EFFICIENCY FOR ACCESS

UK ENGINEERS WITHOUT BORDERS

Sustainability: mitigating environmental impacts through design

Funded by:

UKaid from the British people

IKEA Foundation

energy saving trust

Assessment Criteria

- Is your design reducing the environmental impact throughout its lifecycle compared to existing alternatives? Consider the whole product lifecycle: materials used, repairability and end of life.
- How does your design contribute towards greenhouse gas emissions reduction compared to other technologies that exist in the market? Consider the sustainability of your business model (including manufacturing, distribution and operating) and its scalability.

Innovation

How does your design compare and improve on solutions that are currently available to your target end-user?

Judges will want to see that you have demonstrated and understood the technological context that you are targeting, and that you have gone through a well-informed design process to improve on solutions currently available to the end user.

- What is the potential of your design to improve energy efficiency compared to existing alternatives? Consider how you define energy efficiency (energy used per service provided) and what the baseline is for comparison.
- What is the potential of your design to reduce production costs compared to existing alternatives? Consider materials used, price of components and cost of assembly.
- What is the potential of your design to improve usability compared to existing alternatives? Consider its ease of use, reliability and safety.

Sustainability

How does your design impact on the environ

Judges will want to see the effects your solutio demonstrate your sol contributes to achieving S

- Is your design reduci throughout its lifecy alternatives? Consider materials used, repairal
- How does your d greenhouse gas emissio other technologies that exist the sustainability of your business model (including manufacturing, distribution and operating) and its scalability.
- How does your design contribute to the Sustainable Development Goals (SDG), in particular SDG7 – Affordable and clean energy? How well have you demonstrated you understood the potential connections with the other 17 SDGs and its associated targets? Consider how the different areas of this assessment framework are contributing to this.

improve the desirability of your target end-user? Consider what their livelihood was before and the improvement your design will bring to them.

- How well has your design considered the Sustainable Development Goals' commitment to 'Leave no one behind'? In particular, consider gender equality and disability inclusion.

be able to access and afford your product? Consider affordability, potential customer payment models and existing financial models.

- How well has your business model considered affordability, payment models, existing supply chains, manufacturing, distribution channels, local partners and services associated? Consider the pricing and costs strategies to make your business model commercially viable.

Agenda

- Introductions
- Speakers
  - **Sonal Adlakha**
  - **Dozie Igweilo**
  - **Anton Espira**
- Q&A
- Survey and Closing

Meet our speakers

- **Sonal Adlakha** – Independent energy access consultant

- **Dozie Igweilo**– QuadLoop

- **Anton Espira** – Solibrium Solar

Sonal Adalkha – Independent energy access consultant

13 minutes

DISTRIBUTED RENEWABLE ENERGY
&
SUSTAINABILITY

WHAT'S AHEAD

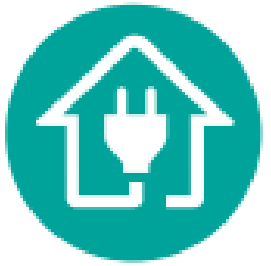
- Need for off-grid energy solutions
- Available solutions
- Theoretical Impact assessment on Environment
- Redefine the product/design
- Get creative with business model

NEED FOR OFF-GRID ENERGY SOLUTIONS

- Lack of availability of reliable electricity
- Unavailability of electricity
- Dependency on high emission products and devices
- Independence from the grid

AVAILABLE SOLUTIONS

- Basic Solar lighting products
- Solar Home System (SHS) kits
- Solar Micro/Mini Grids with T&D
- Nano grids
- Centralized solar micro grid with battery charging facility
- Solar Water Pumping Systems
- Solar powered systems for productive usage



Source of icons- Endev. (2021). *Tiers, Markets, Sustainability: Trends in Rural Off Grid Electrification*

THEORETICAL IMPACT ASSESSMENT ON ENVIRONMENT

POSSIBLE NEGATIVE IMPACTS

- End of product stage not planned
- Poor quality product
- Products like solar pumps- oversized systems could lead to extraction of additional ground water
- User’s lack of awareness leads to exploitation
- Components can have harmful environmental impact

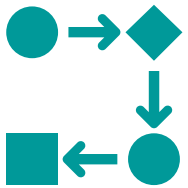
THEORETICAL IMPACT ASSESSMENT ON ENVIRONMENT

PROPOSED SOLUTIONS

- Organization’s policy around tacking end of cycle product disposal
- Improved product quality leading to reduced service requests/ returns/repurchase
- Arrangements around ground water recharge and improved agricultural practices
- Awareness campaigns to educate the end users

REDEFINE THE PRODUCT/SERVICE

- Adding service lines/ build partnerships to manage end of product situations



- Improvise products
- Use of Technology

- Using locally available products
- Innovation in business models
  - Buyback the used product when customer upgrades
  - Empanel and train local technicians
  - Second hand product sale to local businesses
  - Additional service provision- Eg- a solar pump provider could also provide ground water recharge service

QUESTIONS

Dozie Igweilo – QuadLoop

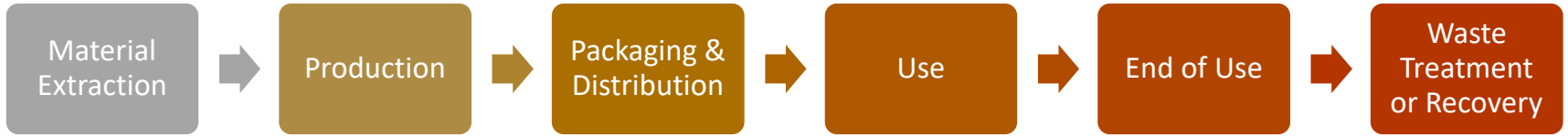
13 minutes

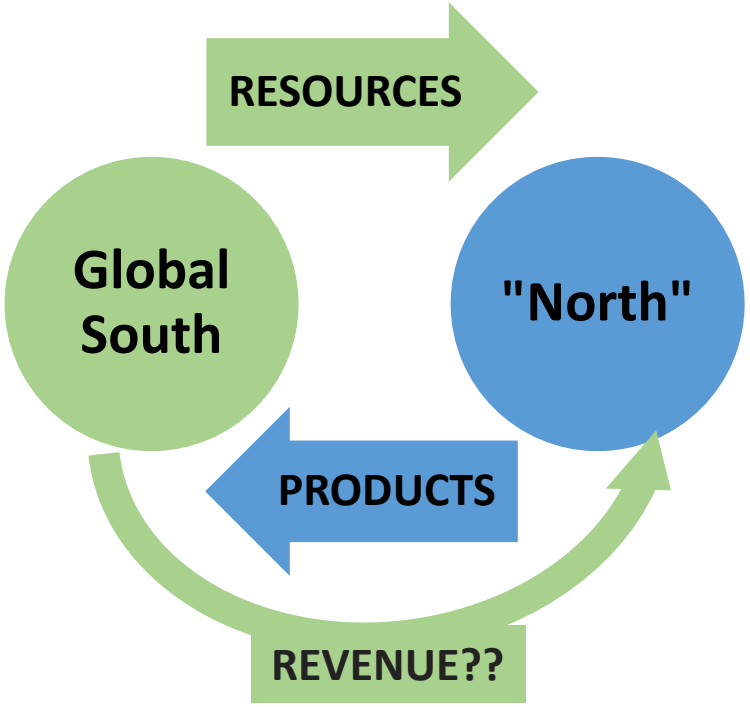
Anton Espira – Solibrium Solar

13 minutes

Efficiency for Access Design Challenge

How to assess a design's environmental impact:





Building a Circular Economy

Consider not only the environmental impact but the social impact as well:

- Equitable distribution of resources?
- Technology transfer?
- Sustainability?

Can unequal distribution of benefits coexist with sustainability?

SOLIBRIUM-SOLAR Nuru Maishani

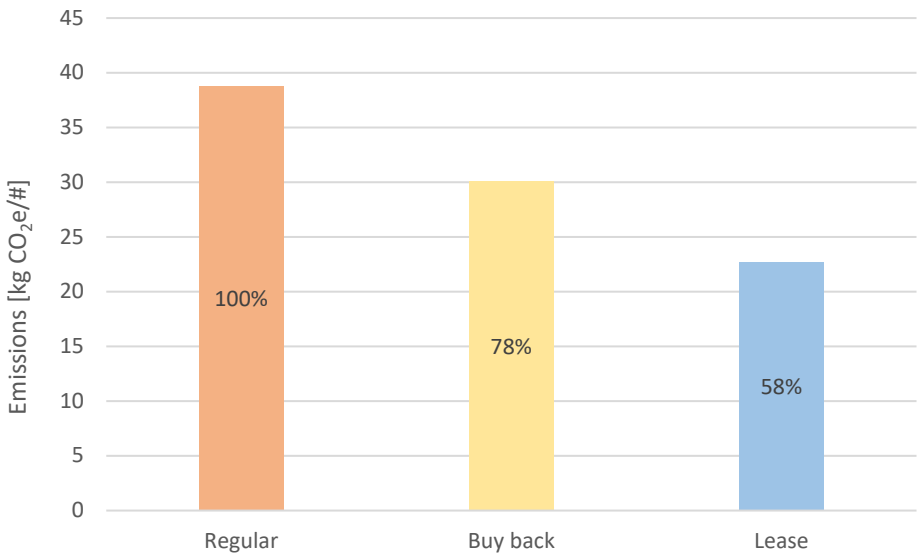
myclimate shape our future

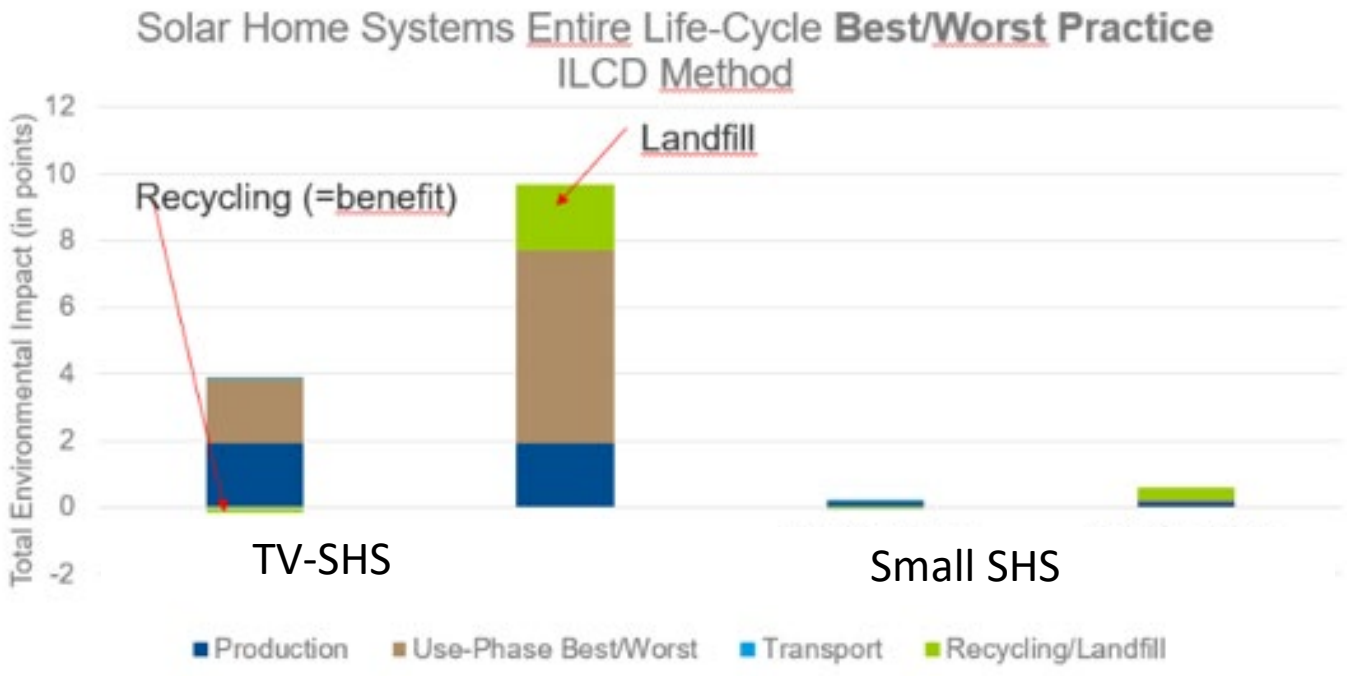
Efficiency for Access Design Challenge

How to assess a design's environmental impact:

Best-Case Scenario = environmental impact **reduction potential of 26% – 29%** (TV) & **16% – 24%** (small SHS).

Total Greenhouse gas emissions (CO_2e per piece) over a lifetime of an SHS





Best-case vs Business-as-usual

SOLIBRIUM-SOLAR Nuru Maishani

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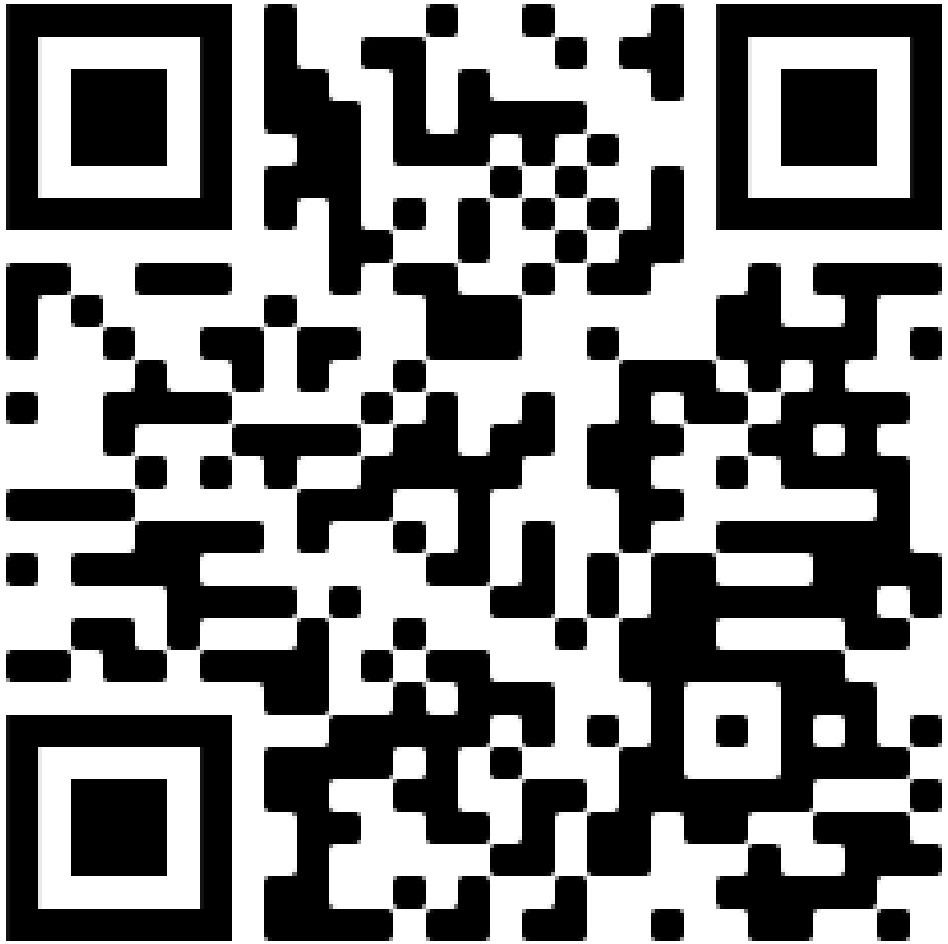
Q&A

Short feedback survey

Bit.ly/EforADCFeedbackSurvey2021-22

Newsletter sign up:



bit.ly/DesignChallengeNewsletter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