Gender, Disability and Social Inclusion

Agenda

- **Gender Inclusion**

- **Disability and Energy Access**

- **Social Inclusion**

- Q&A

- Webinar feedback survey

Our speakers

► **Jennye Greene**

- Managing Partner for Sustainable Energy Solutions LLC where she specialized in gender and energy related assignments, mostly in Africa.

- Her professional projects span policy, finance, enterprise development, and environmental sustainability.

- She has a masters from Columbia University (Climate & Society) and bachelors degree from Brown University (International Relations).

► **Richa Goyal**

- Senior Insight Manager at Energy Saving Trust and research co-lead for the Efficiency for Access Coalition.

- Over 11 years of experience research grant management, evaluating social businesses, leading field work & development projects, implementing monitoring & evaluation research and big data analytics.

- Worked across programmes such as Lighting Global Quality Assurance Framework, Lighting Asia India and served as the Country Manager India for Alliance for Rural Electrification.

► **Katrina Pielli**

- Board Trustee for Energy 4 Impact and Steering Committee member for the SEforALL Energizing Finance research series

- Over 15 years extensive experience across the U.S., Africa, and the Middle East

- Authored a scoping study on sustainable energy and the 'leave-no-one-behind' agenda

- Served as a senior program director and energy access expert at the USAID

Gender Inclusion

Jennye Greene
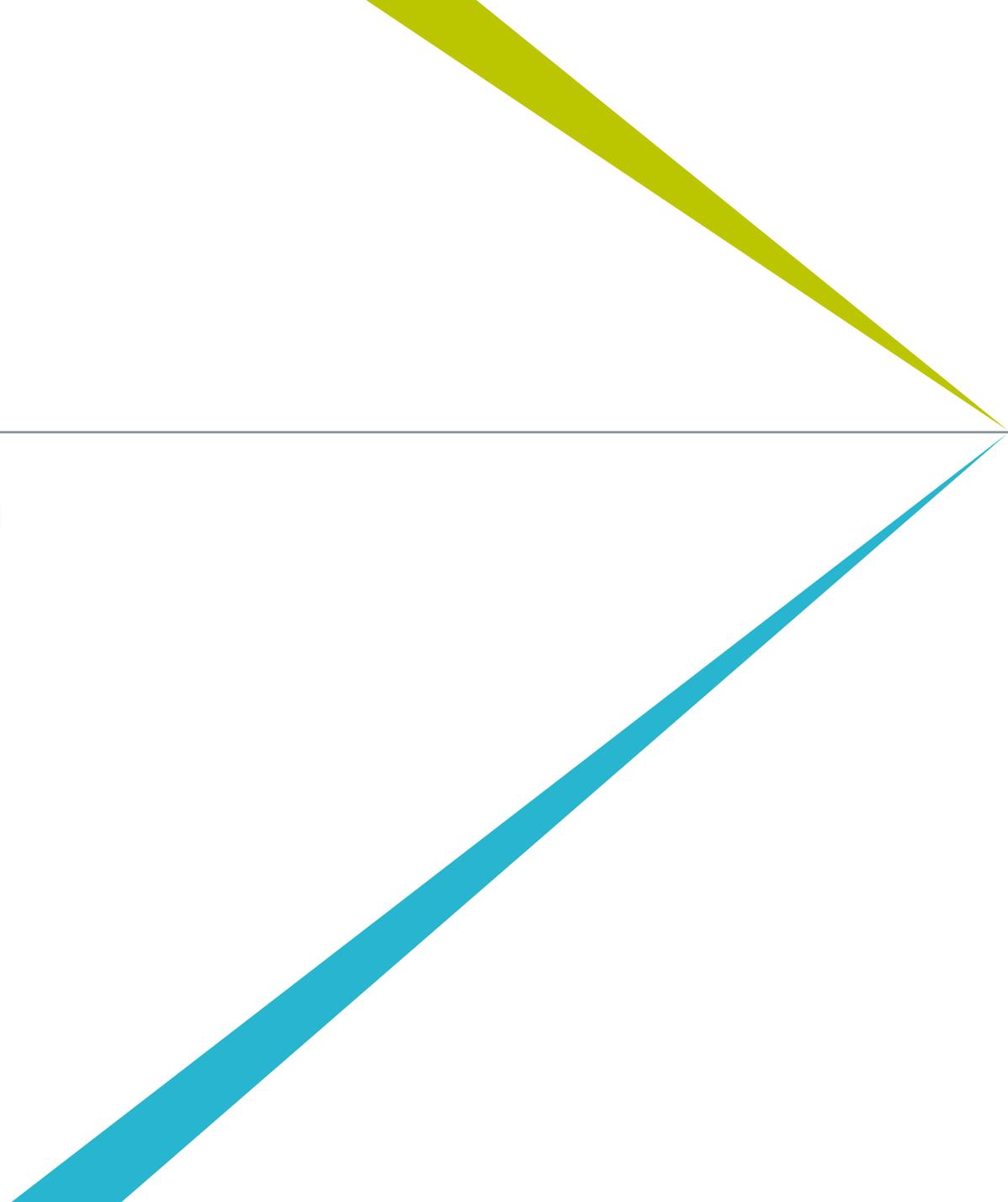
Bonus slide – Sharing your thoughts

Lowes' Hand Drills

► A little background of these U.S. examples:

► Lowes is a nationwide home improvement/construction/remodeling retailer serving individuals but also micro, small, and medium enterprises (MSMEs) linked to homebuilding and repair (Lowes calls this customer segment "Pros"). Immigrants from Mexico and Spanish-speaking countries of Central and South America along with their U.S. born descendents are sometimes referred to as Hispanic and are often overrepresented among MSMEs in this sector. In the U.S. since the 1940's, pink has become gendered as a stereotypically "feminine" color and in the 2000's was adopted as the color for breast cancer awareness and research.

Picture   Video

Bonus Slide - Who is this designed for?

► While I support the fight against breast cancer, I have always disliked the color pink because of its gender connotations in the US… Nevertheless, I do own some pink woodworking tools…

► …as a protective measure since male relatives are less likely to borrow (read: misplace, abuse, break or unintentionally walk off with) something this color.

Bonus Slide – Who is this designed for?

► While the executive's comment was problematic, it does draw attention to one important consideration for inclusive design – the fact that users are not homogenous and it's limiting to default to the dominant sub-group.

Average Height of American Men

	White	Black	Asian	Hispanic
	5' 9.5"	5' 9"	5' 7"	5' 6.5"

Source: CDC

Mother Jones
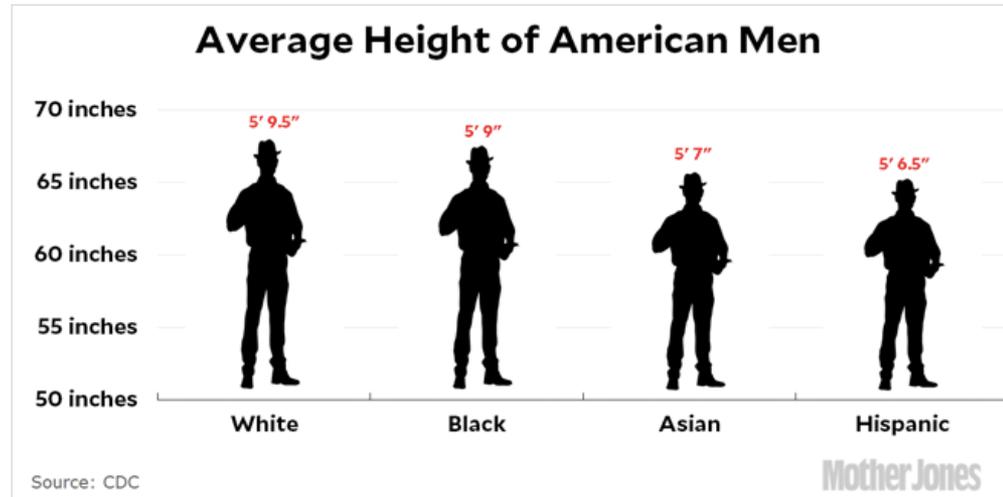
According to the *European Journal of Clinical Nutrition*, the formula for hand size in men is:

Hand Breadth = (Height − 86.783) + (.195 * age) / 5.122.

Source: Drum, Kevin. "Lowe's Exec In Trouble for "Small Hands" Gaffe." August 27, 2019. https://www.motherjones.com/kevin-drum/2019/08/lowes-exec-in-trouble-for-small-hands-gaffe/

Hyperlink to EJCN: https://www.nature.com/articles/ejcn2013220

Historical View of the Plough 1/2

► Vaclav Smil (2004)

► "Assuming sustained human exertion at 75 W, the power of a working equine or bovine animal is typically eight times, and usually not less than six times, greater."

From:
Encyclopedia of Energy
1st Edition
Editor in Chief: Cutler Cleveland
Hardcover ISBN: 9780121764807
eBook ISBN: 9780080523613
Imprint: Elsevier Science
Published Date: 18th March 2004
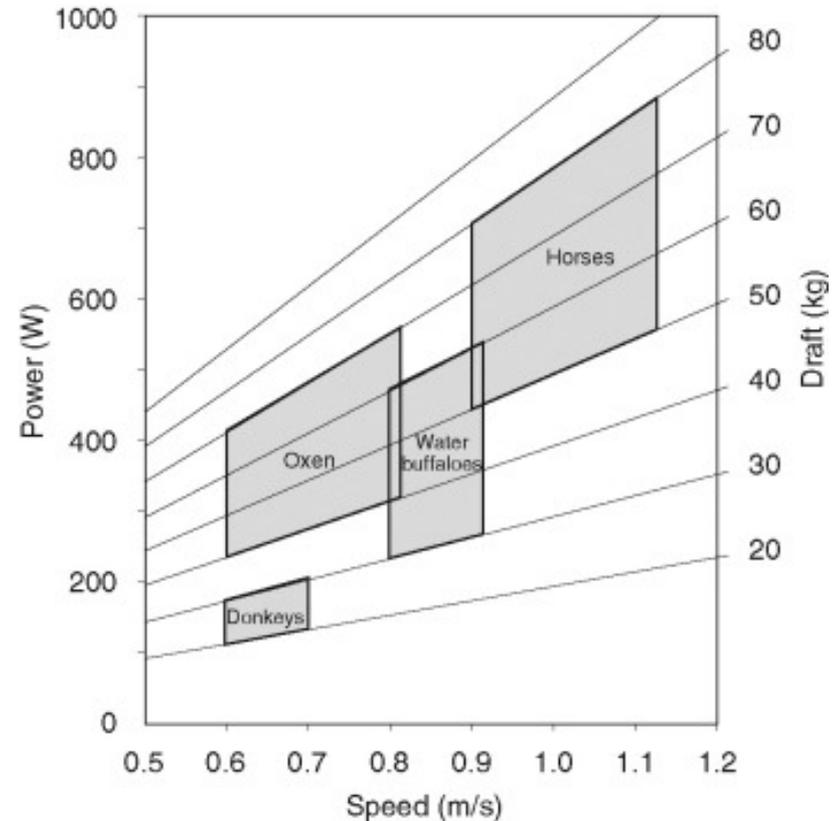
Historical View of the Plough 2/2

- Boserup, Ester. <u>Women's Role in Economic Development.</u> New York: St. Martins, (1970).
  - Upper body strength
  - Capital intensive
  - Hard to start/stop frequently
  - Drove sexual division of labor

- Alesina et al. "On the origins of gender roles: Women and the plough," (2011).
  - Empirical evidence linking soil/climate conditions to present day gender (in)equality
  - Even among descendants of immigrants

- **Technology is not neutral.**
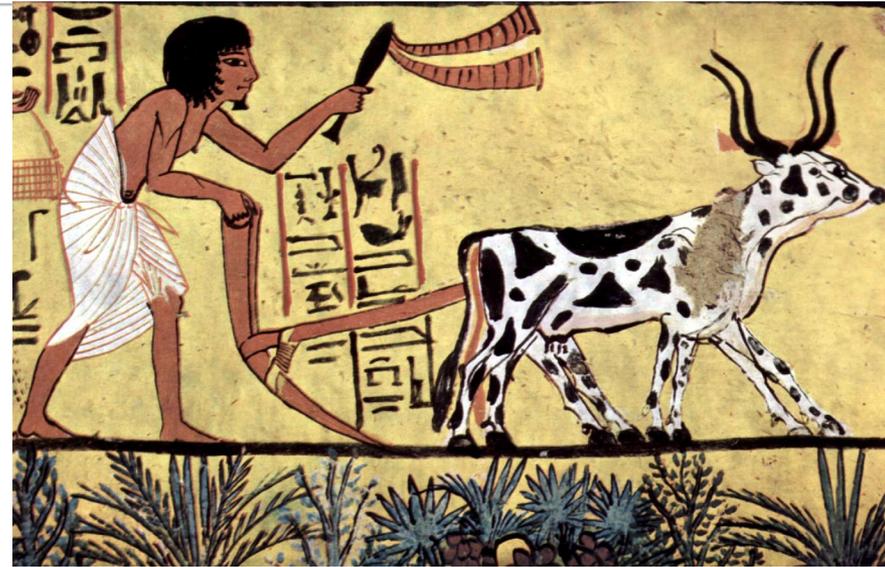
Painting from the burial chamber of Sennedjem, c. 1200 BC

"A **socio-technical system** (STS) is one that considers requirements spanning hardware, software, personal, and community aspects. It applies an understanding of the social structures, roles and rights (the social sciences) to inform the design of systems that involve communities of people and technology."

~Interactive Design Foundation
https://www.interaction-design.org/literature/topics/socio-technical-systems

Brief History of Gender and Energy Discourse

Summarized from: Osunmuyiwa and Ahlborg, "Inclusiveness by design? Reviewing sustainable electricity access and entrepreneurship from a gender perspective," (2019).

"Focus on Women, Energy and Development" – Starting in the **1980s** and mostly focused on **women as lacking (and suffering** from the lack of) energy services. The focus was heavily on **cooking**, also pointing out that cooking was deprioritized in energy policy arenas relative to large scale electricity and petroleum infrastructure development.

"Energy in Policy Focus" – In the **1990s**, this dealt with means of integrating **women into energy policy and planning**, including by accounting for varying **roles** (like wage work, reproductive work, and community work), **time** use, and access to and control over **resources**, differentiated basic and strategic **needs**. At this time, women's energy involvement was still mostly centered around a biological (rather than social) lens and limited to cooking and very **small-scale electric applications**.

"From Women to Gender (Electricity Choices in Focus)" – In the **2000s** arose a more feminist critique that "gender neutral" policies and interventions actually brought more benefits to men than women, men being generally better placed to take advantage of them. **Gender (rather than women)** became an increasingly important concept and was understood in post-structuralist terms that examined **socially determined roles and relationships**. Women were increasingly acknowledged to be a highly **diverse** group, defying easy characterization. Finally, the shift continued from considering women as objects who were acted upon (as victims, as beneficiaries, etc.) to **agents** who were (or should be) central to all parts of the action.

Technology and Appropriation

► Some vocabulary:

- Gender neutral, gender blind

- Androcentrism (male-as-norm)

- Mentrification (a portmanteau of 'men' and 'gentrification,' that is adapting something to dominant middle-class tastes resulting in exclusion of the original inhabitants or users)

► Positive aspects of appropriation

- Uptake, mastery, ownership, organic adaptation to local/individual needs

► Negative aspects of appropriation

- Exclusion, building up of in-group benefits and dominance

'Mentrification': how men appropriated computers, beer and the Beatles (Excerpt)

"Ada Lovelace Day, held on the second Tuesday of October, commemorates the brilliant mathematician as the 19th century's "first programmer". But even the word "computer" used to refer to women mathematicians, who solved astronomical riddles for professors like astrophotography pioneer Edward Charles Pickering at Harvard; apparently, "looking at plates for hours on end was considered boring and unspecialised work", so he turned "to women to perform the duties".

"It was within this framework that Grace Hopper, on assignment from the navy during WW2, wrote the first computer operating manual; and that Jean Jennings Bartik (who led the development of computer storage and memory) and Frances Elizabeth "Betty" Holberton (who pioneered the first software application) found themselves among the group of women who programmed ENIAC, the first computer."

~ Van Badham. May 28th, 2019. TheGuardian.Com

https://www.theguardian.com/music/2019/may/29/mentrification-how-men-appropriated-computers-beer-and-the-beatles

Technology Appropriation – Finding a Balance?

Annecke, Wendy. "Whose Turn Is It to Cook Tonight? Changing Gender Relations in a South African Township," (2005).

► "… Secondly, that electricity makes it easier for men to perform domestic chores because they are not too burdensome or demeaning."

Efficiency for Access. "Electric Pressure Cooking: Accelerating Microgrid E-cooking Through Business & Delivery Model Innovations," (2020).

► "One man made the purchase in order to empower himself to be able to cook on his own and not depend on his wife."

Winther et al." "In the Light of What We Cannot See: Exploring the Interconnections between Gender and Electricity Access" (2020).

► "…houses are a part of men's wealth … a woman in Homa Bay and Chhattisgarh in the case of divorce or widowhood would not even be entitled to keep an object [like an appliance] that "belongs" to her in the first place."

Special concerns with smart technology?

Gender and Sex

- **Gender**
  - Socially/individually determined
  - Differs across contexts
  - Not monolithic and not binary
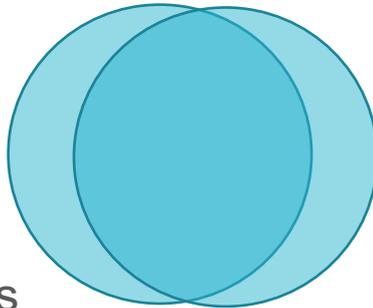
- **Sex**
  - Biological/physical basis
  - Degree of commonality
  - Also not binary
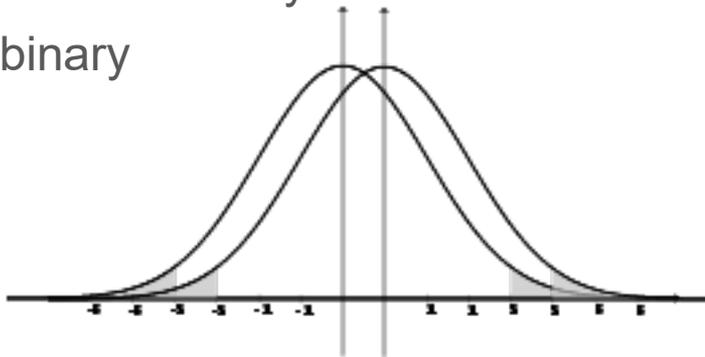
Physical Differences

1-size-fits-all → 2-sizes-fit-all → As-many-sizes-as-needed-to-fit-all

- Lift load

- Arm length/reach

- Bursts of energy versus endurance

- Chest and belly, especially during and after pregnancy

- Grip size, strength

- Comparative upper/lower body strength

- Height

Right: A DC millet mill, Middle: Agsol solar appliances
Photo and screenshot from Energypedia https://energypedia.info/wiki/Grain_Mill
Left: LPG cylinders from Facebook @QuickGasDelivery

Social Differences – Gendered Nature of Work

Appliances and Energy Help Perform Work and Work is Gendered…

1. Domestic/reproductive

- Cooking and food prep
- Cleaning up
- Washing clothes
- Fetching water
- More…

2. Agricultural

- Gendering of crops
- Gendering of production steps and value capture

3. Entrepreneurship and employment

- Business sectors:
- Business size and formality
- Access to credit, information, networks, and markets
- Location/premises
- Ownership: Individual, partner, cooperative, etc.

4. General Issues

- Total time use
- Mobility
- Work intensity (physical, mental)

Social Differences – Safety Concerns

Children in tow

► May be physically attached to parent

► May be playing, doing chores, studying, etc. nearby

► May have more sensitive hearing

► Need to be seen, heard, and also hear caregivers clearly

→ *Enclose moving/electrified parts*

→ *Child safety start switch*

→ *Muffle noise, vibrations*

→ *Emergency shut off*

Hair and clothing

► Possibly long hair

► Possibly loose or flowing garments

→ *Enclose moving parts*

Concurrent responsibilities

► Women often required to multi-task

→ *Able to be left unattended*

→ *Auto standby mode*

https://commons.wikimedia.org/wiki/File:Cooking_with_love_for_the_father,_India.jpg

Social Differences – Norms and Relationships

Gender Bargaining

- Who will decide to purchase?
- Who will pay and with what funds? (Own savings, loan, etc.)
- Who will use it, where and when?
- Who will own the asset?
- Who may economically profit from the equipment?
- Who will maintain and repair the appliance?

Questions:

- Is there 'latent,' or unexpressed female demand for appliances? (e.g. because women have less purchasing power, because male-dominated companies don't fully research these users)
- How do design choices respond to bargaining structures in place?
- Are there product design choices that can influence household bargaining dynamics?

Design considerations 1/2

0. How was the need for this appliance identified, who provided input, who tested it, and under what conditions?

1. Does it help women and men accomplish their existing work? Branch into new opportunities?

2. Does it provide mechanical or strategic advantages to help reduce existing sexual divisions of labor?

3. Is it comfortable and safe for women's bodies when used?

4. Is it easily portable and/or designed for use women's workspaces (sometimes at home)?

5. Is it compatible with child-rearing and multi-tasking?

Design considerations 2/2

6. Is it attractive to, desired by, and marketed to women? (Also men, if they are deciding to purchase.)

[Customer =/ User]

7. Are there obvious appropriation risks that can be mitigated? (e.g. Reliance on male-dominated mobile phones or bank accounts to work; male-titled property as collateral for a loan; specific literacy or technical proficiency levels needed for operation or maintenance, etc.)

8. How is this appliance likely to change relationships and social dynamics? Will it generate resistance or backlash? If it will promote equality, how?

9. What else is needed to accompany this appliance in the whole socio-technical universe to ensure its success?

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Thank you

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WITHOUT BORDERS

# Disability and Energy Access

Richa Goyal

People with disabilities: Just how big are the obstacles?

► 15% of global population live with some form of disability (WHO based on 2010 global population estimates)

► In reality, people with disabilities population is much larger: Lack of current estimates + disabilities due to old age + invisible disabilities

► Disabilities in vulnerable groups such as in rural regions is expected to be higher than urban regions. Likewise disabilities in women are expected to be higher than in men.

► 80% of people with disabilities live in developing countries

Why should the energy access agenda care about disability

► UN Flagship Report on Disability and Development (2018): "…between 2001-2015, in 37 out of 44 countries, households with persons with disabilities had lower access to electricity than households without persons with disabilities."

► Four critical issues to consider while implementing SDG 7 for people with disabilities

– access to energy for development;

– access to electricity to charge or operate assistive technology;

– access to modern forms of energy which are less polluting for the households where people with disabilities stay for longer periods of time

– affordable energy as many people with disabilities live in low-income households.
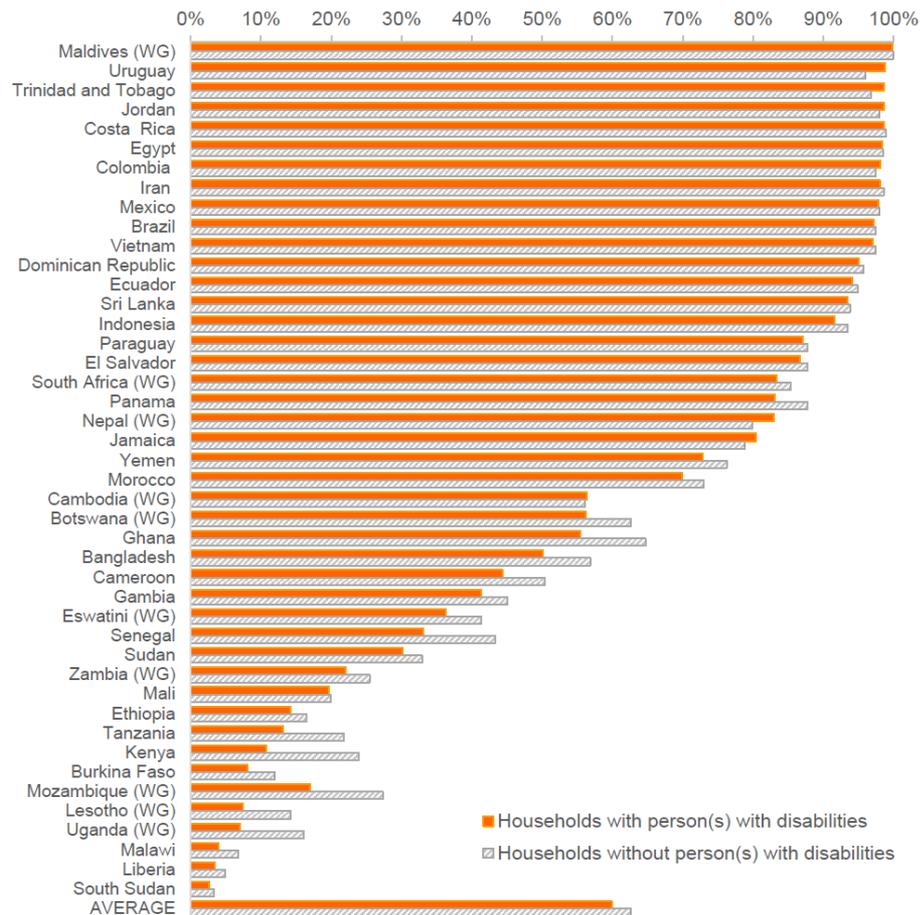
Note: (MDS) identifies countries with data collected using the WHO Model Disability Survey. (WG) identifies countries with data collected using the Washington Group short set of questions.

Source: ICF International,[411] Minnesota Population Center,[412] SINTEF[9] and WHO.[107]

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

Assistive Technologies that need to be powered

► Many assistive devices need electricity to run. Both availability of ATs and sufficient electricity access for powering ATs are a prerequisite for improving the quality o life of people with disabilities

► WHO Priority Assistive Products: https://apps.who.int/iris/handle/10665/207694

► Examples include:

- Mobility devices: Electric wheelchairs and canes

- Devices for education or people with print disabilities: Braille displays, screen readers

- Hearing aids

- Other devices: Alarm signallers with light/sound/vibration, Audioplayers with DAISY capability, Gesture to voice technology, fall detectors etc.

Design changes that can make conventional appliances disability accessible

► It is estimated that globally there are 2.2 billion people with a vision impairment or blindness. Making appliances accessible for the visually impaired could be a first important step.

► Suggestions include: Text option in braille, using colour blind friendly palettes, use of textured materials, using different shapes instead of colours to tell apart different parts where applicable. Use of braille should be backed by specific need of the community for which appliance is being designed, as this can be expensive to implement, is paper heavy and requires users to be trained in braille.

► Use of both light and sound indicators for the visually and hearing impaired. Gesture technology can be particularly useful for different types of disabilities.

► Accessibility of digital content supporting appliances:
  − For a website to be accessible to users with various disabilities, it needs to conform to the Web Content Accessibility Guidelines (WCAG)

Disability inclusive pilot design, collecting disability disaggregated user data

- ► Include people with disabilities in surveys

- ► Data on numbers and types of disabilities is sparse: Use standardized disability questions can help comparison of data across research studies. An important resource is the Washington Group set of questions. https://www.washingtongroup-disability.com/about/about-the-wg/

- ► Talk to family members or care takers of people with disabilities, for their insights and how the design all works together for everyone

- ► Think about the most efficient recruitment strategies for the disabled in survey samples

- ► Useful methods to consider would be interviews and observation

- ► Research ethics to consider while interviewing people with disabilities

Thank you

Richa Goyal

Social Inclusion

Katrina Pielli
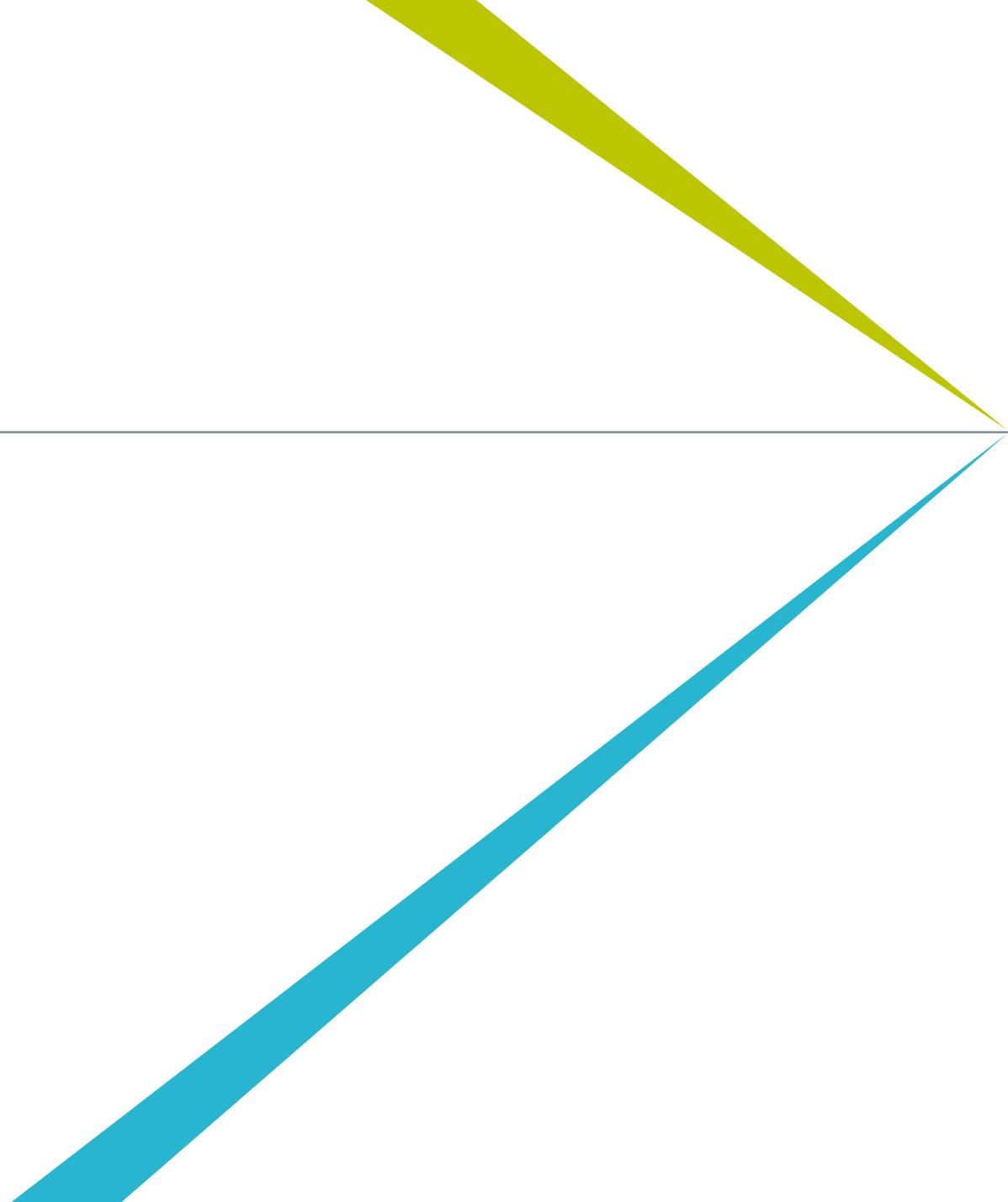
Social Inclusion

► Social inclusion is the right thing to do and it makes economic sense

► If not addressed, it is costly:

  – <u>Individual level</u>: Loss of wages, lifetime earnings, poor education, and employment outcomes. Racism and discrimination also have physical and mental health costs.

  – <u>National level</u>: Forgone gross domestic product (GDP) and human capital wealth.

World Bank

"Leave No One Behind"

► 'Leave no one behind' (LNB) agenda is anchored in the UN 2030 Agenda for Sustainable Development.

► UK: To realize the opportunity of the Sustainable Development Goals,

  − *"We will prioritise the interests of the world's most vulnerable and disadvantaged people; the poorest of the poor and those people who are most excluded and at risk of violence and discrimination."*

► Most vulnerable populations to being left behind:

  − The poorest

  − Those living in remote communities ("last mile")

  − Women

  − People with disabilities

  − Those who have been displaced (either internally, as migrants or as refugees)

Energy Access Linked to Development & Economic Growth

► Established connection between access to clean energy and socio-economic development.

► Many of the last-mile households live on **under $4 a day** and are not being served by current commercial off-grid energy services & products.

► Designing energy efficient DC appliances for these communities is key to unlocking sustainable development and economic growth.

► Social inclusion is an important element to appliance design.

Key Issues to Consider

- ➤ Human-centered design

- ➤ Affordability

- ➤ Productive uses of energy

- ➤ Accessibility

Human-Centered Design

► Know your customer and design from their point of view

► How they will interact with or use the appliance?

► What about their life experience will impact the usability of the appliance?

► What constraints in their life may impact their ability to use the appliance?

Affordability

- **Initial purchase and continued use** of energy products and appliances can be particularly **challenging** for last mile households.

- Estimates suggest that in countries working toward universal access, **affordability affects 57% of those who already have access**, hindering the positive impacts of access due to **limited use of the energy product or service.**

- Among all households using an off-grid solar product today**, approximately 50% remain below Tier 1 access** which is commonly defined as the minimum level to qualify as electricity access.
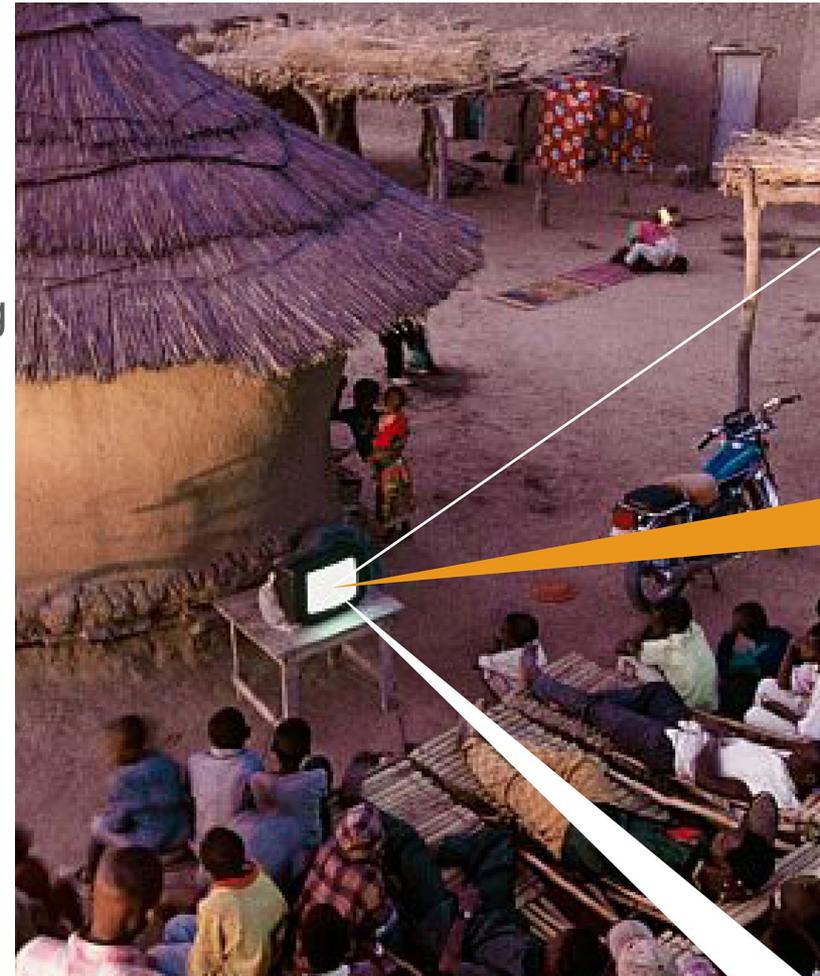
Affordability & Gender

► Gender dimension to affordability that can be illustrated by willingness to pay.

► Research shows willingness to pay for a solar device is generally **lower** among female-headed households than in male-headed households.

► Decisions about what energy appliances to buy are often **gendered** → the user of an appliance may not be the person who made the purchasing decision or who retains ownership.

► Understanding ability to pay is also critical as this dictates the type of energy product or service the user can ultimately afford to purchase.

Productive Uses of Energy (PUE) & Gender

► Because women and men use energy differently and face different challenges at work, PUE are likely to deliver **different benefits** to women and men.

► Consider gender in the design of PUE appliances/equipment

► Tanzania research shows that since men are typically involved in larger enterprises that use more electricity than those run by women, their enterprises are more attractive to private sector suppliers.

- Women, on the other hand, are more reliant on fuels such as firewood, charcoal and LPG for running their businesses.

► In informal/street food production, sectors predominated by women, process heat and mechanical power are also significant.

Accessibility & People with Disabilities

- Over a billion people, about 15% of the world's population, have some form of disability.

- 80% of people with disabilities live in developing countries.

- Estimates are that 20% of the world's poorest people have some kind of disability and tend to be regarded in their own communities as the most disadvantaged.

- Within these populations there are gaps around PUE – in particular what role can PUE appliances and equipment play in income generation, changing stigmas, and empowerment?

- Consider how to make appliances more inclusive, such as electric cooking, for the visually impaired?

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Thank you

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Q&A

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Short feedback survey

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