February 2025

Inclusive Design

of Infrastructure, Products, Services, and User Participation

DSS: **Online Training Course–Module 3**

UKaid
from the British people

Transforming
Energy
Access

Agenda

Global Disability Innovation Hub

1. **Introduction**
   GDI Hub, Team, Housekeeping
2. **Introduction to Inclusive Design**
3. **Delivering Inclusive Design**
4. **Inclusive Design in Energy Access**
5. **Summary and Next Steps**
   Feedback, Triage Clinics

Acknowledgement

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1 Introduction

GDI Hub: Introduction

Global Disability Innovation Hub

Global Disability Innovation (GDI) Hub accelerates ideas into impact for a more just world—for disabled people, and all people.

41+ countries | 37 million people | 100+ partners

Growing new technologies & ecosystems I Supporting & scaling innovations I Strengthening systems I Pioneering research I Sharing knowledge I Building partnerships I Taking risks

Bringing together world leading academic research and practice-led delivery to address global challenges

Modules 1 and 2: Recap

Global Disability Innovation Hub

What is disability and disability inclusion?

- **Disability is diverse** and a part of being human. It arises from barriers that should be reduced and removed.
- **1 in 6 people (16%) globally have a disability,** 80% live in LMICs.

Key enablers for disability inclusion

- Disability confidence, engaging persons with disabilities, accessibility, reasonable accommodations, disaggregated data.

Disability innovation

- Energy access innovation could **directly influence 'powering AT'.**
- Developing affordable and sustainable adaptations or alternatives for the 22 energy-based WHO-listed priority assistive products presents a high-impact opportunity.

Suggested actions for TEA partners:

- Conduct disability inclusion **training and awareness workshop** for all staff.
- Develop and adopt **policies** for disability inclusion and reasonable accommodations.
- Explore **partnerships with disability innovators/ businesses.**

Training Module 3: Delivery Team

Global Disability Innovation Hub

Iain McKinnon
CEO and Co-founder
i.mckinnon@ucl.ac.uk

(Presenter)

Shivani Gupta
Senior Inclusive Design Manager
shivani.gupta@ucl.ac.uk

(Presenter)

Bala Nagendran M
Inclusive Climate Researcher
b.nagendran@ucl.ac.uk

(Thematic Lead & Moderator)

2 Introduction to Inclusive Design

What is Inclusive Design?

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Inclusive Design–can help all human beings experience the world around them in a fair and equal way.

Iain McKinnon, GDI Hub, 2017

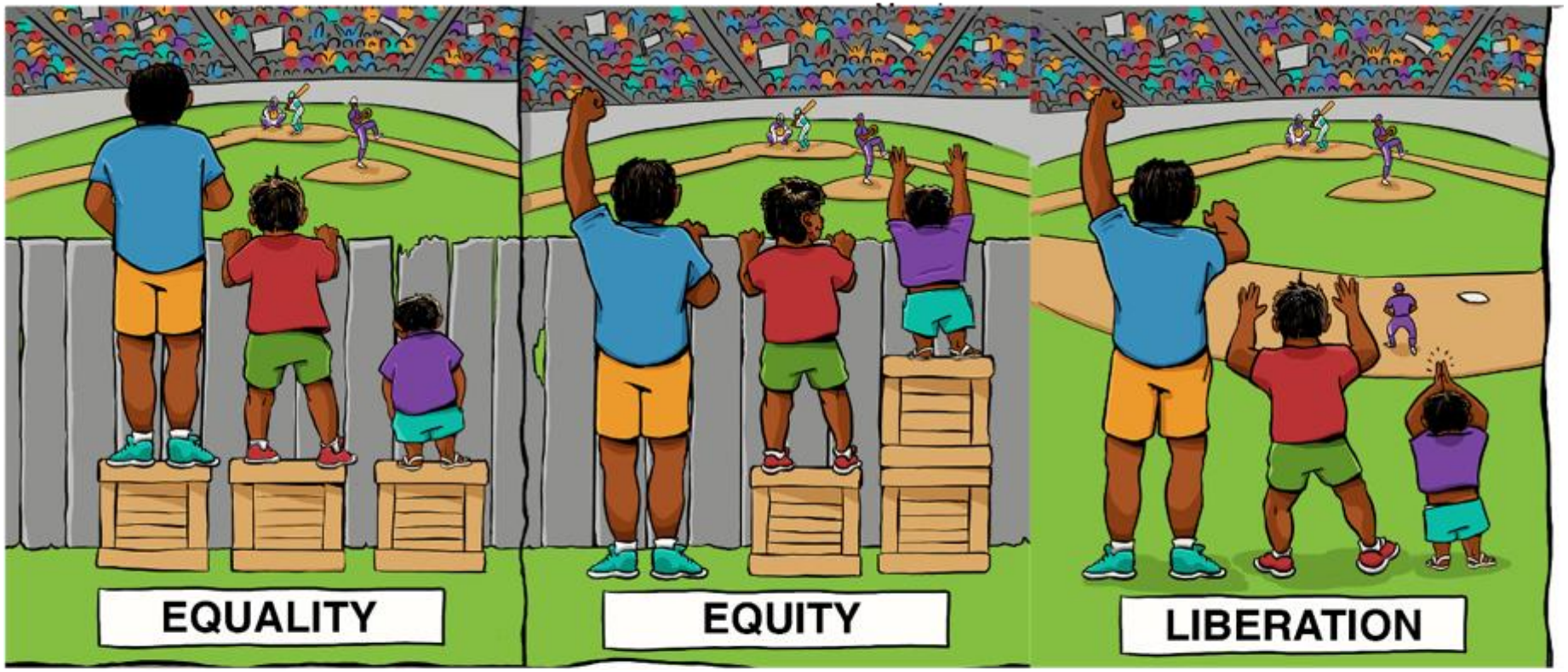
Inclusive Design principles:

- Place **people at the heart** of the process
- Deliver **results** 'with' and not 'for'
- Is about **collaboration & co-design**
- Anticipate **differing needs** and wants

Source: GDI Hub

Inclusive versus accessible

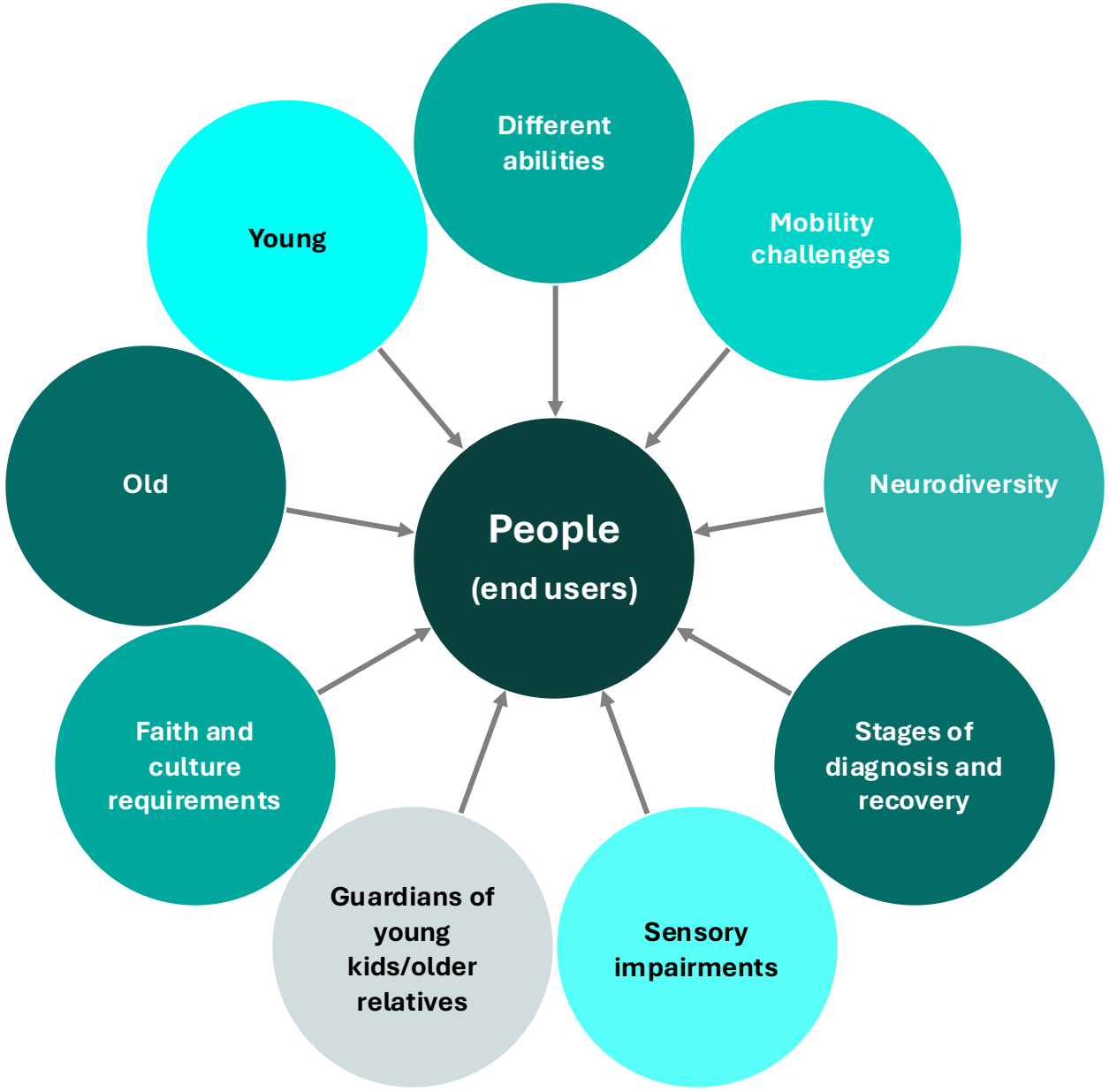
Global Disability Innovation Hub



Not accessible **Not** inclusive	**Accessible** Not inclusive	**Inclusive**

Source: Interaction Institute for Social Change

Growing demand



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Globally:

- **16% of the population (1.3 billion) are** people with disabilities (WHO, 2022).
- **16% of the population will be** aged 65 and above by 2050 (United Nations).
- **681 million children are** below five years of age, relying on caregivers (United Nations Population Division).

Inclusive design responds to the context— demography and geography.

Inclusive design benefits everyone!

Inclusive Design is for all - ‘3 modes’ of disability

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1. Permanent

People who are permanently disabled.

2. Temporary

People who are temporarily disabled, for example, someone with a broken leg or someone recovering from an illness.

3. Situational

People who experience a situational disability because of their environment, circumstances, or behaviour.

Inclusive Design offers societal, economic, and sustainability benefits.

Societal benefits: From the context of situational disability

Global Disability Innovation Hub

Adaptations/innovations that support people with disabilities usually provide wider benefits for...

- People reading their smartphone.
- Families with prams and buggies.
- People watching videos in a noisy environment, or who want to keep video volume low.
- People who are not able to speak the local language.

Economic benefits

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It is estimated that for **every dollar spent on accessibility features and inclusive design**, companies see an average **revenue return of over nine dollars** (Valuable 500, 2024).

At the outset of the project, inclusive design features can be achieved with almost **no additional cost.**

22%
of global population (5+ years old) with a disability

22%
of global working-age population (25-64) with a disability

27%
of global consumer population (15+) with a disability

63%
of global population impacted by disability (friends and family)

1.6 billion
people in the world currently have a disability

$18.3 trillion
is the value of global disability market (people with disabilities; friends/family)

Return on Disability, 2024.

Sustainability benefits

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Inclusive Design helps create solutions that are fit for purpose both now and in the future by:

- **Fostering social sustainability**
- **Mitigating risks**
- **Avoids reverse engineering and retro-fitting products**

Source: GDI Hub

Benefits of Inclusive Design for energy access - summary

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1. **Social benefits -** **supports 'just energy transition'** and leaves no one behind.

2. **Economic benefits -** recognises people with disabilities **as current and potential customers** of energy products.

3. **Sustainability benefits -** makes way for **cost-effective, low-carbon future** for all.

Inclusive solutions are simple and for everyone

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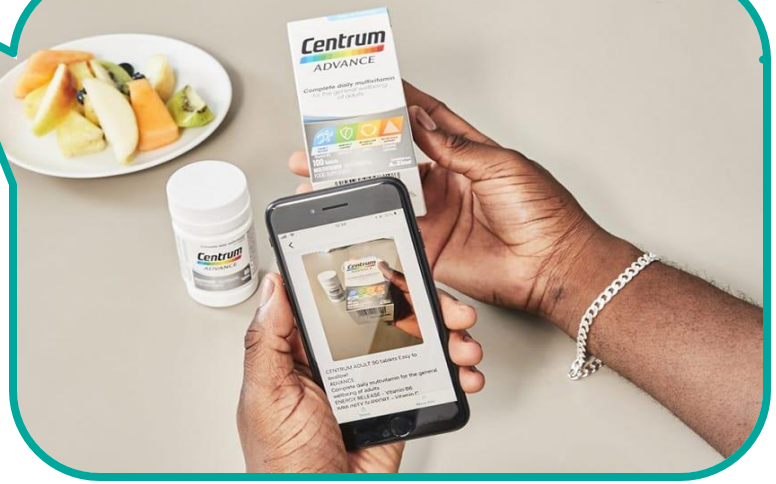
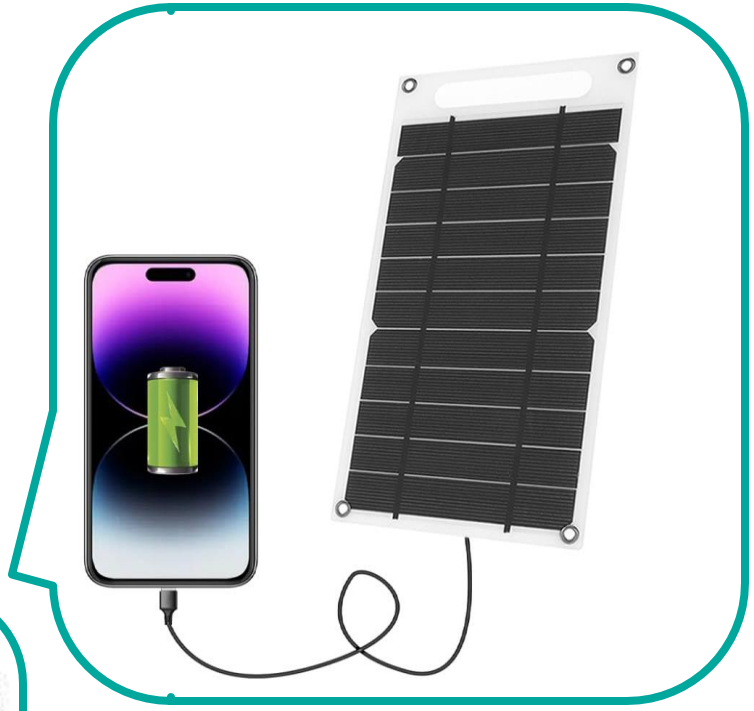


Seeing AI App enabling access to information using mobiles
Source: AT Today



Solar Mobile charger
Source: Amazon

Control panel with tactile information

A common TV remote

Delivering Inclusive Design

Steps for delivering inclusive design

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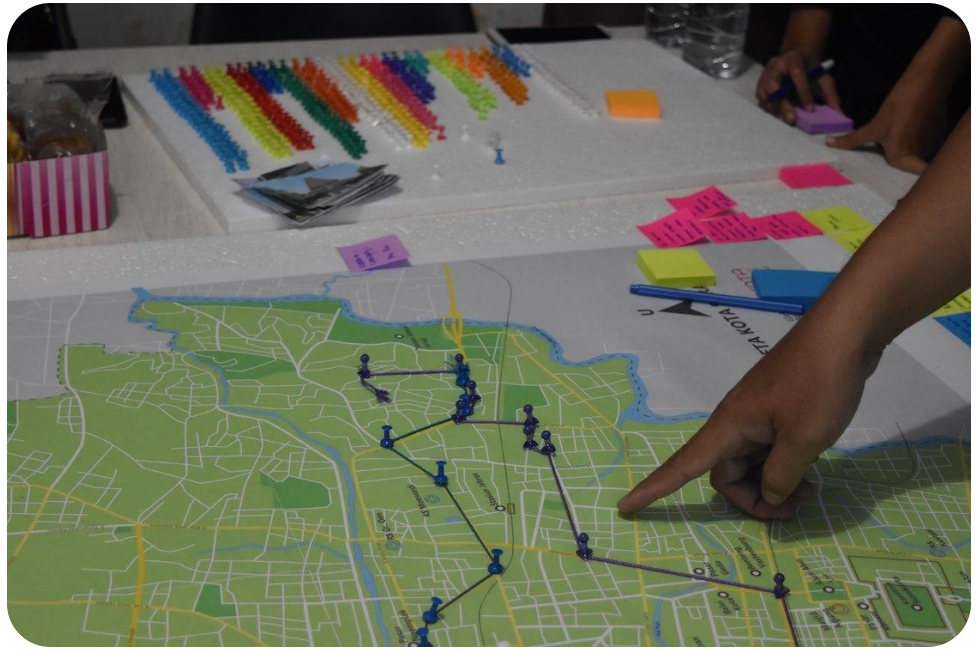
1. Vision and Planning
2. Design and Evaluate
3. Build and Fit-out
4. Manage and Operate



Source: GDI Hub

1. Vision and Planning

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Co-developing design with people with disabilities and all potential consumers.

- **Senior advocate** – appoint a senior figure (e.g., a Board member) as your Inclusive Design (ID) champion
- **Client ID champion/expert** – have a team responsible for ID briefing and leading the delivery of ID outcomes.
- **End users** – engage with people with disabilities. They will bring a depth and richness to understanding the issues.

Tanni Grey-Thompson

Iain Mckinnon

Source: GDI Hub

2. Design and Evaluate

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- **Design Team** – should be **briefed on Inclusive Design (ID)** with support from ID expert/access consultant.
- **Reporting** – design team to **regularly report progress** on ID features being developed in compliance with ID standards.
- **Engagement** – people with disabilities to be **pro-actively and genuinely engaged** throughout the design process.
- **Design and access statement/report** – clearly **set out how the product/service embeds ID,** making it usable for the widest range of end users.

Adopt benchmarks

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Standards

- International standards (ISO, IEEE, IEC)
- Regional standards (CEN, CENELEC and ETSI)
- National standards (BS, BIS, AFNOR)

Guidelines

- Developed by UN Agencies
- Developed by NGOs, CSOs, OPDs

Best Practices

3. Build and Fit-Out

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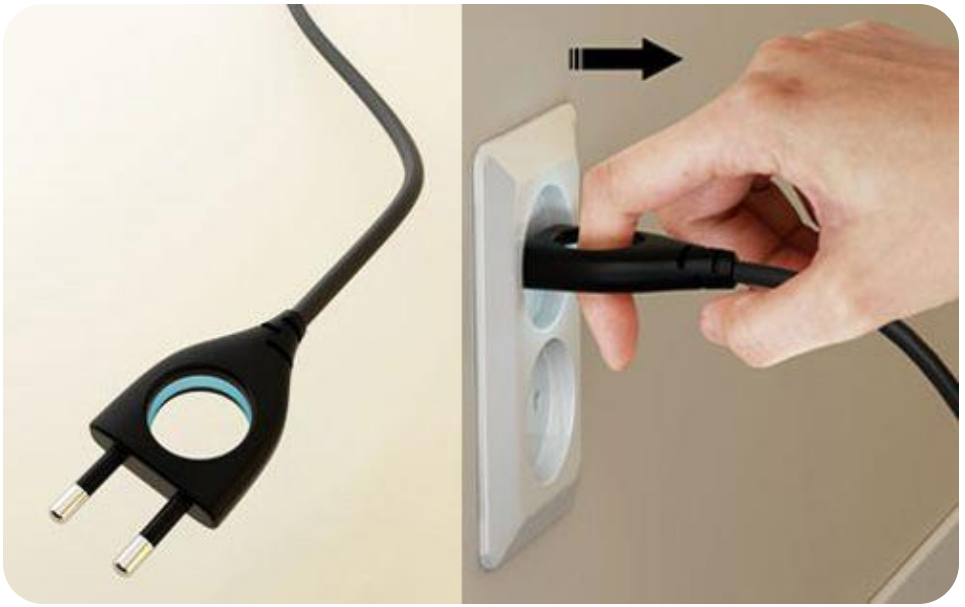
In this stage, ensure that the approved drawings are what is being built or made.

- The manufacturing team should **be aware of the inclusive design features** and ensure they are achieved.
- If there are any alterations to the design, ensure that they **comply with standards** and consult the user group.
- Invite users to do an **audit at different stages,** including before and after completion.



Universal Plug (Source: VLND)

4. Manage and Operate

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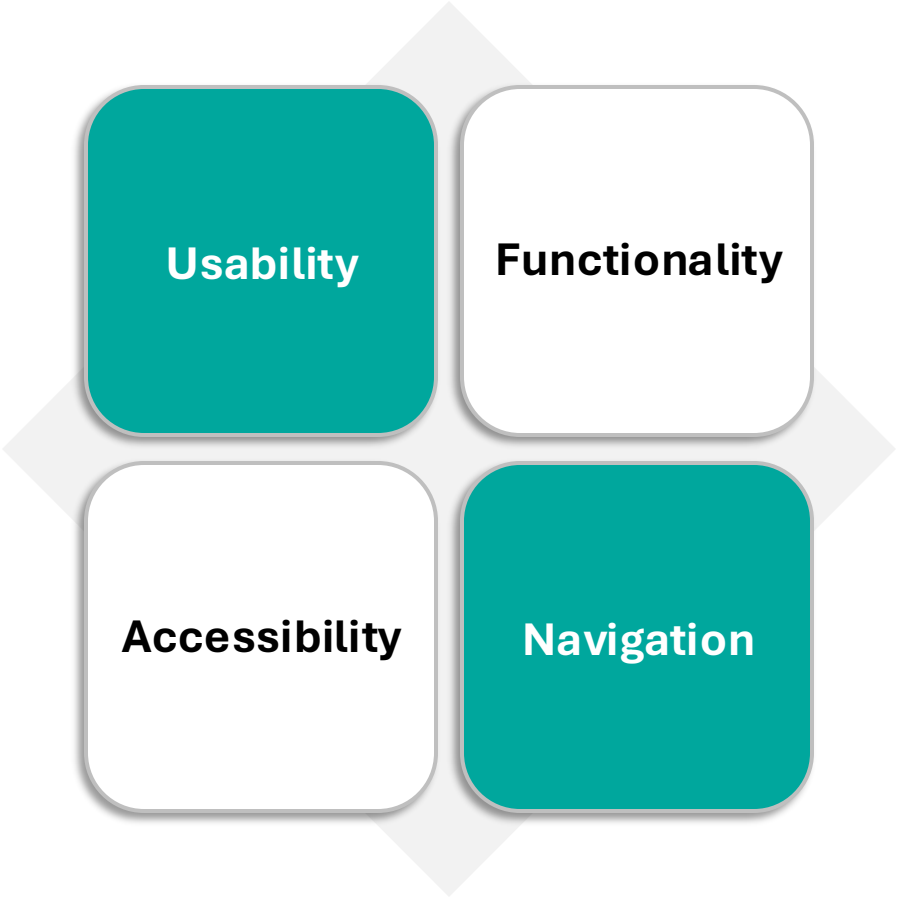
- **Onboarding and practice –** ensure that the operations and marketing team **knows all about the inclusive design features** of the product/service.
- **Staff training –** train all staff, especially in customer care, in **disability inclusion and equality,** preferably delivered by people with disabilities.
- **Engagement – engage** with the local population, product users, and people with disabilities. **Audit (or mystery shop)** with the access panel to improve the service offer.
- **Monitoring and Review –** continue monitoring the product/service offer and **capture learnings for the future.**

Source: Little Britain

Need for a comprehensive accessibility audit

- **Accessibility Audit:** An evaluation of your organization's **physical and digital infrastructure and services** to assess their accessibility.
  - It involves assessing accessibility against set criteria such as **standards/guidelines or user feedback and** making improvements**.**
  - The process could be designed as a combination of **automated and manual auditing.**
- **Benefits:** Improves legal compliance, enhances user experience, and detects barriers early on.



4 Inclusive Design for Energy Access and Just Transition

Disability-inclusive energy access: Insights

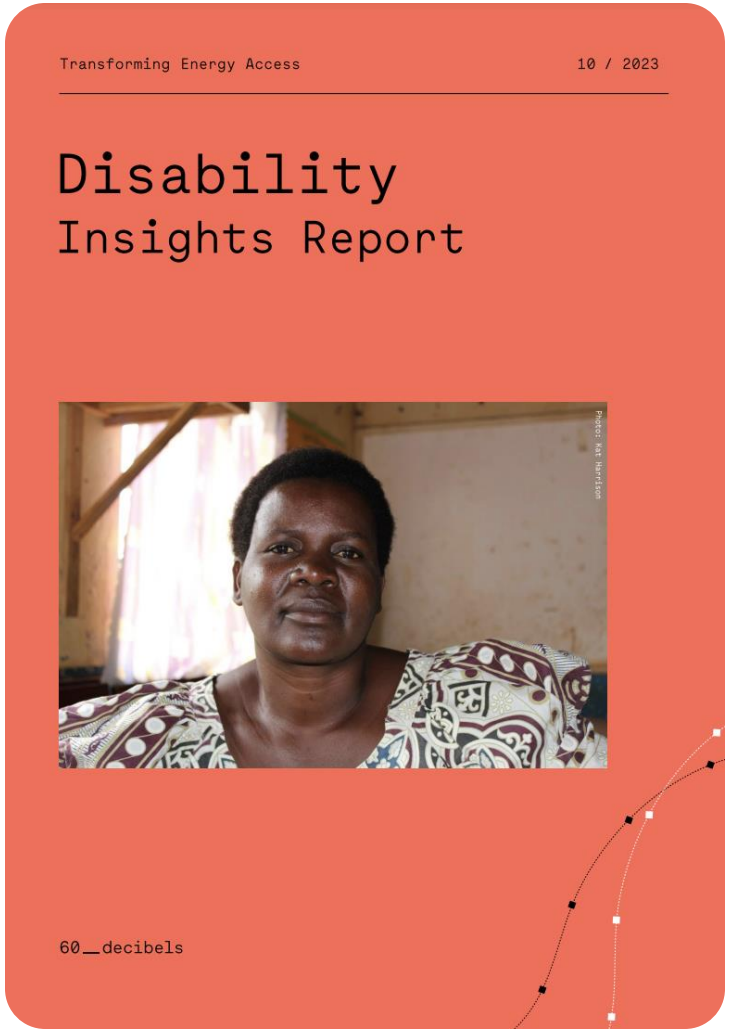
Global Disability Innovation Hub

Based on data from **3,060 customer interviews (4.2% of households with disability),** from eight LMICs.

Adopting Inclusive Design for energy access – why?

- 73% of those with disabilities use the energy product/service, though **usage is impacted for 21% of them due to disability.**
- 27% of household members with disabilities are not using the energy product/service. For **13%, it was due to their disability**

Disability limits or excludes access to energy!



Source: TEA

Improved cookstove, solar home system, solar lantern, mini-grid, off-grid refrigerator, solar water pump, and e-mobility

Disability experience of clean energy products: Insights

Global Disability Innovation Hub

Common reasons for not using clean energy products:

- Mobility impairments
- Safety concerns
- Visual impairments

Common impacts of energy products on disability:

- Physical strain while using the product
- Sensitivity to product stimuli (for example, smoke, bright light, etc.)

A third of people with disabilities whose energy product usage is affected by disability, **use the product with additional support from assistive tools or family members.**

Equitable access to modern, clean energy products/services and equal experiences/ opportunities for people disabilities, **require inclusive design.***

*Inclusive design is both a means and enabler of just energy transition.

Transforming livelihoods through inclusive design: Case Study 1

Global Disability Innovation Hub

Solar-powered photocopying machine and printer for local entrepreneurs

- Installed in the user's vehicle, fitted in a lightweight mild steel box, **as per user needs and ergonomics.**
- Solar panels are installed at users' home with 2 **portable batteries,** which can be charged and utilised on alternate days.
- Printing operations are carried out using **a smartphone.**

Ilayaraja, **an entrepreneur with disability** from India using solar-powered photocopy machine and printer

Source: SELCO Foundation, India

Transforming livelihoods through inclusive design: Case Study 2

Global Disability Innovation Hub

LincCell technology for wheelchairs

- First company in Kenya to **manufacture electric wheelchairs** from recycled parts **with long-range lithium-ion batteries.**
- **"Rough road electric wheelchair,"** a sturdy and reliable chair that can navigate even the most challenging terrain.
- Built from **discarded materials** such as e-waste from old cars and machines, parts from old bicycles and other scrap materials, making it an environment-friendly solution for mobility.

Lincoln Wamae – an engineer and innovator of the ’Rough Road Electric Wheelchair (Reference: AT2030)

Transforming livelihoods through ID: Solar-powered Mobility

Global Disability Innovation Hub

Sunny Splendor – a solar-powered vehicle and mobile shop for people with disabilities
(Source: The Better India)

Solar-powered tricycle innovated by Arusha Technical College Staff
(Source: EASTRIP)

5 Summary and Next Steps

Module 3: Key takeaways

Global Disability Innovation Hub

Inclusive Design benefits everyone:

- Places people at the heart of the design process.
- Delivers results 'with' and not 'for' .
- Responds to diverse needs.

Catering to diversity in disability requires mainstreaming Inclusive Design for:

- Built spaces, information and communication, assistive technology and support services, and staff awareness and training.

Delivering Inclusive Design requires interventions across four stages:

- Vision and planning, design and evaluation, build and fit-out, and monitoring and operations.

Suggested Actions for TEA Partners:

- Conduct **Accessibility Audits** for your business assets (physical, digital, and communication)
- Onboard **Inclusive Design expert/s** as part of your team and improve policies and practices
- Adopt relevant Inclusive Design processes and accessibility **standards**

Next steps

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Triage clinics and technical assistance:

TEA Partners can now **book one-hour appointments** with the GDI Hub team to discuss any questions or ideas on disability inclusion and innovation. 1-2-1 technical assistance support is also available from the GDI Hub team.

Scan the QR code to book your slot or email b.nagendran@ucl.ac.uk

Thank you!