

Energy and disability

Energy Insight

Ashira Perera, Oxford Policy Management

March 2019



Introduction

The UN's 2030 Agenda for Sustainable Development seeks to ensure that no one is left behind in the quest for prosperity for all, as set out across its 17 goals and 169 targets. Energy access is a key pillar of prosperity within the UN's Sustainable Development Goals (SDGs), and SDG 7 promises a global commitment to 'access to affordable, reliable, sustainable and modern energy for all'.¹

The universal energy access agenda has typically focused attention on the inclusion of vulnerable individuals in society, typically women, children, and the elderly. Relatively little focus has been placed on the energy deficit experienced by people with disabilities (PWDs). Indeed, even PWDs-targeted conventions, such as the Convention on the Rights of Persons with Disabilities (CRPD) (2006) pay scarce attention to energy poverty itself: the CRPD's Article 28 mentions the need to ensure equal access by PWDs to services and devices (which ultimately require energy access), but only specifically mentions access to clean water.² Furthermore, country reports by CRPD signatories detail provisions and aspirations to improve services which require energy access but they rarely, if at all, specifically delve into the issue of energy poverty.³ PWDs are known to face discrimination, social ostracism, and lack of access to services and safety nets. There are also barriers to obtaining education and employment opportunities.

In this *EEG Energy Insight*, we explore the extent to which the debate on energy poverty and access seeks to address the vulnerabilities of PWDs, given that this segment of society may suffer disproportionately from energy poverty compared to other marginalised groups. We examine the opportunities and challenges ahead for stable and poverty-reducing energy service provision to PWDs, and provide some recommendations for future interventions.

Disability: definitions, broad trends, and statistics

Disability can take many forms, can be felt with varying intensities, and can manifest itself in varying contexts. Disability can therefore be measured and defined along multiple dimensions, with the choice of definition dependent on the context in which disability is being discussed. This creates complexity around acceptance of a universal and definitive explanation of the term 'disability'. There are therefore several definitions which we can draw on:

- The World Health Organisation (WHO) (2001) defines disability as 'the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors'.
- The International Classification of Functioning, Disability and Health (ICF) defines disability as a limitation in a functional domain that arises from the interaction between a person's intrinsic

capacity, and environmental and personal factors (UN, 2018).

There is a paucity of data on disability at a national and disaggregated level. This being said, the WHO, cited in the World Bank's World Report on Disability (2011), estimates that 15% of the global population (or 1 billion people) live with some form of disability.⁴ This is an increase on a WHO estimate of 10% in the 1970s. The Global Burden of Disease survey (2008) estimates that 975 million of individuals aged 15 or above live with a disability, while the figure for children aged 0–14 years is 95 million (cited in the World Report on Disability, 2011). UN estimates suggest that 80% of the world's disabled populations are located in developing countries (Kajima, 2018).

The percentage of PWDs is arguably considerably higher than 15%, given that, according to the World Report on Disability (2011), 43.4% of people in low-income countries aged over 60 years have some form of disability. Furthermore, the percentage of people aged over 60 years is

¹ www.unescap.org/our-work/energy/energy-sustainable-development/about

² www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-28-adequate-standard-of-living-and-social-protection.html

³ See, for example, the first periodic report by Kenya, a CRPD signatory.

www.ohchr.org/en/hrbodies/crpd/pages/spreports.aspx

⁴ Based on 2010 global population estimates.

increasing dramatically in most parts of the world (except in Africa and parts of the Middle East), which suggests inevitably higher overall rates of disability in coming decades. Furthermore, PWDs with psycho-social disabilities are dramatically undercounted in country censuses. These so-called 'invisible disabilities' often rely on self-reporting in censuses and surveys, which means that unless reported, this segment of the population of PWDs is often overlooked. Indeed, in some countries words such as depression are not even part of the local lexicon.

Data deficiencies notwithstanding, disability is likely to have a disproportionate effect on low-income populations. The World Health Survey suggests that the likelihood of disability prevailing is higher in low-income populations compared to high-income populations (WHO, 2011). PWDs are more prone to living under the national and international poverty lines compared to the non-disabled population (UN, 2018). Lack of affordability of food containing protein is twice as likely for PWDs as for non-disabled individuals.

Some of the barriers for PWDs include inadequate policies and standards around the inclusion of disabled people in education, and lack of access to health care, rehabilitation, social protection, safety nets, and formal employment opportunities. Data from the World Health Survey (cited in WHO, 2011) shows that disabled populations across 125 countries were more than twice as likely to be on the receiving end of inadequate healthcare, four times more likely to receive poor treatment, and three times more likely to be denied healthcare. The World Report on Disability (2011) cites several examples from southern Africa which show that only 26–55% of PWDs received the medical rehabilitation which they needed; 5–23% received the vocational training required to secure employment; and 5–24% accessed the welfare services they needed. The situation is likely to be further exacerbated for PWDs among poor and illiterate communities in the Global South.⁵

⁵ Mitra *et al.* (2013) surmise that the academic literature remains inconclusive on whether disabled communities suffer a more pronounced vulnerability to poverty than non-disabled communities, but this is mainly due to the use of different disability measures and whether poverty is being measured through the income/employment lens, or through an assessment of functional limitations. The causal relationship between poverty and disability can

Gender differences, as well as rural–urban disparities, with respect to disability are also stark.

The access of women with disabilities to food containing protein is remarkably lower than for their male counterparts: Mitra *et al.*'s (2013) study of 15 countries across sub-Saharan Africa, Asia, Latin America and the Caribbean shows that the prevalence of disability among working-age individuals is higher among women than men (the gap being 3–5 percentage points across developing countries in their study, compared to a smaller gap in the developed world). Furthermore, the prevalence of disability is higher in rural than in urban areas for 11 out of the 15 countries in the Mitra *et al.* (2013) study.⁶

Disability as an integral part of the 2030 Sustainable Development Agenda

Addressing the needs of the disabled community is a cross-cutting issue and an integral part of the UN's SDGs. The focus on PWDs has been increasing, as recently as 2012, during the UN Conference on Sustainable Development. The 2030 Agenda considers the needs of PWDs across the SDGs. However, Wolbring *et al.*'s (2013) study finds that while the sustainable development-oriented goals and actions are highly relevant to the disability community, the link between goals and actions is not distinct, and disability needs to be mainstreamed into the post-2015 Sustainable Development Agenda.

Observing the UN's SDGs through a disability lens shows that the phrases 'persons with disabilities' or 'disability' are mentioned in the 2030 Agenda for Sustainable Development 11 times, and 'persons in vulnerable situations' is mentioned six times.⁷ There are some SDGs which explicitly focus on disability, while others are implicitly linked to disability. Indeed, the European Disability Forum (2018) highlights that the SDGs targets and/or indicators that explicitly focus on PWDs include SDG 1 on no poverty; SDG 4 on quality of education;

also be bidirectional but an examination of this is beyond the scope of this EEG Energy Insight Paper.

⁶ Mitra *et al.* (2013) note the need for more research to examine whether the latter is a systematic finding

⁷ www.un.org/disabilities/documents/sdgs/disability_inclusive_sdgs.pdf (accessed 9 March 2019).

SDG 8 on decent work and economic growth; SDG 10 on reduced inequalities; SDG 11 on sustainable cities and communities; SDG 16 on peace, justice, and strong institutions; and SDG 17 on partnerships for the goals. It is worth mentioning that while SDG 7 on affordable and clean energy does not explicitly mention PWDs, it does refer to 'affordable, reliable, sustainable and modern energy *for all*'.

Disability and energy poverty

We now turn to the role that energy plays in the lives of PWDs.⁸ The recently published UN Flagship Report on Disability and Development (2018) seeks to coordinate disability-related interventions across all UN entities, while keeping in line with the key tenets of the CRPD (2006). The 2018 UN Flagship Report highlights four key priority areas regarding energy that are of greatest concern to PWDs: 1) access to energy (predominantly electricity but also other forms); 2) greater demand for electricity to

operate assistive technologies; 3) affordable energy; and 4) access to modern forms of energy for PWDs who live in low-income households.

First, access to electricity is low across sub-Saharan Africa and disproportionately affects PWDs.

According to the Sustainable Energy For All Initiative (2017), access to electricity in sub-Saharan Africa is estimated at 43% of the population on average. Only 25% of the rural population has access to electricity; in stark contrast to 76% of the urban population.⁹ In almost 50% of developing countries covered in the 2018 UN Flagship Report, less than half of households with PWDs have access to electricity. Figure 1 is taken from the 2018 UN Flagship Report and shows the difference in electricity access rates between households with and without PWDs. In 37 out of 44 countries in the sample, households with PWDs have a lower electricity access rate than households without.

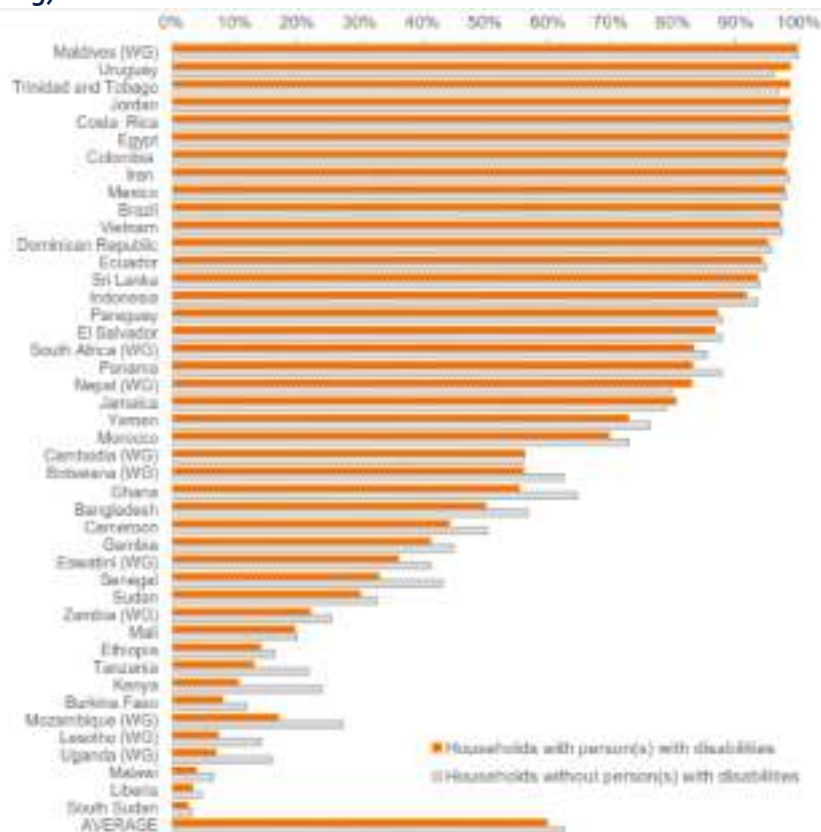
⁸ Energy access entails the ability to obtain electricity access and clean cooking fuels.

⁹ South Asia fares comparatively better, with 86% of the population being able to access electricity – the rural–urban gap in electricity access is less stark, with 79% of

the rural population having access, compared to 98% of the urban population.

www.seforall.org/heatmaps/electrification (accessed 9 April 2019).

Figure 1: Comparison of electricity access rates between households with and without PWDs (2011–2015)



Note: (MDS) identifies countries with data collected using the WHO Model Disability Survey. (WG) identifies countries with data collected using the Washington Group short set of questions.

Source: UNDESA¹⁰ (on the basis of data from DHS,¹¹ IPUMS¹² and SINTEF¹³) and WHO.¹⁴

Source: UN Flagship Report on Disability and Development (2018)

Second, assistive technologies are in greater demand among PWDs, which in turn leads to greater demand for access to electricity.

Assistive technologies encompass the systems and services related to the delivery of assistive products, including: wheelchairs, eyeglasses, hearing aids, communication aids, memory aids, prosthetics, and personal assistance devices. The Global Partnership for Assistive Technology – an initiative launched at the Global Disability Summit in 2018 – asserts that over 1 billion people are in need of at least one form of assistive technology.¹⁰ This number is set to double to 2 billion people by 2030, by which point many older people may need two or more assistive technologies (WHO, 2018). Currently, over 90% of people in need of assistive technologies do not have access to them.

PWDs are likely to have an increased need to be more self-sufficient, potentially through increased demand for assistive technologies, which often rely on electricity access. For example, individuals with disabilities are more likely to spend increasing amounts of time in the household, for multiple reasons. One possible reason is a lack of physical mobility, which causes home-boundedness. Another reason is social pressures and stigma, which keep PWDs out of sight of the community.

Marginalisation can also be felt by PWDs in terms of formal employment opportunities, due to ‘discrimination, stigma, negative attitudes, lack of accessible transportation to get to work, and inaccessible workplaces with limited availability of accommodations’ (UN, 2018). Indeed, the WHO (2011) reports that 87% of PWDs in India work in the informal sector. The UN 2018 Report on Disability and Development provides examples

¹⁰ www.atscale2030.org/background (accessed 9 April 2019).

from Chile and Sri Lanka which show that almost 20% of PWDs need, but do not have access to, advanced assistive technologies in the workplace (e.g. screen-reading software with synthesised speech). Up to 54% of PWDs already use assistive technologies, but need further advanced assistive technologies in the workplace.

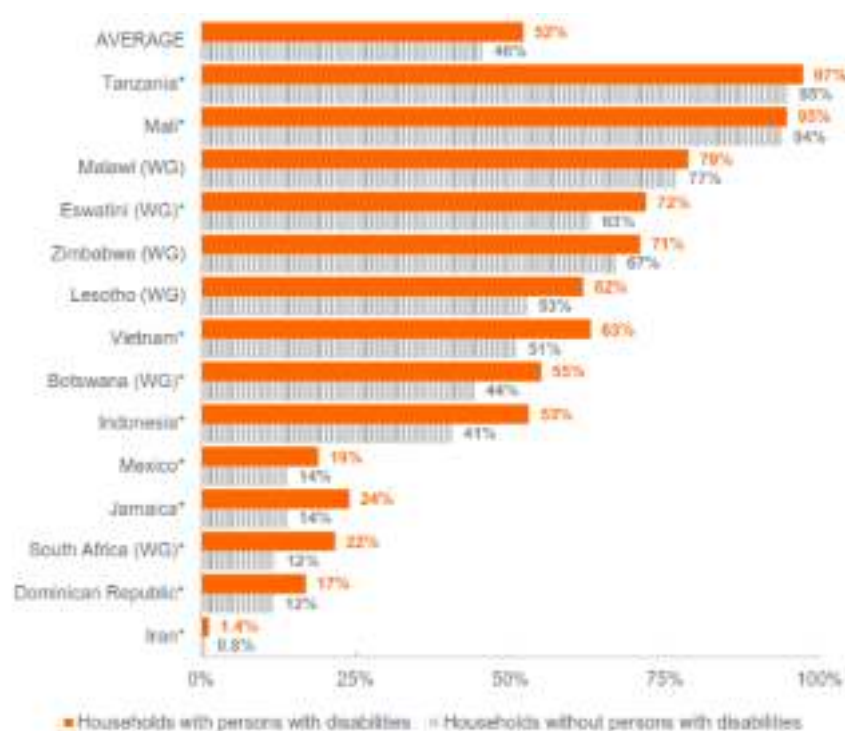
Furthermore, it is likely that PWDs with multiple forms of disability will be marginalised to a greater extent in the workplace than those with a single form of disability. PWDs will therefore tend to engage in informal and/or self-employment, which is more likely to take place in their homes. The end-result is increased home-boundedness, greater reliance on assistive technologies, and therefore greater need for electricity access.

Third, affordability of energy among PWDs is a challenge. Energy bills tend to be higher among households with PWDs and the UN 2018 report highlights that this burden is increased by the fact that PWDs often have fewer financial resources to be able to pay energy bills. The literature cited in Mitra *et al.* (2013) posits that the disabled community experiences a 'conversion handicap', which is the additional need and cost to the individual of living with a disability, and this additional cost varies with the type and severity of the disability.

Fourth, PWDs in developing countries are more exposed to pollution in the household due to a lack of modern energy services. The UN Flagship Report (2018) notes that, from a sample of 14 developing countries in 2010, on average 53% of households with PWDs still used wood or coal for cooking, versus 46% of households without PWDs. This occurrence is especially true in sub-Saharan Africa and Asia: Bonjour *et al.* (2013) note that 77% of all households in sub-Saharan Africa use solid cooking fuels, and the equivalent figure for South-East Asia is 61%. In Tanzania, 97% of disability-affected households use traditional forms of energy (UN, 2018) (see Figure 2 below). The rural-urban disparity is also stark, with 66% of rural PWD households using traditional forms, versus 32% of urban PWD households (Bonjour *et al.*, 2013).

The increased exposure of PWDs to air pollution in the home is primarily due to increased time spent in the home. Exposure to household air pollution is increased due to the burning of traditional energy forms used for cooking and heating, as well as for informal microenterprise. Consequently, greater use of traditional fuels for cooking, heating, and enterprise is more likely to negatively impact the health and safety of PWDs, as well as any PWD-carers in the household who assist them. This compounds the need for cleaner and more modern forms of energy for households with PWDs.

Figure 2: Percentage of households with and without PWDs cooking with wood or coal, across 14 countries (2010)



Note: (WG) identifies countries with data collected using the Washington Group short set of questions. An asterisk (*) indicates that the difference between households with and without persons with disabilities is statistically significant at the 5% level.

Source: UNDESA²³ (on the basis of data from IPUMS²⁴).

Source: UN Flagship Report on Disability and Development (2018)

Possible solutions and recommendations

The key to overcoming the challenges for PWDs through an energy lens lies chiefly through increased access to electricity. First, future energy and development programmes may consider increasing the provision of energy to certain key areas of social infrastructure, especially healthcare and educational services.

Improving and sustaining electricity provision within educational infrastructures may incentivise greater participation of disabled individuals in the educational system. An example from the literature on water, sanitation and hygiene shows that making facilities more accessible to PWDs through disability-targeted interventions (e.g. by having more accessible latrines in schools through the provision of assistive devices – such as toilet chairs, potties, commodes, toilet grab bars, portable and fixed ramps) increases PWDs' participation in the education system (UN Children's Fund, undated). At a minimum, adequate lighting in schools would help

visually-impaired students. Bourne *et al.* (2017) show that 36 million people worldwide are affected by blindness, with sub-Saharan Africa and Asia disproportionately affected, and that 89% of those affected by visual impairment live in low- and middle-income countries. Electricity would be key to powering a whole range of assistive devices for PWDs. These include e-readers, audio books, and optimal character recognition devices for visually-impaired students, all of which require access to electricity to power and charge the batteries which these devices require to operate. For schools which have computer facilities, students with learning difficulties, or who have difficulties typing, may benefit from using programmable keyboards which reduce the choice set of functions and which use graphics to aid comprehension. Again, access to electricity is key.

PWDs are more likely to need access to healthcare services, so uninterrupted energy access in remote healthcare facilities is also likely to have a disproportionately positive effect on the lives of

PWDs. Mars and Erasmus (2012) cite the fact that Africa carries almost a quarter of the burden of the world's diseases, is served by 3% of the world's healthcare workers, and has only 1% of global expenditure on healthcare. The use of telemedicine, a technology which enables healthcare professionals to connect with PWDs in rural areas using information and communication technology, would benefit PWDs located in rural areas who would otherwise spend several hours travelling to distant healthcare facilities. Telemedicine facilities would also enable patients to gain access to the limited number of healthcare professionals. Doctors would be able to communicate with patients via mobile devices and would be able to issue electronic prescriptions. However, telemedicine technology requires reliable electricity access, and telecommunications infrastructure is dependent on electricity.

As some of the literature asserts, **families with PWDs incur increased costs of living.** The 2018 UN Flagship Report notes that at least 168 countries have schemes which support disabled communities with periodic cash benefits, while 11 countries provide a lump-sum benefit, and four countries provide no cash disability benefits. Half of the countries which provide periodic benefits provide them for workers and families in the formal sector, and exclude children or individuals who have not contributed to the social system for a sufficiently long time. Given that households with PWDs incur higher costs of living, cash transfer programmes could consider the provision of higher cash transfer amounts that PWDs can decide how to allocate. Furthermore, given that PWDs include children, and that PWDs are more likely to be engaged in informal employment, cash transfer programmes should consider focusing on interventions which include children and PWDs engaged in the informal sector.

Furthermore, in two-thirds of countries featured in the 2018 UN Flagship Report, disability benefits are means-tested based on income thresholds. In their research on Peruvian social protection systems, Bernabe-Ortiz *et al.* (2016) suggest that income thresholds should be lower as PWDs have a greater need for social protection and are less likely to be enrolled in social protection programmes. This is an especially prescient point as the authors note that people in the lowest quartile of income are seven times more likely to have a disability; those in the

poorest quartile of socioeconomic status are three times more likely to have a disability.

There is a potential to link energy access to cash transfer programmes targeted at PWDs: for example, by considering the provision of voucher schemes tied to the purchase of energy products and services. One prospect for increasing energy affordability could be the provision of cash transfers with higher transfer amounts to ensure that PWDs receive the basic energy-related services they need. Social safety net mechanisms focused on energy have been created in developed countries. For example, cold weather payments, warm home discount schemes, and winter fuel payments are provided to low-income, vulnerable populations, including disabled people, in the UK; and the US has a low-income home energy assistance programme (LIHEAP), which again focuses on vulnerable populations. Such schemes could be designed and tailored to the needs of PWDs, particularly in low-income countries.

Given that 2.9 billion people worldwide, including PWDs, still resort to traditional cooking fuels, investments in clean cooking are necessary to reduce indoor pollution. Indoor pollution kills more than 4 million people annually (George, 2015), of which 500,000 deaths originate in sub-Saharan Africa (World Bank, 2012). Liquefied petroleum gas (LPG) stoves offer a viable alternative to consuming traditional fuels. However, there are questions which need to be addressed around how PWDs will afford the LPG cylinders needed to operate stoves – vouchers schemes and other cash transfers options could help uptake and affordability. Microcredit schemes may also be an alternative financial mechanism for PWDs living below the poverty line. Finally, there is also a need to sensitise PWDs, as well as the men in the household who often determine purchasing decisions, on the benefits of clean cooking methods.

Conclusion

This *EEG Energy Insight* sought to identify the energy-related challenges faced by PWDs – particularly around energy access and affordability – and practical solutions to those challenges.

As with the rest of the energy-poor, disabled populations are often left out of discussions around energy poverty, even though it often

disproportionately affects them. Engagement with PWDs in the energy planning process would help policymakers distinguish between the different forms of disability (both physical and psychological), and how these differing forms of disability interact with PWDs' energy needs. Increasing inclusion of PWDs across ministries,

departments, and agencies, would benefit the future design and effectiveness of energy access interventions. The inclusion of PWDs in energy planning at the programme level through to national-level decision-making and policymaking would ultimately help ensure the energy access agenda truly leaves no one behind.

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About the author

Ashira Perera is a PhD-trained development economist and Consultant in the Natural Resources and Energy Portfolio at Oxford Policy Management (UK). She has provided analytical and research expertise on the Energy and Economic Growth (EEG) programme relating to the institutional mechanisms around energy planning and designing energy planning stakeholder surveys. She also contributes to EEG's Energy Insight Series. Ashira has extensive field research experience from her work on extractives governance programmes and reviews in Kenya, Tanzania, Uganda, and Ghana. She has been Programme Manager on and continues to contribute research and analysis to the £15 million DFID-funded Ghana Oil and Gas for Inclusive Growth (GOGIG) programme, which engages in regulatory reforms that encompass the energy sector. Prior to her PhD at the University of Nottingham (UK), she was Emerging Asia Economist at Capital Economics (UK). Ashira has also worked for the environmental and microfinance sectors in Sri Lanka.

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