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# Transforming Energy Access Delivery Review Workshop 2025

5th March, 2025

Image: Ecobodaa, Kenya


# Annual Review: TEA Impacts and Stories of Change

Andie Sevelsted, the Carbon Trust

5th March 2025

Image: Construction, Kenya

Transforming Energy Access (TEA) is a Foreign, Commonwealth and Development Office funded research and innovation platform supporting the **technologies, business models and skills** needed to **enable an inclusive clean energy transition** in sub-Saharan Africa, South Asia, and the Indo-Pacific region.

**To support achieving SDG7, we work with over 20 direct delivery partners and around 750 downstream partners across a wide range of projects and technologies in energy access**

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# TEA Context

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## Key Facts

**675 million**
People lack access to electricity (9% of global population)
SDG7 Tracking Report 2023

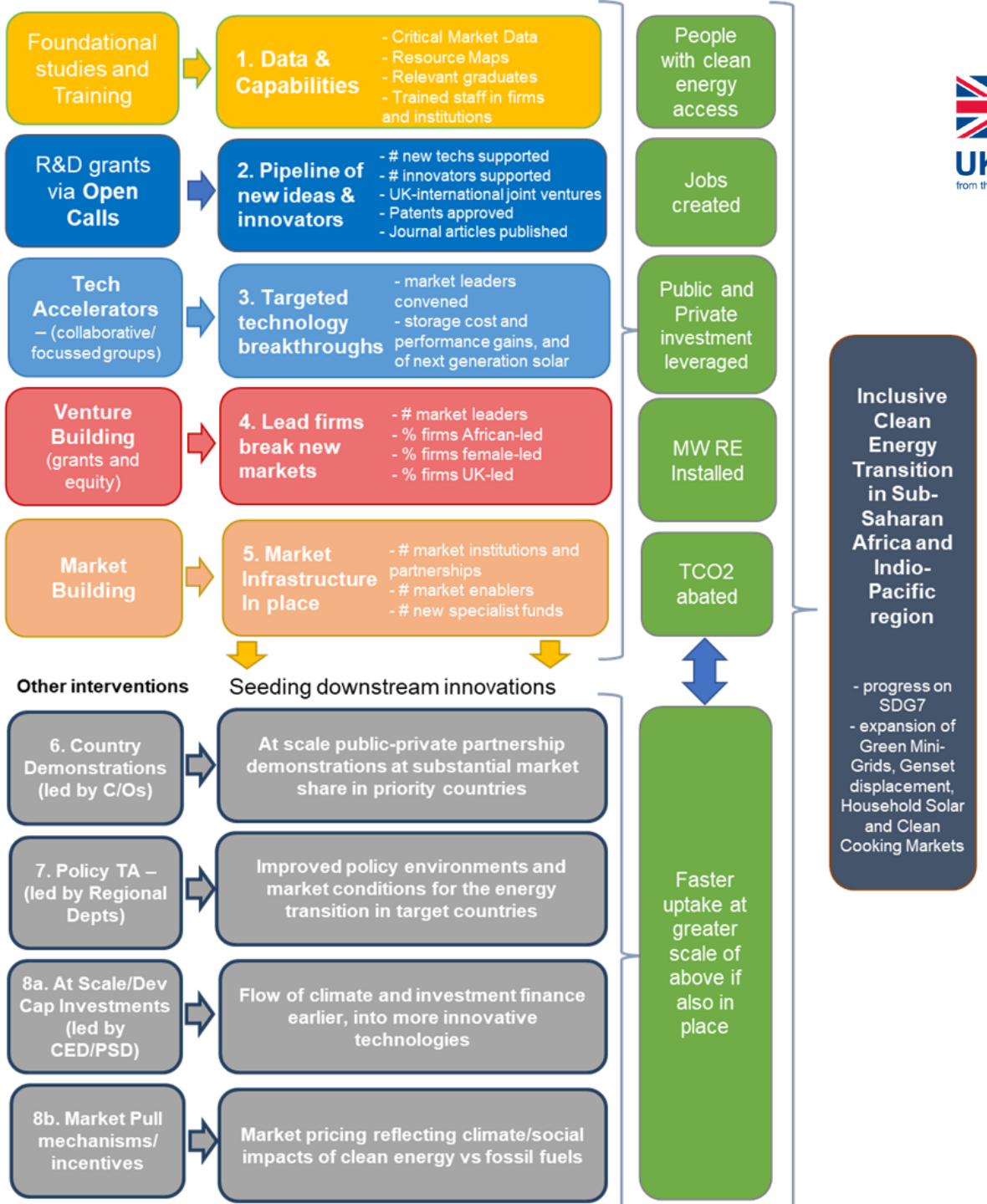
**Over 50%**
Of people in Sub-Saharan Africa lack access to electricity
SDG7 Tracking Report 2023

**2.3 billion**
People lack access to clean cooking (31% of global population)
SDG7 Tracking Report 2023

**3.2 million**
People die each year due to the lack of clean cooking
SDG7 Tracking Report 2022

**£1 billion**
Committed by UK under Ayrton Fund for clean energy innovation
UK Gov 2019

# TEA Theory of Change

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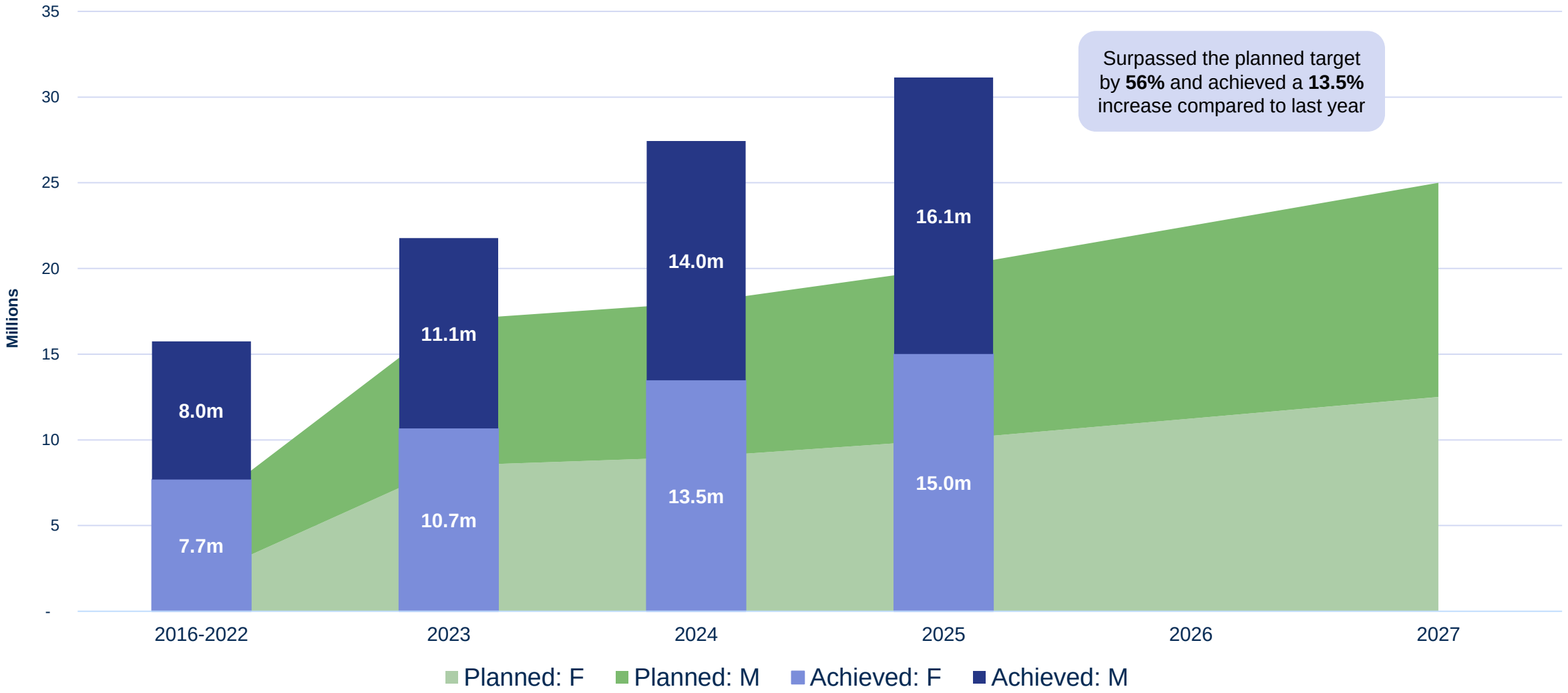
# Programme Wide Outcomes

# P1: People with improved access to clean energy - 31.1m (Target 20m*)




Surpassed the planned target by **56%** and achieved a **13.5%** increase compared to last year

* PLANNED FIGURE FOR 24/25 IS 10M F & 10M M
**FIGURE TO BE FINALIZED FROM DRAFT REPORTS

# P2: Sustainable long-term jobs created - 152.7k (Target 140k*)

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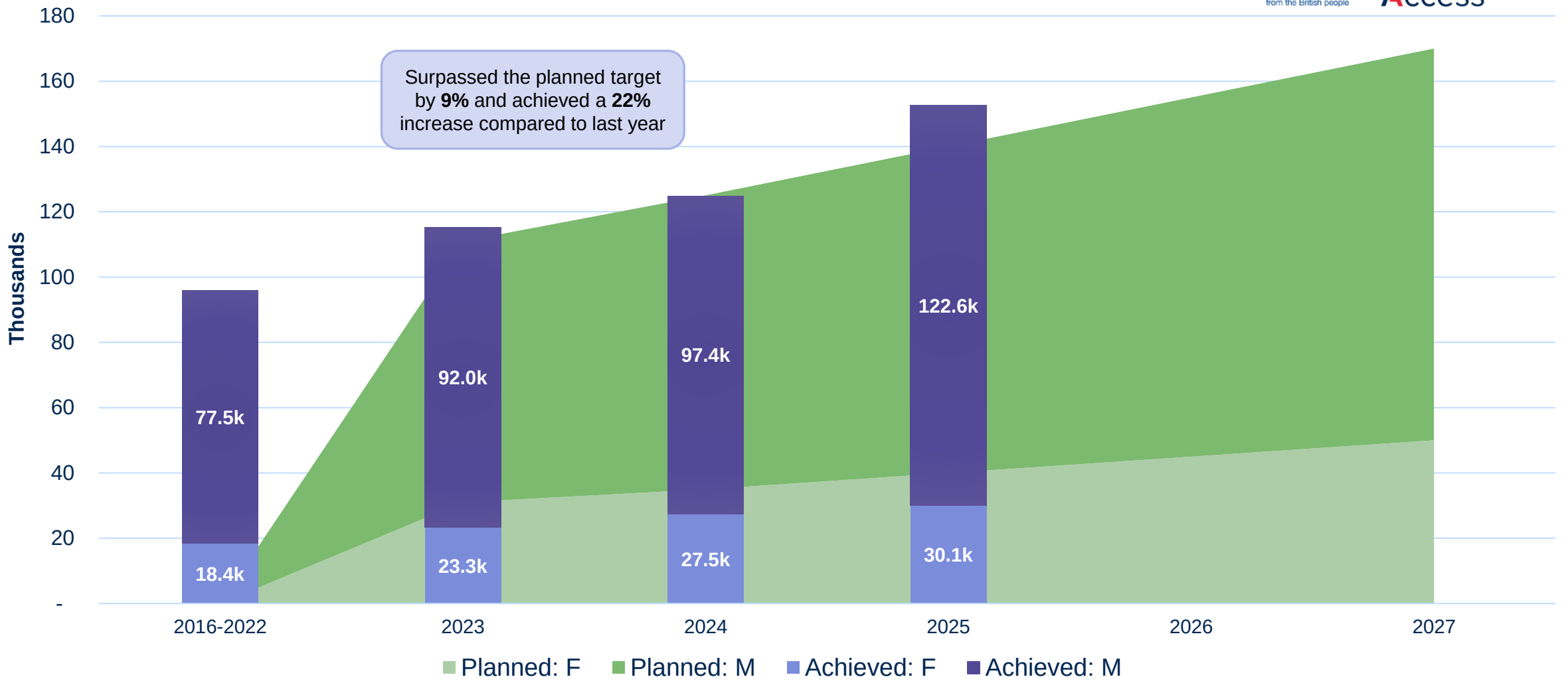
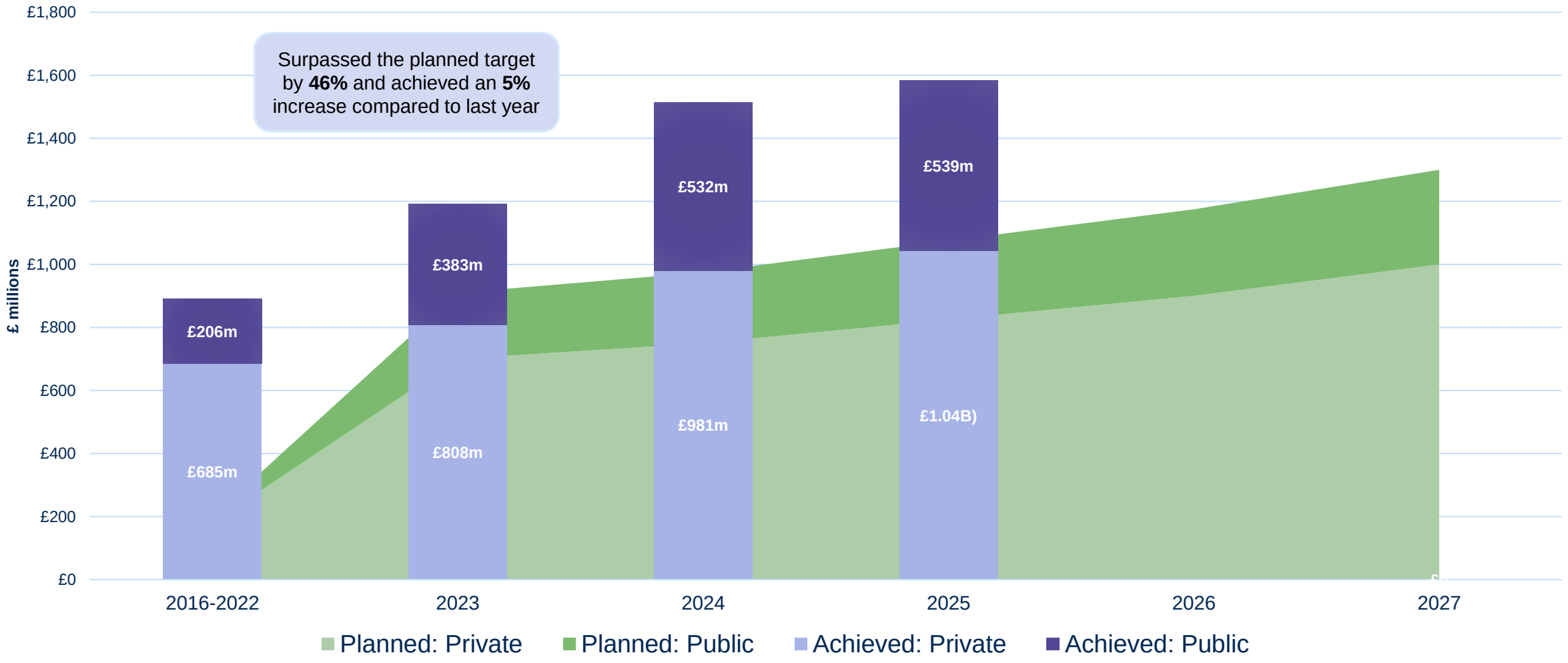



* PLANNED FIGURE FOR 24/25 IS 40K F & 100K M
** FIGURE TO BE FINALIZED FROM DRAFT REPORTS

# P3.1/3.2: Private and Public funding leveraged - £1.58B (Target £1.08B*)




* PLANNED FIGURE FOR 24/25 IS 825M PRIVATE & 250M PUBLIC
**FIGURE TO BE FINALIZED FROM DRAFT REPORTS

# P4: Installed clean energy capacity - 328MW (Target 400MW*)

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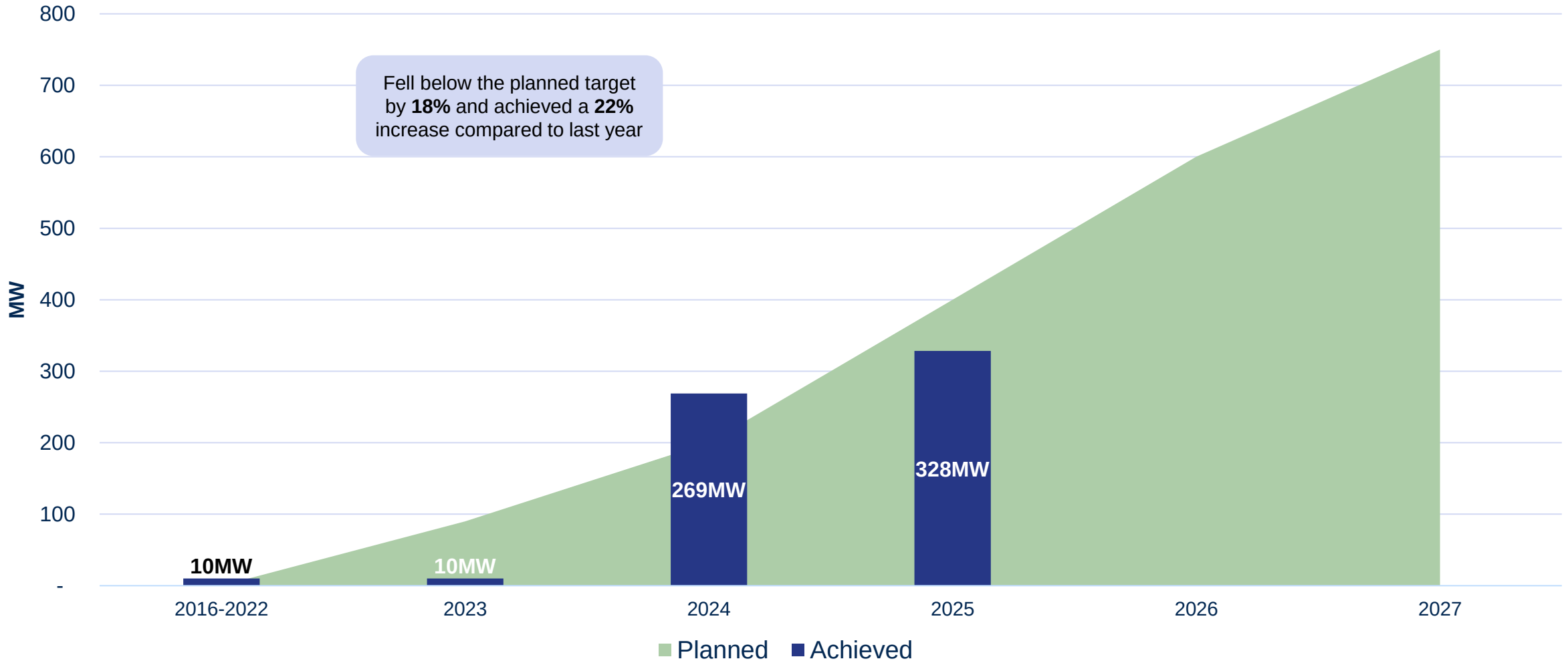
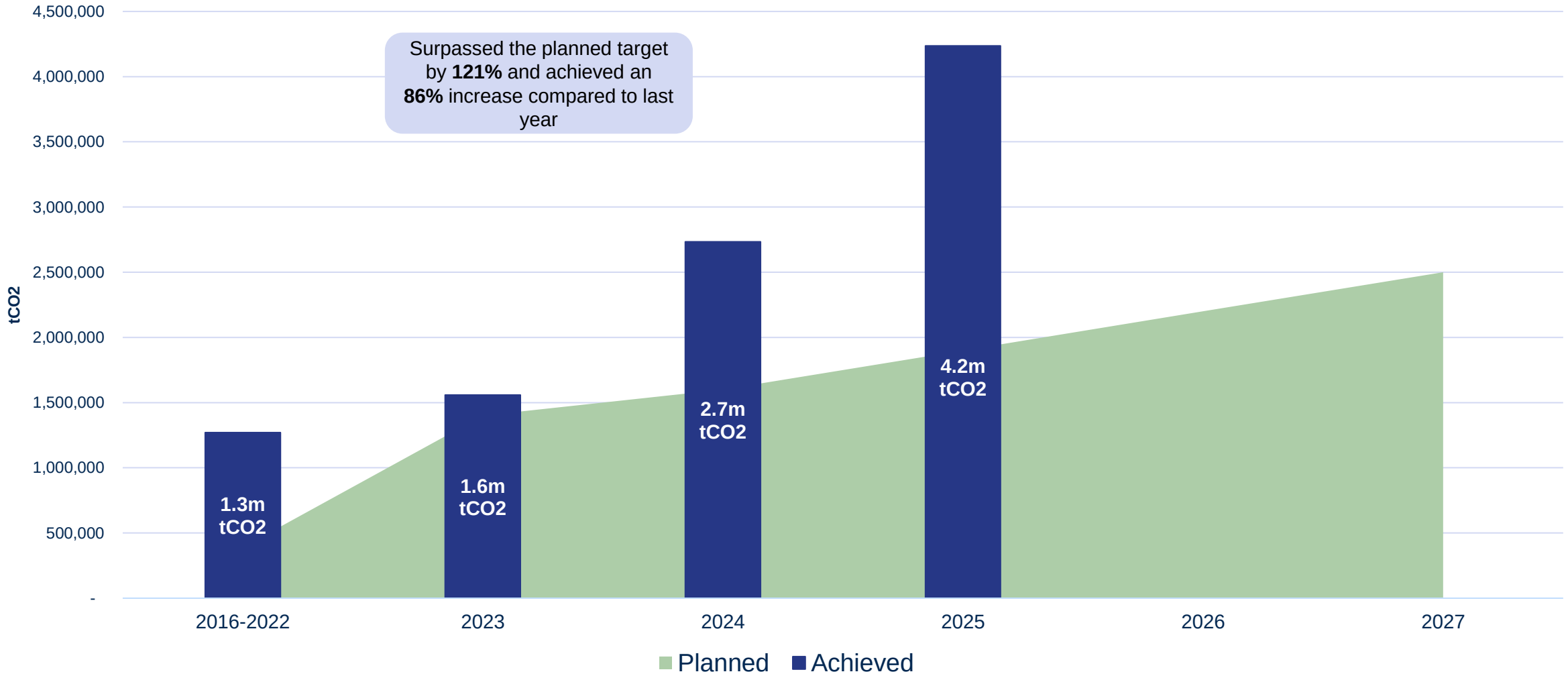



* PLANNED FIGURE FOR 24/25 IS 400MW
**FIGURE TO BE FINALIZED FROM DRAFT REPORTS

# P5: CO2 reduced or avoided - 4.2mtCO2 (Target 1.9mtCO2*)




* PLANNED FIGURE FOR 24/25 IS 1.9MTCO2
**FIGURE TO BE FINALIZED FROM DRAFT REPORTS

The TEA platform works to support transformational change via **People, Partnerships,** and **Technology**

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# Scaling from Energy Catalyst to BII: MOPO

Video, Energy Catalyst

UKRI Innovate UK

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# The Power of Partnerships to Support Disability Innovation

Ben Hardman, Global Disability Innovation Hub

Global Disability Innovation Hub

## Disability Support Service for TEA

*is now launching....*

# Disability-inclusive Energy Access Innovation Network

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For TEA partners, including the downstream organisations and members, **to collaborate with disability innovators/businesses.**

Global Disability Innovation Hub

**With $2.6 trillion as disposable income, the disability community is the largest emerging market.**

*- The Global Economics of Disability Report, 2024*

***Scan the QR code to join our LinkedIn group and build new partnerships!***

## Disability Support Service for TEA

# Book a slot in our Triage Clinic!

To discuss your ideas and questions and collaboratively explore entry-points for delivering disability-inclusive energy access and **integrating GEDSI**

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For **TEA partners,** including the downstream organisations and members!

Global Disability Innovation Hub

**"...there is no climate action project which can claim to be too technical to integrate GEDSI"**

*- Valentina Girotto, GEDSI Lead, Green Recovery Challenge Fund*

***Scan the QR code and book your appointment!***

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# Supporting improved livelihoods for motorbike drivers with M-KOPA

Video, Shell Foundation

Shell Foundation

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# Transformational Change via the Low Energy Inclusive Appliances Programme

Jakub Vrba, Energy Savings Trust

energy saving trust

ENERGY CATALYST

EFFICIENCY FOR ACCESS

# Low-carbon cold room development

TEA Delivery Workshop

March 2025

# LOW-CARBON COLD ROOM DEVELOPMENT

- **Aim:** Develop world's first off-grid solar net-zero walk-in cold room
- **Delivery partners:** Solar Cooling Engineering, WeTu, Kenyan and Swiss architects, University of Sheffield, Wageningen University & Research
- **Location:** Western Kenya
- **Innovation:**
  - Use of local biogenic materials
  - Evaporative pre-cooling
  - Real-time life cycle assessment

# LOW-CARBON COLD ROOM CONSTRUCTION


# LOW-CARBON COLD ROOM BLUEPRINT

- Next steps:
  - Publish the blueprint and life cycle assessment
  - Open source the optimisation tool
  - Test cold room performance
  - Pilot Cooling-as-a-Service
- Please get in touch to find out more:
  - Jakub.Vrba@est.org.uk

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# FCDO Welcome and Update

Steven Hunt, FCDO

Foreign, Commonwealth
& Development Office

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# Keynote and Q&A

David Woolnough, Deputy Director
Research, Tech and Innovation, FCDO

Foreign, Commonwealth
& Development Office

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Break- In-Person Session will resume at 10:30 GMT

Online participants, please join back at 11:15 GMT for the “Partnerships to Manufacture Locally” session

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# Partnerships with Academia

Jiska de Groot, Leslie Ashburner, Whitney Pailman and Ruth Massey,
University of Cape Town

5th March, 2025

ACDI African Climate & Development Initiative

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

# What do we have planned for this session?

- Why engage in partnerships with academia?
- Partnerships with Academia: exploring the work of the University of Cape Town in the TEA Programme as an example of an academic partnership
- EXCITING! Marketplace with academic partnerships – meet some of the UKRI Ayrton Challenge winners!

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# Why engage in partnerships with Academia?

We know that a range of (local and international) actors and stakeholders together are crucial for developing locally appropriate energy solutions that are sufficiently grounded in the nuances of the local context.

**Research-driven innovation**

Academia can bring cutting-edge research and technological innovations to the table. Researchers often have the freedom to explore unconventional ideas that are less constrained by private-sector objectives.

**Expertise and credibility**:

Universities have specialized expertise in fields like energy systems, environmental science, economics, policy, and often have long-standing local engagements. By partnering with academic institutions, energy access programs can benefit from evidence-based strategies, ensuring that interventions are scientifically sound and have a high likelihood of success at the local level.

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## Capacity building and knowledge transfer

Academic partnerships can contribute to capacity building  by providing training programs, internships, and educational initiatives to deliver a pipeline of skilled expertise. This helps develop a skilled workforce capable of sustaining energy access solutions over the long term, improving the scalability and sustainability of the sector.

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However, nothing is perfect… and in some cases, challenges can arise in partnerships with Academia due to a mismatch of priorities between generating new knowledge and immediate solutions, bureaucracy, reliability on grants and external funding.

Most of these challenges can be overcome through shared goals from the beginning, clear agreements, and an understanding of the different enablers and barriers of each partner…

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# The University of Cape Town: Who we are and what we do in the TEA Platform

The University of Cape Town (UCT), a partner within the TEA Platform, has been appointed by the Carbon Trust in two markedly different roles:

- Delivering capacity enhancement at Masters level, Continued Professional Development (CPD) and building a network of Southern Expertise through the **TEA Learning Partnership**
- Extracting knowledge, lessons, and insights, from TEA platform, and disseminating them to a broader audience as part of the **Research Support Services**

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# The University of Cape Town: Who we are and what we do in the TEA Platform

The **University of Cape Town (UCT)**, established in 1829, is South Africa's oldest university.

Located in Cape Town, UCT is a leading university in teaching and research in areas like medical sciences, energy, environmental science, and engineering.

UCT contributes to sustainable development through education and innovation, and implementation of projects locally.

With a focus on social justice and inclusivity, UCT plays an important role in shaping South Africa's higher education landscape.

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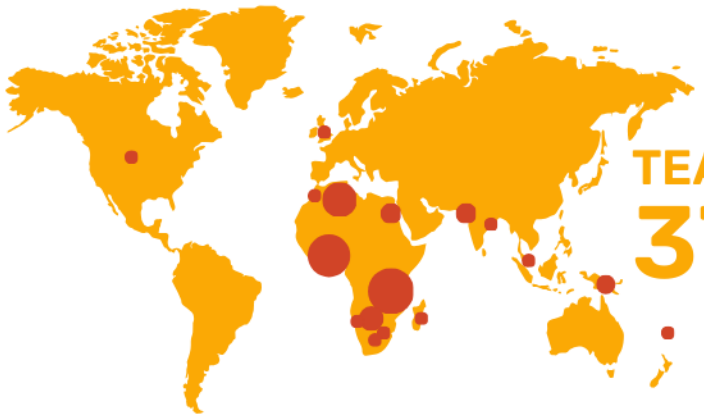
# Transforming Energy Access
## LEARNING PARTNERSHIP

## KEY ACHIEVEMENTS TO DATE AS OF JANUARY 2025

The Transforming Energy Access – Learning Partnership (TEA-LP) is a network of university academics and energy sector professionals committed to ensuring a highly qualified professional workforce to drive SDG7: Sustainable energy for all.



**TEA-LP REACHES 37 COUNTRIES**

### WP 1 ENHACING UNIVERSITY DELIVERY OF MASTERS' CURRICULA FOR SDG7

- 30 partner universities supported across 19 countries
- 3 masters' courses for uptake:
  - Local solutions for Energy Access
  - Mini-grids: Planning and Design
  - Appliances for Off-grid Communities
- 606 students enrolled across partner universities
- 558 individual course completions

### WP 2 CAPACITY BUILDING FOR PROFESSIONALS

- 3 CPD courses developed in collaboration with 8 African content experts:
  - Future Female Leaders in Energy
  - Integrated Energy Systems
  - Integrated Data Energy Analytics
- 403 FFL students
  57 IES students
  36 IDEA students
  across 19 cohorts
- First industry webinar: Powering the Future: The Integration of AI and Smart Grids in the Internet of Energy

**Partnerships with existing and new universities**

### WP 3 NETWORK OF SOUTHERN ENERGY EXPERTISE

- 3353 followers
- 19 newsletters
- 84 website posts

# Research Support Services

The University of Cape Town (UCT), a partner within the TEA Platform, has been appointed by the Carbon Trust as a core partner tasked with:

Extracting knowledge, lessons, and insights, from TEA platform,

Disseminating them to a broader audience.

Our **mission** within the TEA platform encompasses:

Conducting research across various platform facets,

Disseminating findings to a diverse array of audiences, and

Fostering continuous feedback loops to promote learning and enhancement.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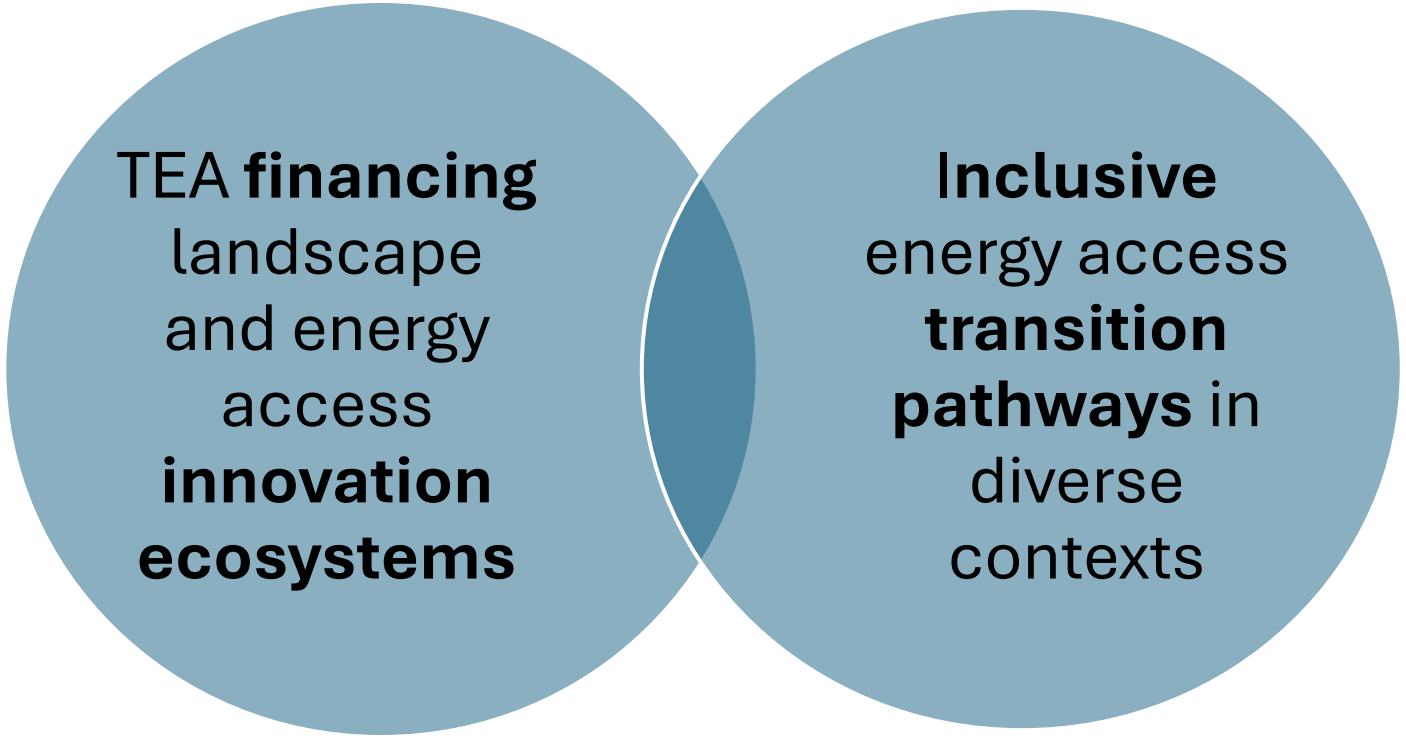
# A short recap: our main areas of research




**Research outputs**: Research papers, presentations, frameworks, alongside other outputs.

# What research do we currently cover (1)?

1. Rethinking the capital continuum for energy access finance – Company finance journeys in the Transforming Energy Access platform

- Using the Transforming Energy Access research and innovation platform as an example,
- We delve into the challenges and complexities of navigating the finance continuum,
- Highlighting significant funding gaps and their effects on innovation and scaling.

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# What research do we currently cover?


2. Pathways and challenges to scale

- Need for scale
- What is needed for successful scaling (considerations for scaling) (strategic planning across multiple dimensions, including operational efficiency, financial sustainability, regulatory compliance)
- Why many renewable energy companies struggle to scale (challenges of scaling in the sectors
- What can be done to support scaling of companies who wish to do so

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# What research do we currently cover (2) ?


3. Partnerships

- Aspects that are important when partnering with another organisation (company culture/values, reputation/experience in the industry, ethical standards, corporate social responsibility etc.)?
- Advantages of partnering with other organisations? (What worked/works well?)
- Challenges faced in local and international partnerships (or in trying to set up partnerships - past and present)?
- How these challenges have been navigated

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Over to our colleagues now! Time to enjoy the Academic Marketplace

# Shopping around – please  check out the following tables during the marketplace session…

- **SMART-SIP+** - Innovative approaches to downstream energy utilisation from solar irrigation pumps in Bangladesh: Lynsey Melville, Birmingham City University
- **Circular Microgrids:** Circular Economy Pathways for Renewable Microgrids in Africa: Muyiwa Oyinlola, De Montford University and Layi Alatise, Warwick University confirmed
- **Moving IMPACT:** Integrated Means to Power Agriculture, Clean Cooking and Transportation -Dr Onesmus Mwabonje, Imperial College London confirmed
- **African SCENe** (Sustainable Community Energy Networks)- Lucelia Rodrigues, University of Nottingham and Strathmore University
- **REACH-PSM**: Resilient Renewable Energy Access Through Community-Driven Holistic Development in Perovskite Solar Module Manufacturing: Mark Spratt, Swansea University and Jiska De Groot, University of Cape Town
- **JustGESI:** Mainstreaming Gender Equality and Social Inclusion for a Just Energy Transition in Ethiopia, Malawi, Mozambique, and Tanzania- Vanesa Castan Broto, University of Sheffield

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# Partnerships to Manufacture Locally

Rhiannon Turner, the Carbon Trust

5th March 2025

CARBON TRUST

# Manufacturing Africa

## Energy Efficient Manufacturing

**February 2025**

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This document has been funded by UK aid from the UK Government; however, the views expressed do not necessarily reflect the UK government's official policies

www.manufacturingafrica.org

# Enabling investment and the creation of jobs

## Programme Overview

### Programme Goal

Attract **£1.9 billion** of foreign direct investment (FDI) and creation of **99,000 jobs**

### Focus Sector

**Manufacturing** and manufacturing enablers

### Implementing Consortium

**McKinsey & Company, BDO, TechnoServe, Steward Redqueen** and others

### Funding

UK Government through the **Foreign, Commonwealth and Development Office (FCDO)**

### Duration

**7 Years** (2019-2026)

### Focus Countries


### Addressing two of Africa's Key Challenges

#### A growing Labour Force

**1B** Working population increase by 2050

**2x** Urban population growth by 2050

**18M** New jobs needed a year until 2035

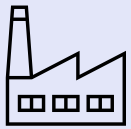
### An underdeveloped Manufacturing Sector

**Low** manufacturing productivity

Struggle to move into **high-value** services

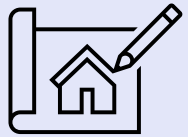
# MA Portfolio Overview

**Investment types**



Brownfield

**52%**



Greenfield

**47%**

| Funding Instruments | Across MA portfolio | Closed deals |
|---|---|---|
| Debt and equity | 101 (48%) | 19 (43%) |
| Debt, equity, other* | 35 (16.5%) | 8 (18%) |
| Equity | 27 (12.7%) | 3 (6.8%) |
| Funding already arranged | 14 (6.6%) | 5 (11.4%) |
| Debt | 17 (3.3%) | 5 (11.4%) |
| Equity, other* | 7 (3.3%) | 1 (2.3%) |
| Other* | 2 (0.9%) | 2 (4.5%) |

## Core MA Offerings

Investor Memo Development

Commercial Diligence Analysis (CDA)

Gender Economic and Social Inclusion (GESI)

Business Case Development

Climate and Environment (C&E)

# Progress to date

**£22b** value of pipeline

**>208** deals supported

**44** deals closed

**£1.6** billion FDI facilitated

**97,000** jobs committed

**A++** rating

**6 countries** operational

| | | | |
|---|---|---|---|
| **£1.6 billion** FDI into Africa's manufacturing sector supported | **200+** companies supported, including **50+** green deals | **44** deals closed for businesses with MA support | **97,000+** direct and indirect jobs committed |
| **£820 million** biggest deal supported | **£40 million** average size of transactions supported | **15+** multinational manufacturing companies supported | **+30** manufacturing companies with UK trade and/or linkages assisted |
| **£22 billion** combined value of pipeline identified | **239,000 tCO2** emissions reduced | **40+** women owned/led manufacturing businesses supported | **100%** deals screened for Gender Economic Social Inclusion (GESI) compliance |
| **30** policy changes influenced | **55** sector transformation studies published | **A++** latest rating at Annual Review | **20** partnerships ongoing with regional UK government related programmes |

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Manufacturing Africa

# We have supported electric vehicle companies to drive sustainable mobility and economic impact.

## Electric vehicles

| | |
|---|---|
| Countries and number of deals supported | **Kenya (6)**<br>**Nigeria (5)**<br>**Rwanda (1)**<br>**Tanzania (1)** |
| Deals closed | 4 |
| Investors | lightrock, DFC, global.ventures |
| FDI raised | £1.1 billion |
| Direct Jobs | 15,047 |
| Products | • Eco-friendly motorcycles and scooters powered by electricity.<br>• Sustainable transport solutions for passenger and cargo mobility.<br>• Zero-emission public transport for cleaner and greener cities.<br>• Battery-powered cars reducing carbon emissions and fuel dependency.<br>• Emission-free cargo transport for sustainable and efficient logistics. |

## Examples of deals that closed include:

**max** Nigerian mobility company providing independent drivers with access to vehicles, including electric models, through a rent-to-own platform, raised $31 million.

**OX DELIVERS** UK-based electric mobility company addressing transportation challenges in developing countries by providing purpose-built electric trucks through a truck-as-a-service model. Currently operating in Rwanda and expanding to Uganda, Kenya, Tanzania, and Burundi with $167 million raised.

**BASIGO** Kenyan electric mobility company providing electric buses and a "Pay-As-You-Drive" financing model to make e-bus adoption affordable, operating in Kenya and Rwanda, raised $18 million.

# We have supported manufacturers of energy-efficient products to scale production, enhance affordability, and reduce emissions.

## Household Appliances

| | |
|---|---|
| Countries and number of deals | **Kenya (3)**<br>**Nigeria (4)**<br>**Rwanda (1)** |
| Deals closed | 4 |
| Investors | Triodos Investment Management; NDF Nordic Development Fund; alphamundi; ARUWA CAPITAL MANAGEMENT; Key Carbon |
| FDI | £113 million |
| Direct Jobs | 2,558 |
| Products | • Energy-efficient stoves that reduce fuel consumption and indoor air pollution.<br>• Standalone solar solutions providing reliable electricity for off-grid households.<br>• Refrigeration powered by solar energy for off-grid cooling needs.<br>• Renewable energy systems converting sunlight into electricity.<br>• Solar-powered systems for cost-effective water heating.<br>• Solar-driven pumps for sustainable water access and irrigation. |

## Examples of deals that closed include:

KOOLBOKS LIFE IS KOOL

**Solar fridge producer** that raised $3.2m to set up local assembly operations and significantly expand footprint across Nigeria, Kenya and DRC.

burn™ life · saving · stoves

**Clean cookstove manufacturer** that raised $18m over several rounds to support the distribution of electric cookstoves in Kenya, Tanzania, Uganda, and Zambia in the next 2 years.

SunCulture

Provider of **solar-powered irrigation systems** tailored for smallholder farmers that raised $60.5m for solar water pumps expansion into new and existing markets such as Ethiopia, Uganda, and Zambia

# We have also supported energy access solutions to expand reliable and sustainable power and support green industrialization

## Energy Access

| | |
|---|---|
| Countries and number of deals | **Kenya (2)**<br>**Nigeria (2)** |
| Deals Closed | 2 |
| Investors | AllON, Banque Africaine de Développement / African Development Bank, African Development Fund / Fonds Africain de Développement, finnfund |
| FDI | £267 million |
| Direct Jobs | 1,615 |
| Products | • **Geothermal power production** – Renewable energy harnessed from the Earth's heat for reliable electricity generation.<br>• **Lithium-ion batteries** – High-efficiency rechargeable batteries enabling energy storage and electric mobility.<br>• **Microgrids** – Localised energy systems providing independent and resilient power distribution. |

## Examples of deals that closed include:

GLOBELEQ
POWERING AFRICA'S GROWTH

Leading **independent power producer** in Africa, operating 1,794 MW and developing renewable and thermal projects for sustainable growth raised $117 million to set up a new geothermal plant in Nakuru, Kenya.

arnergy

Nigerian **solar systems manufacturer** that has raised $4.7m for expansion into new higher capacity products for mid-sized manufacturing companies, and support for a new assembly line.

# Through technical assistance, we have strengthened ecosystems and unlocked opportunities in energy-efficient manufacturing

## Areas of technical assistance

- Conducting **sector studies** to identify concrete investment opportunities
- Supporting governments and **public bodies to adapt policy** to attract FDI including for targeted investment areas
- **Convening and sharing knowledge** with the private and public sector around barriers and opportunities

| | Sample reports*: | Key stakeholders |
|---|---|---|
| Automotive and E-vehicles | EV: Mobility business models and operational enablers – Nigeria<br>Opportunities for Lithium battery precursor supply chain -Rwanda | Rwanda Development Board<br>Ministry of Commerce and Trade (MINICOM)<br>Rwanda Mining Board |
| Renewable technology | Opportunities for commercial and industrial solar energy production- Senegal<br>Market assessment for battery recycling - Nigeria | |

Further reports available at: https://manufacturingafrica.org/resources/?tab=Reports

**Sample reports are hyperlinks to the full reports on the MA website*

# Despite Manufacturing Africa's successes, persistent market failures remain

## Context

In spite of its demonstrable impact, **Manufacturing Africa (MA)** uncovered additional and **persistent market failures** that **constrain the pace of development of manufacturing SMEs in Africa,** including availability of adequately structured and sized capital to **accelerate "green" industrial growth**

In collaboration with multiple stakeholders, MA made the case for and led the design of the **Green Manufacturing Partnership** (**GMP**)

# … and GMP has been designed to help to address some of them

## Objectives

**Green Manufacturing Platform (GMP)** is the first investment fund for low carbon and climate resilient manufacturing in Africa

GMP aims to **mobilise $100m+ of private capital** into African manufacturing in the first 5 years of operation and **invest in small ticket size deals** (average $3million) that generate sustainable manufacturing growth

GMP has received £40m fiscal CDEL approval to partner with FSDA for the incubation and set-up of GMP – as well as many other stakeholders - and to start **operations in Kenya** before scaling to its Pan-African ambition

At the basis of the GMP model are partnerships: knowledge, investment, pipeline

# More Info and Questions

**More information:**

- www.manufacturingafrica.org
- Manufacturing Africa: Posts | LinkedIn
- Thomas Pascoe, MA Programme Director Thomas_Pascoe@mckinsey.com
- Harald Poeltner harald_poeltner@mckinsey.com and Faheemus Chowdhry Faheemus.Chowdhury@bdo-ifi.com, MA Transaction Facilitation Leads

**Prompting questions**

- Are there manufacturing deals for MA (typically above $10million) or GMP (<$10million, average $3million) to consider in the 6 target markets?
- How to maximise synergies across FCDO-funded instruments to maximise impact? And how to harness the UK Plc's strengths in the renewable energy space to enhance energy access and localization of energy product manufacturing while contributing to growth in the UK?

# PREO

Powering Renewable Energy Opportunities

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IKEA Foundation

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ENERGY4IMPACT POWERED BY MERCY CORPS

# Powering Renewable Energy Opportunities (PREO)

PREO Powering Renewable Energy Opportunities

**PREO's Vision**

Our vision is a world where everyone, everywhere has access to affordable PURE products and services, while simultaneously generating new employment opportunities and helping communities mitigate and adapt to climate change.

PREO supports testing of business models and stimulation of income-generating activities involving productive use of renewable energy (PURE).

Grant funding
(£7.3M 2022-27)

Technical Assistance
(£772k 2022-27)

Knowledge dissemination

- Approx. **40** grants in total to be awarded in the current phase of PREO (2022-2027)
- Includes **9** grants for delivery of projects in Pacific Island Countries
- So far, **75%** of grantee companies are locally-owned. **88.5%** of latest wave of applicants are locally-owned

PREO is co-funded by UK aid from the UK Government, through the Transforming Energy Access (TEA) platform and the IKEA Foundation.

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# Case study: Hinckley E-Waste

**Ayrton Challenge: Smart Energy Systems**

PREO Powering Renewable Energy Opportunities

## Second life battery use validation (Nigeria)



**Company background**

- Hinckley E-waste Recycling business began in 2010.
- Offers socially responsible e-waste solutions in Nigeria which conform to strict environmental recycling regulations and legislations locally

**Current areas of focus**

- Validate proof of concept to develop and install second life batteries to power telecoms towers in Nigeria

**Support provided by Manufacturing Africa**

- Hinckley received technical assistance from Manufacturing Africa to secure investment in its battery recycling business
- Included the funding of a market study undertaken by McKinsey

**TEA funding received**

| | |
|---|---|
| Global LEAP | £65,490 |
| PREO Wave 3 | £127,500 |
| PREO Wave 4 | £106,650 |
| ZE-Gen | £103,669 |

# Current grantee: Jokosun Energies

**Ayrton Challenge: Clean Transport**

PREO Powering Renewable Energy Opportunities

## E-mobility on waterways for small boats (pirogue) in Senegal - ElekTey

**PREO Grant:** £222,911

**Project duration:** 22 months

**Prior UK support:** FCDO Frontier Tech

To prove the technical viability of retrofitting diesel engines on fishing boats with electric motors in the south of Senegal

**Innovation:**

- Set up retrofitting division that will train local technicians and sell ‘retrofit kits’ to them at a margin
- Offer ‘battery as a service’: charged battery delivered to user’s location
    - Users can order the battery via an app and the delivery at the location of the boat mimics the existing delivery of fossil fuel in cans

**Local manufacture:**

- Project will create a decentralised assembly and maintenance network
- Plan to establish a battery assembly process, further localising key components

**Likely required support**

- Preparation for engagement with investor community
- Support to understand market size

# Current grantee: Ecobora

**Ayrton Challenge: Modern Cooking**

PREO Powering Renewable Energy Opportunities

## EaaS/PAYGO Solar Cooking Boilers for Schools (Kenya)

**PREO Grant:** £132,217

**Project duration:** 20 months

**Technical Assistance** planned within PREO, focused on:

- Reducing manufacturing costs
- Improving energy efficiency of heating element
- Improve user interface/product design

**Innovation:**

- Catering-scale solar-powered cooking boilers backed up with battery storage solution
- Piloting an integrated 'cooking-as-a-service and PAYGO' model
  - Will relieve the schools from the burden of raising initial capital and maintenance funds
  - Affordability further improved as schools will only buy the energy needed and afforable

**Local manufacture:**

- Manufacture the solar cooking boilers in their factory in Kenya
- Solar panels and batteries supplied by local supplier

**Likely required support**

- Market analysis, including investigation of carbon financing as means of reducing end user costs
- Outreach and engagement with investor community

# More Info and Questions

**More information:**

- www.manufacturingafrica.org
- Manufacturing Africa: Posts | LinkedIn
- Thomas Pascoe, MA Programme Director Thomas_Pascoe@mckinsey.com
- Harald Poeltner harald_poeltner@mckinsey.com and Faheemus Chowdhry Faheemus.Chowdhury@bdo-ifi.com, MA Transaction Facilitation Leads

**Prompting questions**

- Are there manufacturing deals for MA (typically above $10million) or GMP (<$10million, average $3million) to consider in the 6 target markets?
- How to maximise synergies across FCDO-funded instruments to maximise impact? And how to harness the UK Plc's strengths in the renewable energy space to enhance energy access and localization of energy product manufacturing while contributing to growth in the UK?

# Partnerships to Manufacture Locally- Pitches and Q&A

Rhiannon Turner, the Carbon Trust and Ilaria Chessa, FCDO

5th March 2025

# Partnerships for Country Impact

Nadia Algera, the Carbon Trust

5th March 2025

# TEA – Country Demonstrators

UKaid Transforming Energy Access | Foreign, Commonwealth & Development Office

**Objective**: To scale-up and demonstrate clean energy innovations via TEA partnerships (**funded by FCDO Posts**)

**£21m committed in the first year of the offer, out of £30m budget headroom available**

| Country | TEA Partner | Budget | Summary |
|---|---|---|---|
| **Tanzania** | Innovate UK | £1.8m | **Energy Catalyst Round 10** clean energy innovation projects in Tanzania |
| | Innovate UK | £1.8m | **Contract for Innovation Open Call** in 2025 supporting innovation projects in Tanzania |
| | ESMAP | £1m | Contribution to **World Bank ESMAP**, preferenced to activities in Tanzania |
| **Somalia** | Acumen (via Carbon Trust) | £2.1m | Expansion of **Acumen's Hardest to Reach** initiative in Somalia |
| | Mercy Corps (via Carbon Trust) | £2.6m | Provision of affordable and reliable **solar energy to IDP communities** in Barwaqo camp |
| **Uganda** | ICLEI (via Carbon Trust) | £1m | Scale-up clean and improved **cooking access in informal settlement** households and businesses |
| **Rwanda** | EST (via Carbon Trust) | £750k | Deployment of standalone **off-grid solar appliances in refugee camps** in Rwanda |
| **Pacific** | ESMAP | £4m | Inform the design of the **$5 billion World Bank Accelerating Sustainable Energy Transition (ASET)** project to increase renewable energy generation capacity in the Pacific |
| | SPC (via Carbon Trust) | £1m | Expand the TEA research and innovation **Clean Energy Partnership between the UK and the Pacific** Community (SPC) to build the enabling environment for the clean energy transition in the Pacific |
| **Indonesia** | ESMAP | £5m | Support the **World Bank's $1.7bn 'Indonesia Sustainable Least-cost Electrification** – 2" (ISLE-2)' programme, that will build or upgrade at least 2,000km of transmissions lines and connect 1 million new customers to the grid, and contribution to **World Bank ESMAP** preferenced to activities in Indonesia/ |

# Enter Energy Somalia Country Demonstrator

Tilen Ogola, Mercy Corps

5th March 2025

# Contents


1. INTRODUCTION TO ENTER ENERGY SOMALIA

2. PROGRESS AND SPOTLIGHT

3. PARTNERSHIPS & COORDINATION

4. POTENTIAL OPPORTUNITIES TO SCALE

4. Q&A

# PROGRAM OVERVIEW-Enter Energy Somalia

**The EES project overall goal is to develop a scalable, sustainable model for clean energy access that improves living conditions and livelihoods for IDPs and host communities in Barwaaqo/Baidoa – Somalia.**

1

A hybridized solar PV power system that provides electricity to at least 3,000 households in the Barwaaqo resettlement town.

2

A power demand-activation and stimulation initiative that enables 150 SMEs to use energy for productivity

# GRID INFRASTRUCTURE SPOTLIGHT

## What We have achieved so far….

- Customer acquisition: +**2,800 HH and Businesses** connections registered so far.
- Facilitation of tariff setting with the utility company, local authority [**↓44% reduction**] From 0.9$/kWh to 0.5$/kWh
- Additional demand to the utility :Request from neighboring settlement on MV network [**70 HH + 3 Large Public institution**]

# PUE SPOTLIGHT

## What We have achieved so far….


- 150 + microbusiness and small-scale enterprises supported
- Business Training /mentorship, 150 participant under PUE component were trained on business development support by expert on BDS services – (iRise Hub)
- Financial support: Partnership with local MFI to provide flexible appliance financing and access to finance

# OPPORTUNITIES FOR COLLABORATION

Project Partnership with IOM on the Baidoa Resilience Building Initiative (RBI) working Group.

Partnered with IBS on the financial inclusion.

Strengthened collaboration with the city Mayor on the customer registration.

# Scale-up opportunities in Larger Baidoa Area

## A. Strengthening PUE businesses

- Based on field observations, the most promising PUEs include agricultural processing (oil and milling), cold chain operations (ice block production, ice cream manufacturing, and cold drink sales), and artisanal businesses (carpentry, mechanics, and welding).

## B. Energy Access: opportunities for utility company

- Competitive tariff structure/Clear tariff methodology.
- Energy efficient appliance /retrofitting support
- Customer centric marketing campaign

# PHOTOS: EES PROJECT MV CASTING & LV INSTALLATION

# PHOTOS: EES PROJECT LAUNCH IN BAIDOA



Thank You!
MERCY CORPS

UKaid from the British people

Transforming Energy Access

# Partnerships for Country Impact

Nadia Algera, the Carbon Trust

5th March 2025

CARBON TRUST

# The Tanzania Country Demonstrator

## eCooking in Tanzania

Dr Anna Clements: Lead Researcher for Tanzania

# Tanzania’s Approach to Clean Cooking

- In 2018, eCooking was not on the radar of the clean cooking space in Tanzania.
- By 2024, eCooking was firmly placed in national policy documents (cooking and electricity), and MECS started the £3.5 million eCooking Scale and Support Programme in Tanzania to seed the transition and make sure it’s sustainable in the long-term.
- How did we get here?

# Timeline: Part 1

Early feasibility studies

GMA highlights potential in Tanzania

2016

Innovate UK

Gamos

eCooking feasibility studies commence. Cooking diaries show >90% TZ menu can be cooked on an EPC

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clasp

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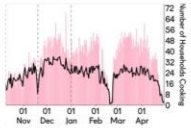
GLOBAL LEAP AWARDS



Detailed IoT monitoring

eCook on minigrid pilot: (100 hhs)
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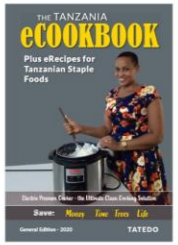
A2EI

NEXLEAF ANALYTICS

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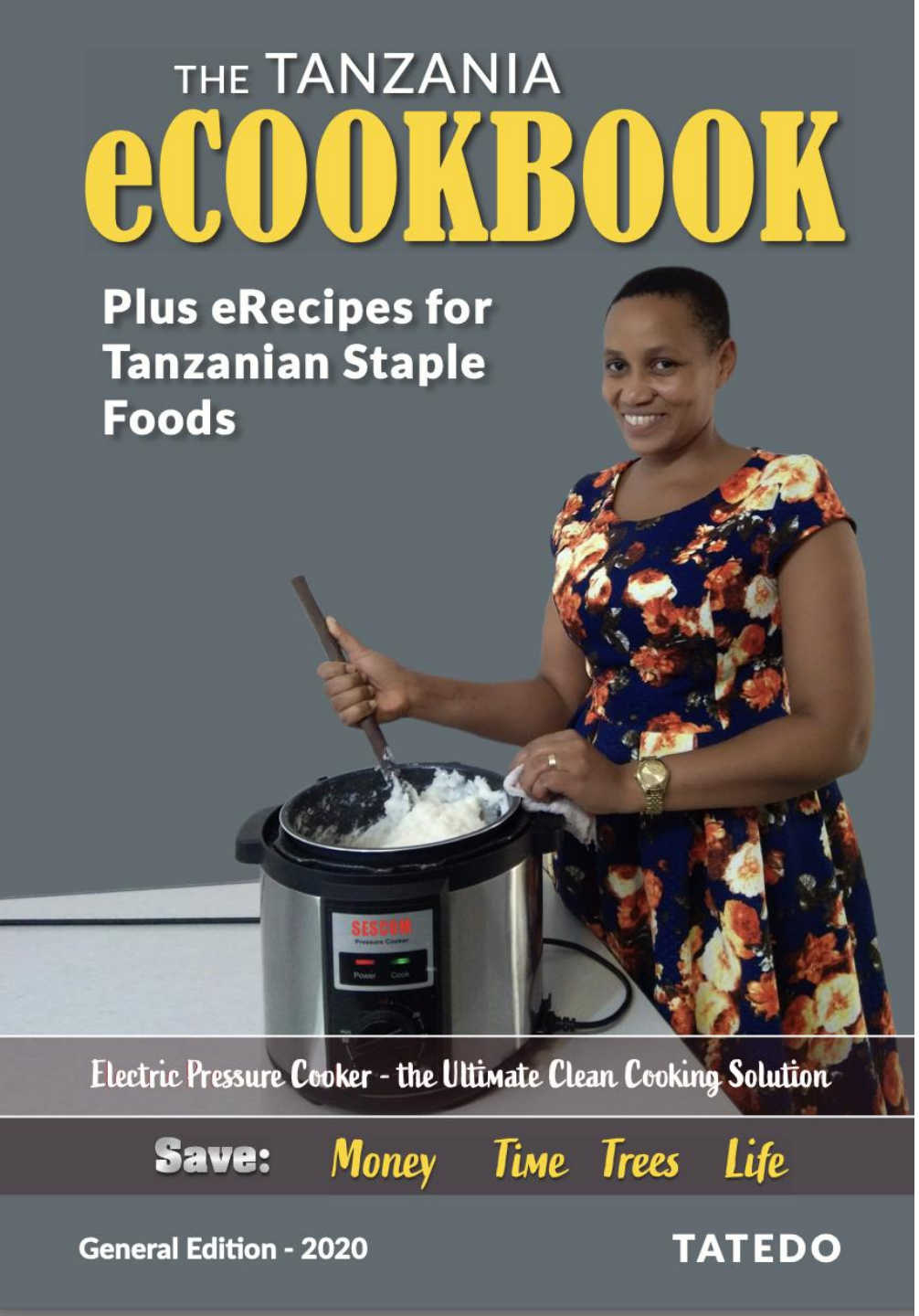



- 92% of Tanzanian dishes can be cooked on an EPC.
- Positive feedback from consumers: studies show convenience, time saving, cost saving, savings of biomass fuels, positive impacts for women.

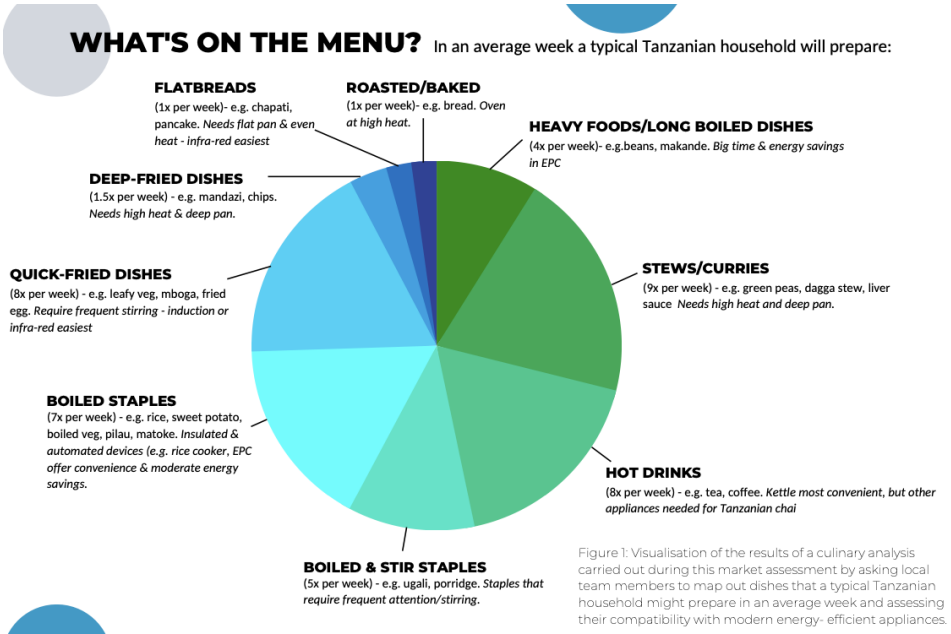
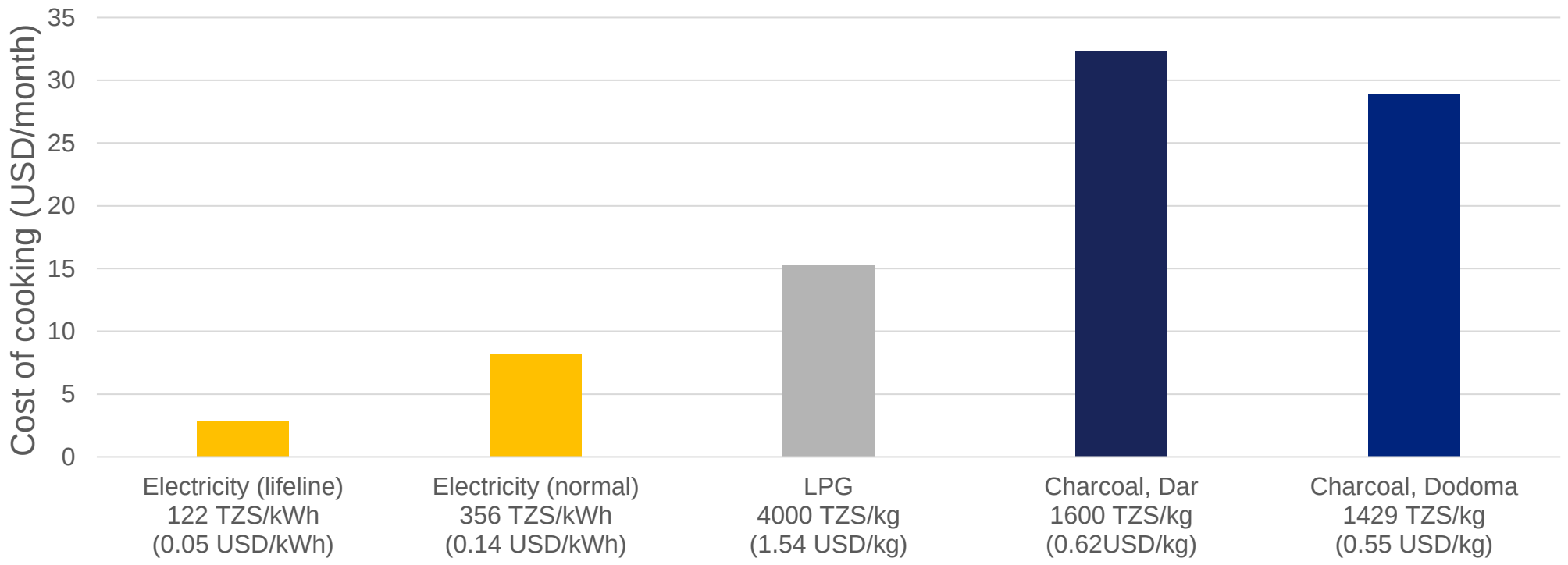



Figure 1: Visualisation of the results of a culinary analysis carried out during this market assessment by asking local team members to map out dishes that a typical Tanzanian household might prepare in an average week and assessing their compatibility with modern energy- efficient appliances.

# Electricity is the Least Cost Fuel




- New highly efficient eCook appliances mean electricity is cheaper to cook with than other fuels.
- eCook electricity consumption based on data from cooking with EPCs only and EPCs and induction stoves as a mix.

Normalised for a household of 4 people. Fuel price data from May 2024. Energy consumption data from MECS empirical studies, and ESMAP (2020) Cooking with Electricity: A Cost Perspective. 2kWh/day electricity consumption.

# Impacts of eCooking

For the first 3 million households who switch from charcoal to eCooking, the impact in one year:

Time saved → 787 million hours

Time saved per household → 258 hours

Energy generated → 1299 GWh

Expected grid revenue → Tsh 454,746 million ($170m)

CO2 equivalent reduction → 2.44 million tonnes

Unsustainable wood harvest reduction → 251,817 tonnes

Health impact (DALYs avoided) → 19,215 DALYs

Using World Health Organisation's (WHO's) revised "Benefits of Action to Reduce Household Air Pollution" (BAR-HAP) tool – conservative estimates of eCooking energy.

# eCooking Opportunity is Significant

90% cook with charcoal or firewood

5.3 million households are grid connected

100% electricity access by 2030 (target)

Less than 5% use electricity for cooking

# Timeline: Part 1

Studies continue to add to the evidence base …

Minigrids

2016

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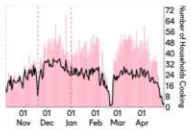

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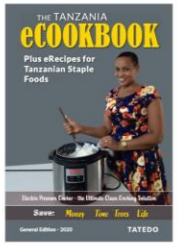
NEXLEAF ANALYTICS

2021

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Exploring sustained use

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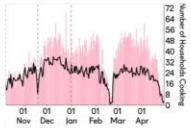

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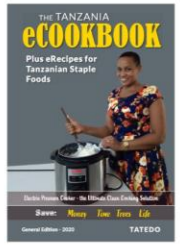


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Other donors come on board

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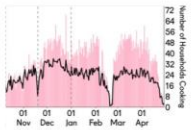

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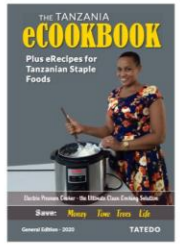


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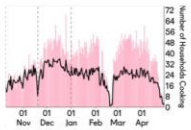

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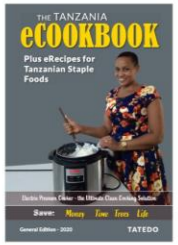


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Off-grid eCooking

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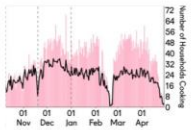

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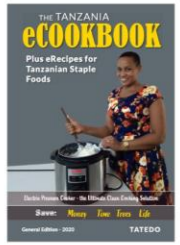


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Key publications of evidence

MECS-TaTEDO Thriving Market Briefing Notes
- TANESCO
- Awareness
- Quality
- Market chain

Key publications highlight opportunity and potential to scale eCooking


MECS eCooking Market Assessment

energies

Journal papers: mini-grids and eCooking delivery models

In Nov, inaugural TZ Clean Cooking Forum sees presidential announcement that clean cooking is a national priority

AECF launches TZ Clean Cooking Project: $3.75m in grants and TA for private sector

SNV and atmosfair join eCooking sector: SNV supporting SACCOs to distribute EPCs, atmosfair in institutional eCooking

SNV atmosfair endev

High-level task force set up to develop a National Clean Cooking Strategy

Duka la Mama

SESCOM

Positive Cooker Pika Kijanja na Jiko Janja

EU-funded UNCDF Cookfund begins to fund eCooking companies

GoT issues biomass ban for institutions starting 2024/25

eCook demos and advocacy carried out in Parliament and Ministries by TaTEDO-SESO

Founder of PAYG LPG company KopaGas pivots to PAYG eCooking with start-up: SmartPika

MECS ECO challenge fund in Morogoro – follow-up study after 1 year found EPC use increased from **33% to 50% of menu**

Burn receive €10m investment from MCFA

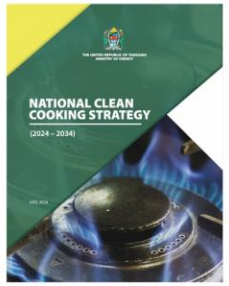
TANESCO

TANESCO engage with MECS on eCooking. TANESCO eCooking Program designed, launched 2024

UpEnergy

UPEnergy receive €2m investment to scale eCooking in TZ from MCFA

SNV expand eCooking work: supporting SHS companies to distribute appliances




National Clean Cooking Strategy of TZ launched in May – eCooking strongly represented

£3.5m UKAid program: **eCooking Scale and Support** launched to seed the scaling of the eCooking transition

UKaid from the British people

MECS

2022

2023

2024

# Timeline: Part 2

Pivotal moment: President sets clean cooking as a national priority

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- Awareness
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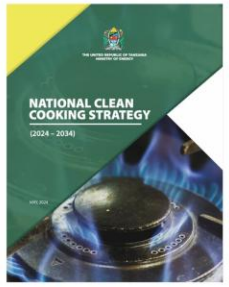


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UKaid from the British people

MECS

2022

2023

2024

# TZ National Clean Cooking Strategy

- Began development end 2022 with the formation of a National Task Force.
- Initial drafts in 2023 were very LPG focused.
- Sector stakeholders gave feedback (including MECS and MECS partners)
- In May 2024, the strategy was launched: a comprehensive, multi-fuel strategy, inclusive of eCooking and with electrification and eCooking targets.
- (Further integrated policy: the revised Power System Master Plan contains eCooking demand forecasting.)

# Timeline: Part 2

Pivotal moment: President sets clean cooking as a national priority

MECS-TaTEDO Thriving Market Briefing Notes
- TANESCO
- Awareness
- Quality
- Market chain

Key publications highlight opportunity and potential to scale eCooking

energies

Journal papers: mini-grids and eCooking delivery models


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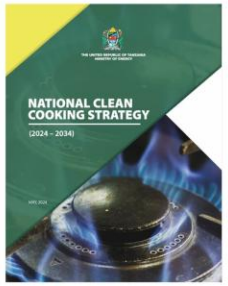


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2022 2023 2024

# Timeline: Part 2

The supply chain starts to grow…

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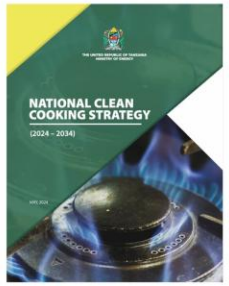


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2022 2023 2024

# Timeline: Part 2

More evidence of sustained use

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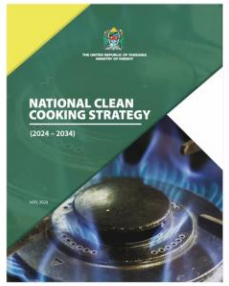


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2022

2023

2024

# Timeline: Part 2

Another breakthrough moment: TANESCO started to engage

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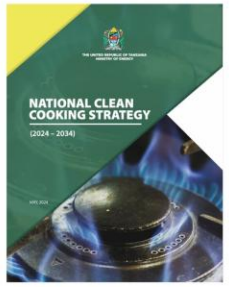


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UKaid from the British people MECS

2022 2023 2024

# Taking stock in 2023/2024

- Big changes in enabling environment:
  - eCooking was named as one of the target fuels in Tanzania National Clean Cooking Strategy (2024-2034)
  - Electricity generation surplus was increasing with ongoing Julius Nyerere Hydropower Plant commissioning.
  - Leverage the progress in electricity access (the infrastructure and the investment) to provide a solution to the clean cooking challenge too.
- Supply chain starting to emerge.
- Still a lack of awareness about eCooking feasibility and affordability.
- Various ‘gaps’ which need to be filled to support a sustained transition.

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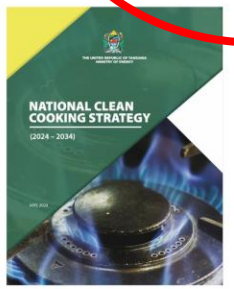


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UKaid MECS

2022

2023

2024

# eCooking Scale and Support Programme

- MECS started the UK aid-funded **eCooking Scale and Support Programme** in 2024, specifically in Tanzania (mainland and Zanzibar), running until early 2026.
- £3.5 million in funds.
- Designed to support the implementation of the Tanzania National Clean Cooking Strategy, we are working closely with the Ministry of Energy.
- The Programme has 6 components.

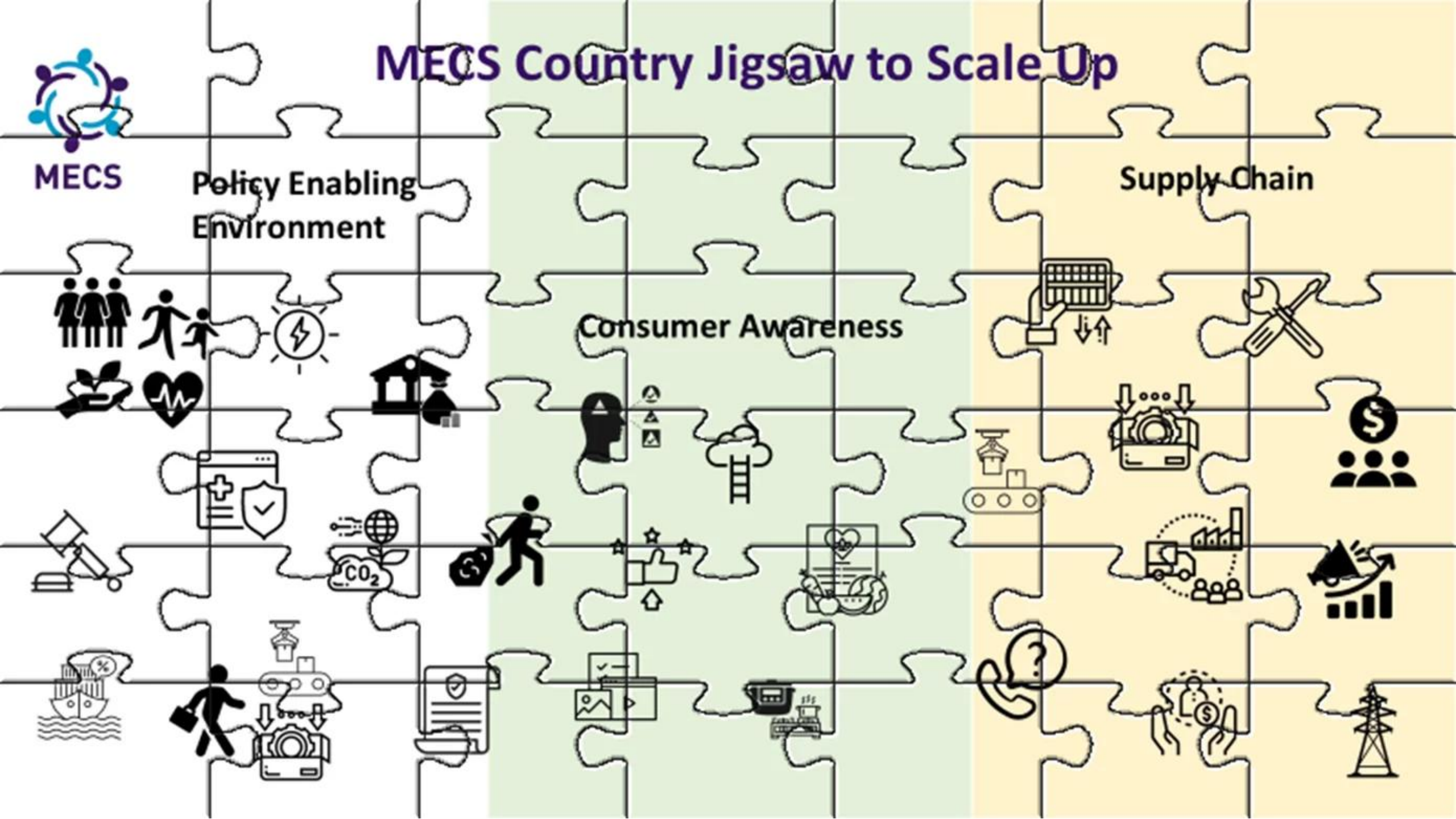
# MECS Country Jigsaw to Scale Up

MECS

Policy Enabling Environment

Consumer Awareness

Supply Chain



# 2024-2026 MECS Programme in Tanzania

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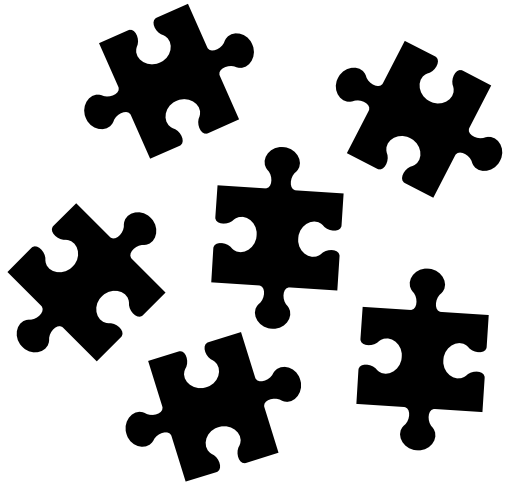
2. TANESCO eCooking Programme
3. Institutional eCooking
4. Repair and Maintenance Network
5. Quality and Standards
6. Supply Chain Support



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1. **National eCooking Awareness Campaign**
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High-level campaign to address lack of awareness

# 2024-2026 MECS Programme in Tanzania

1. National eCooking Awareness Campaign
2. **TANESCO eCooking Programme**
3. Institutional eCooking
4. Repair and Maintenance Network
5. Quality and Standards
6. Supply Chain Support

To promote eCooking to staff and customers.
To address affordability challenge through on-bill financing.

# 2024-2026 MECS Programme in Tanzania

1. National eCooking Awareness Campaign
2. TANESCO eCooking Programme
3. **Institutional eCooking**
4. Repair and Maintenance Network
5. Quality and Standards
6. Supply Chain Support

SEforALL – WFP partnership:
50 schools to transition to eCooking
Carbon finance to support the transition



SUSTAINABLE ENERGY FOR ALL
ENERGY. CLIMATE. DEVELOPMENT.

WFP World Food Programme

# 2024-2026 MECS Programme in Tanzania

1. National eCooking Awareness Campaign
2. TANESCO eCooking Programme
3. Institutional eCooking
4. **Repair and Maintenance Network**
5. Quality and Standards
6. Supply Chain Support

Develop a curriculum to train technicians in repair and maintenance.
Working with the Government to get this into national training programmes.

# 2024-2026 MECS Programme in Tanzania

1. National eCooking Awareness Campaign
2. TANESCO eCooking Programme
3. Institutional eCooking
4. Repair and Maintenance Network
5. **Quality and Standards**
6. Supply Chain Support

Working with TZ Bureau of Standards. Develop Minimum Energy Performance Standards (MEPS) for eCooking appliances.
Control the quality of appliances on the market and give customers the option to choose the highest efficiency appliances.

# 2024-2026 MECS Programme in Tanzania

1. National eCooking Awareness Campaign
2. TANESCO eCooking Programme
3. Institutional eCooking
4. Repair and Maintenance Network
5. Quality and Standards
6. **Supply Chain Support**

Provide support to the supply chain – both new entrants to the eCooking market, and those more established companies.

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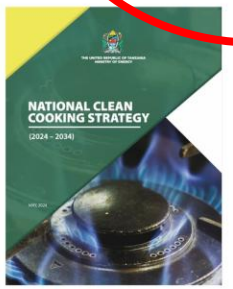


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# What can we expect to see?

- We can expect to see awareness rise and eCooking begin to become known and aspirational.
- We can expect to see the utility become a key delivery actor, and people paying for appliances through electricity bills.
- PAYGO eCooking companies will start to catch more of the market – competing (or working with) the utility to bring down upfront costs.
- eCooking embedded – in national curricula for training technicians, in policy, in mindsets, in load forecasting for further electricity planning, etc…
- Scale current initiatives, such as TANESCO eCooking Program, by leveraging larger funding (e.g.: African Development Bank, other donors)

MECS
Modern Energy Cooking Services

anna@gamos.org

Loughborough University

ESMAP
Energy Sector Management Assistance Program

UKaid
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# ENACT

## Enabling African cities for Transformative Energy Access

UKaid from the British people

Transforming Energy Access

ICLEI Local Governments for Sustainability AFRICA

Ministry of Energy and Mineral Development, Republic of Uganda

MECS Modern Energy Cooking Services

CARBON TRUST


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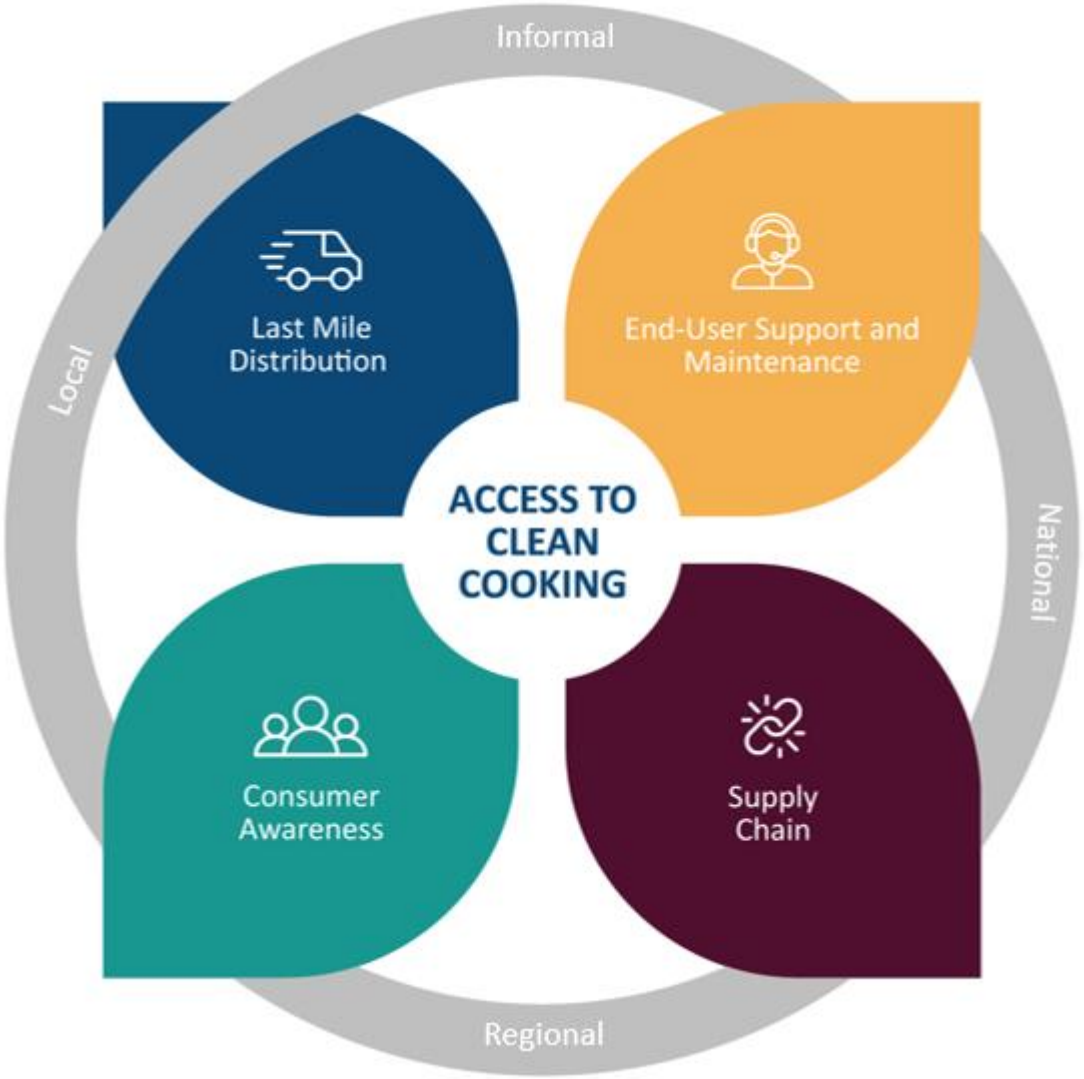
Transforming
Energy
Access

ICLEI Local Governments for Sustainability AFRICA

- Public Sector Capacity Building
- Market Activation and Deployment
- Electricity gains for eCooking
- Financing Clean Cooking
- Knowledge and Awareness




MECS Modern Energy Cooking Services

- Supply Chain
- Schools
- Awareness (national)
- Repair
- Standards

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Transforming Energy Access

# MEMD-MECS eCooking Scale and Support programme

- £3.5m 18-month programme to support Uganda to leverage electricity access to scale eCooking, focussing on 5 key areas: **Supply chain, Schools, Awareness, Repair, Standards**

- **Supply chain**: Trust Fund to provide bridging loans to eCooking appliance suppliers engage with financing programmes (e.g. EASP) so that they can maintain inventory and continue operations while awaiting verification and subsequent payments from fund managers

- **Schools:** Support for 170 schools across Uganda to adopt institutional eCooking appliances and development of a toolkit for institutional eCooking transitions (surveys, training, cooking diaries, etc)

- **Awareness:** National Behaviour Change eCooking Campaign to accelerate eCooking adoption, led by the National Renewable Energy Platform (NREP), featuring exhibitions in partnership with the Uganda Alliance on Clean Cooking (UNACC), media development, eCooking app, etc

- **Repair:** Training of 600 technicians in eCooking appliance repair and maintenance by the Centre for Research on Energy and Energy Conservation (CREEC), to create a network of capability easily accessible via an app and website, targeting known technicians across the country

- **Standards:** Support to Uganda National Bureau of Standards (UNBS) to develop and implement standards and test methods for eCooking appliances, to ensure that only high-quality appliances are available in Uganda. Led by Infinity Quality Services Uganda (IQS), this project will also develop a labelling system for eCooking appliances to enable consumers to make informed choices when purchasing

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Transforming Energy Access

## Public Sector Capacity Enhancement

Strengthening public sector capacity in **10 urban authorities** to improve implementation of clean cooking policies and regulations, enabling adoption in informal settlements.

## Financing Clean Cooking


Financing for at least **5 market led companies** and improved consumer affordability strategies

## Market Activation and Deployment

Expand clean cooking access to at least **30,000** people through sustainable, market-based solutions for households, businesses, and institutions.

## Knowledge and Awareness

Knowledge dissemination supports the scaling and replicating of innovations and best practices in GKMA, Uganda, and beyond.

## Electricity gains for eCooking

Enhanced knowledge and tools for strategic decisions on electricity access to support e-cooking uptake in informal settlements **across GKMA**.

ICLEI Local Governments for Sustainability AFRICA

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT
REPUBLIC OF UGANDA

# ENACT – Uganda Scaleup

KCCA
KAMPALA CAPITAL CITY AUTHORITY
For a better City

NANSANA MUNICIPAL COUNCIL
MUNICIPALITY OF CHOICE

ENTEBBE MUNICIPAL COUNCIL

KIRA MUNICIPAL COUNCIL
KIRA

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Households: **270,000**
Pop: **1,6 million**
% Total GKMA: **35%**

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Transforming Energy Access

# Public Sector Capacity Enhancement

- ICLEI embedded in the MEMD Clean Cooking Unit
- ICLEI proving national > local linkage enhancing implementation of Energy Policy 2023 (Local Government Responsibilities)
- **> 10 urban authorities**
- **> 55 government officials trained** (as at March 2025)
- Energy focal persons absent at local level but participation from environmental, economic development, health, gender, planning, and executive positions
- **High** (82%) **awareness** of clean cooking but **only a third (33%) have received training** in the last 2 years

ICLEI Local Governments for Sustainability


# Market Activation and Deployment

- **£350,000** catalytic grant facility for market entry into informal settlements / urban hard to reach
- **5 clean cooking companies**
- **> 10 recognised informal settlements** through anchor and satellite approaches
- Market Access Partner providing enabling market entry services and baseline studies

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Transforming Energy Access

# Market Activation and Deployment


WES Wana Energy Solutions

gbe

Re-Newable Hub

ACTOGETHER UGANDA
Joining Hands With The Urban Poor

DETRA Energy & Environmental Contractors

REM CLEAN ENERGY SOLUTIONS U LTD

ICLEI Local Governments for Sustainability

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# Electricity gains for eCooking

## Key Challenges

- High Interest, Low Access
- Unreliable Power – Outages & voltage drops (~10V) limit appliance use
- High Costs – Expensive connections & tariffs force rationing
- Safety Risks – Poor wiring, no circuit breakers, frequent electrical injuries.

## Priority Actions

- Targeted Subsidies – Reduce electricity & connection costs
- Better Access – Streamline connections, support renters
- Infrastructure Upgrades – Improve supply & safety

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SPOTLIGHT KAMPALA ILLUMINATING ENERGY INEQUITIES IN INFORMAL URBAN COMMUNITIES


# Financing Clean Cooking

- Engaged **3 FI's** to address financing gaps and co-develop 2+ financing models
- Embarked on co-development of strategies to address consumer affordability gaps developed (Microloans, Pay-As-You-Go models)
- Initiated conversations with the public sector to develop capacities for the public sector to facilitate finance for clean cooking projects
- Exploring collaborations to identify private sector actors requiring support to attract appropriate business finance

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## Knowledge and Awareness

- Knowledge Sharing
- Awareness Campaigns – Government-endorsed initiatives to support market entry
- Peer Learning – City-to-city exchanges to strengthen collaboration
- Project Insights – Knowledge pieces communicating outcomes & lessons
- Global Advocacy – Showcasing ENACTUS at key regional & international events

ICLEI Local Governments for Sustainability

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# ENACT

**Enabling African Cities for Transformative Energy Access**

ENACT is supporting African cities to expand access to **safe, clean,** and **affordable** cooking solutions.

**Save time. Save money. Improve health.**
**Choose clean cooking today.**

UKaid from the British people

Transforming Energy Access

ICLEI
Local Governments for Sustainability

ICLEI
Local Governments for Sustainability

UKaid
from the British people

# Partnerships for Country Impact- Q&A (10 min)

Nadia Algera, the Carbon Trust

5th March 2025

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Transforming Energy Access

# Partnerships for  Regional Impact

Nadia Algera, the Carbon Trust

5th March 2025

CARBON TRUST

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from the British people

Transforming Energy Access

Pacific Community
Communauté du Pacifique

# TEA Delivery Review Workshop

**5th – 6th March 2025**

## “Partnerships for Regional Impacts”

# TEA-P-SPC

# SPC Partnership with UK FCDO:

- SPC signed Amendment Offer Grant of $1M GBP on the 17th June 2024;
- The Partnership will support the delivery of the Framework for Energy Security and Resilience in the Pacific (FESRIP) 2021-2030, Priority A: Energy Policy, Planning and Capacity Development.
- SPC will implement priority actions identified for the region to build the enabling environment for energy transformation, including development and implementation of robust national energy policies and regulations, capacity development in the energy sector and rectifying gender imbalance in the energy sector.

# Transformational Change:

- The Partnership will build enabling environment transformation including:
    - development and implementation of robust national energy policies,
    - capacity development in the energy sector and rectifying gender imbalance in the energy sector.
    - critical data, applied science and technical solutions to overcome some of the greatest challenges faced by members, including the renewable energy transition.

# Regional Impact

The Partnership will reflect Regional Impact thru the implementations of 4 workstreams as follows:

1. **WS1 - Pacific NDC Hub**: an SPC-led initiative that supports PICs to meet their commitments to the Paris Agreement through their NDCs. TEA-P support will focus on energy sector commitments within NDCs, which represent a significant proportion of the PICs NDC focus – 7 Pacific NDCs commit to 100% renewable energy by 2030, and overall renewable energy targets range from 90-100% by 2025-2035. This component enables individual PICs to access demand-led support tailored to their national contexts. This investment demonstrates UK commitment to supporting Pacific-owned and Pacific-led institutions for climate action – a key part of our Pacific Strategy.

2. **WS2 - Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE):** Centre addresses existing barriers for the local private sector and small-scale industries, including mainstreaming renewable energy and energy efficiency solutions into industrial processes and SMEs as well as enabling support for the establishment of a local sustainable energy manufacturing and servicing industry. TEA-P support will focus on local renewable energy business start-up and entrepreneurship support.
3. **WS3 - Office of the Pacific Energy Regulator Alliance (OPERA):** The Office of the Pacific Energy Regulators Alliance provides a platform for energy regulators in the Pacific Islands region to enhance regulatory decision making. OPERA is mandated to promote and support independent energy regulations through policy formulation, relevant capacity building initiatives, and technical and advisory assistance to its members. TEA-P support will promote the independence, professionalism, accountability and visibility of the national utility regulator.

4. **WS4 - Pacific Energy and Gender Strategic Action Plan (PEGSAP):** The main objective of the PEGSAP is to increase women's participation in the clean energy employment market. TEA-P will support regional gender and energy training, development of gender-responsive national energy policies and gender-disaggregated data on energy needs as part of national statistics.

- Through the successful implementation of the 4 Workstreams, could be an opportunities for more partnerships within the Pacific region.

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Access

Pacific
Community
Communauté
du Pacifique

# Thank you very much

# &

# Question & Answers

# Partnerships for Regional Impact- Panel Discussion

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Nadia Algera; Manager, Market Building Lead, Carbon Trust Africa (Moderator)

Robert Aitken; Programme Officer, African Market Mini-grid Acceleration Programme (AMAP), AFDB

Rick Zwaan; Renewable Energy Lead, FCDO Pacific Development Unit

Jem Porcaro; Senior Energy Partnership Specialist (Mission 300), World Bank

Onosai Heremoni Suapaia-Ah Hoy; Energy Access Specialist, SPC


CARBON TRUST

THE WORLD BANK

Foreign, Commonwealth & Development Office

Pacific Community
Communauté du Pacifique

# Break-

Session will resume at 14:50 GMT

Online participants, please join back at 15:45 GMT for the Partnerships Towards Scale Session

# Supporting Services: Enhancing Inclusion and Managing Risk

Gabrielle Coeuille, The Carbon Trust

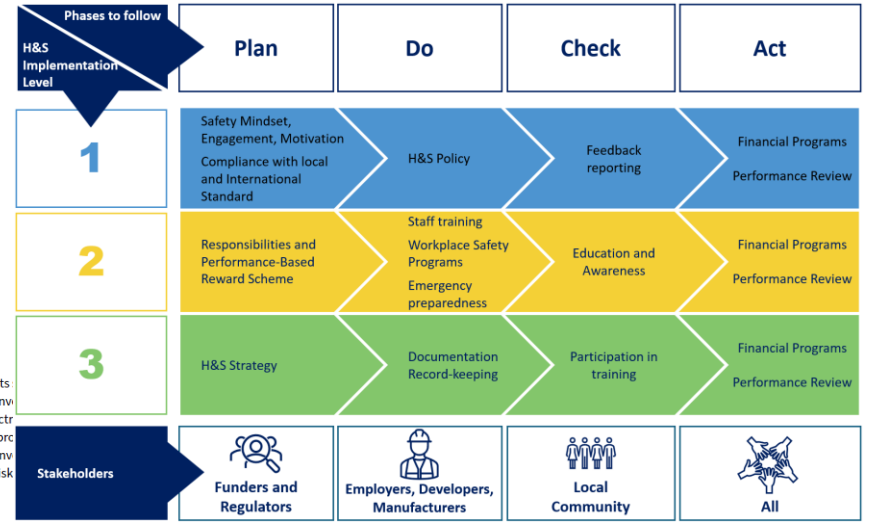
5th March 2025

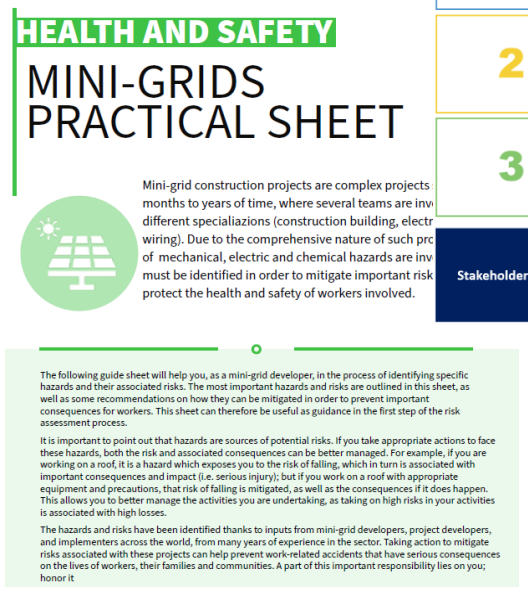
# TEA Health and Safety

With delivery support from **Trama TecnoAmbiental** and **Consultoria Ecos,** TEA commissioned the H&S Support Service Design Phase (TEA H&S) to better deliver off-grid energy access solutions in a way that promotes and encourages H&S best practice, thus reducing the likelihood of accidents and injuries.

## Project Activities

- Establishment of H&S Steering Committee
- Research and Literature Review
- Stakeholder and Beneficiary Interviews
- Site Visits
- TEA Portfolio Review and Analysis*
  - H&S Framework and Risk Heatmap
  - H&S Strategy and Recommendations Report
  - State of the Sector Report
  - Practical guide for Project Implementors





HEALTH AND SAFETY

MINI-GRIDS PRACTICAL SHEET

Mini-grid construction projects are complex projects
months to years of time, where several teams are inv
different specialiazions (construction building, electr
wiring). Due to the comprehensive nature of such pro
of mechanical, electric and chemical hazards are inv
must be identified in order to mitigate important risk
protect the health and safety of workers involved.

The following guide sheet will help you, as a mini-grid developer, in the process of identifying specific hazards and their associated risks. The most important hazards and risks are outlined in this sheet, as well as some recommendations on how they can be mitigated in order to prevent important consequences for workers. This sheet can therefore be useful as guidance in the first step of the risk assessment process.

It is important to point out that hazards are sources of potential risks. If you take appropriate actions to face these hazards, both the risk and associated consequences can be better managed. For example, if you are working on a roof, it is a hazard which exposes you to the risk of falling, which in turn is associated with important consequences and impact (i.e. serious injury); but if you work on a roof with appropriate equipment and precautions, that risk of falling is mitigated, as well as the consequences if it does happen. This allows you to better manage the activities you are undertaking, as taking on high risks in your activities is associated with high losses.

The hazards and risks have been identified thanks to inputs from mini-grid developers, project developers, and implementers across the world, from many years of experience in the sector. Taking action to mitigate risks associated with these projects can help prevent work-related accidents that have serious consequences on the lives of workers, their families and communities. A part of this important responsibility lies on you; honor it

*All H&S resources are currently available on the TEA Teams sites. Public deliverables will be shared on TEA website.

# State of the Sector: Systemic & Operational Challenges

Transforming Energy Access

## Systemic Barriers & Operational Gaps: Undermining Safety in Energy Access

| | |
|---|---|
| National Standards and H&S Regulatory Challenges | Absence of robust national standards or specific regulations |
| Safety-Oriented Culture | Prioritizing productivity over safety, cultural biases, and lack of awareness lead to risky behaviors and practices |
| Limited Risks Assessment | Overlooked or underestimated hazards result in unpreparedness and increased accidents. |
| External Influence on the H&S System | Negligence and Outdated Practices<br>Difficulty with Compliance |
| Customer Safety and Repairs | Scarcity of qualified technicians and substandard equipment lead to unsafe repairs and potential hazards for end-users. |
| Accountability Gaps | Inconsistent safety standards for daily workers and subcontractors increase their risk of accidents and injuries. |

# State of the Sector: Resource & Capacity Constraints

Transforming Energy Access

## Resource & Capacity Gaps: Obstacles to Implementing H&S Practices

### Lack of resources

| | |
|---|---|
| Time | Competing priorities often leave insufficient time for H&S training, implementation, and monitoring. |
| Financial | Limited budgets hinder investment in H&S training, equipment, personnel, and ongoing maintenance, impacting compliance |
| Human Resource | Lack of dedicated H&S staff compromises the implementation and enforcement of safety measures. |
| Knowledge and Experience | Absence of accessible tools, guidelines, and experienced personnel makes navigating H&S requirements challenging. |
| Skilled Labor | Difficulty finding qualified workers with H&S knowledge, especially in remote areas, affects compliance. |
| Safety Equipment Constraints | Cost and availability of proper safety equipment can create hurdles, leading to delays in maintenance and operations. |
| End-of-Life Waste Management | Improper disposal of hazardous materials poses health and environmental risks. |

# H&S Energy Access Framework: Decision trees

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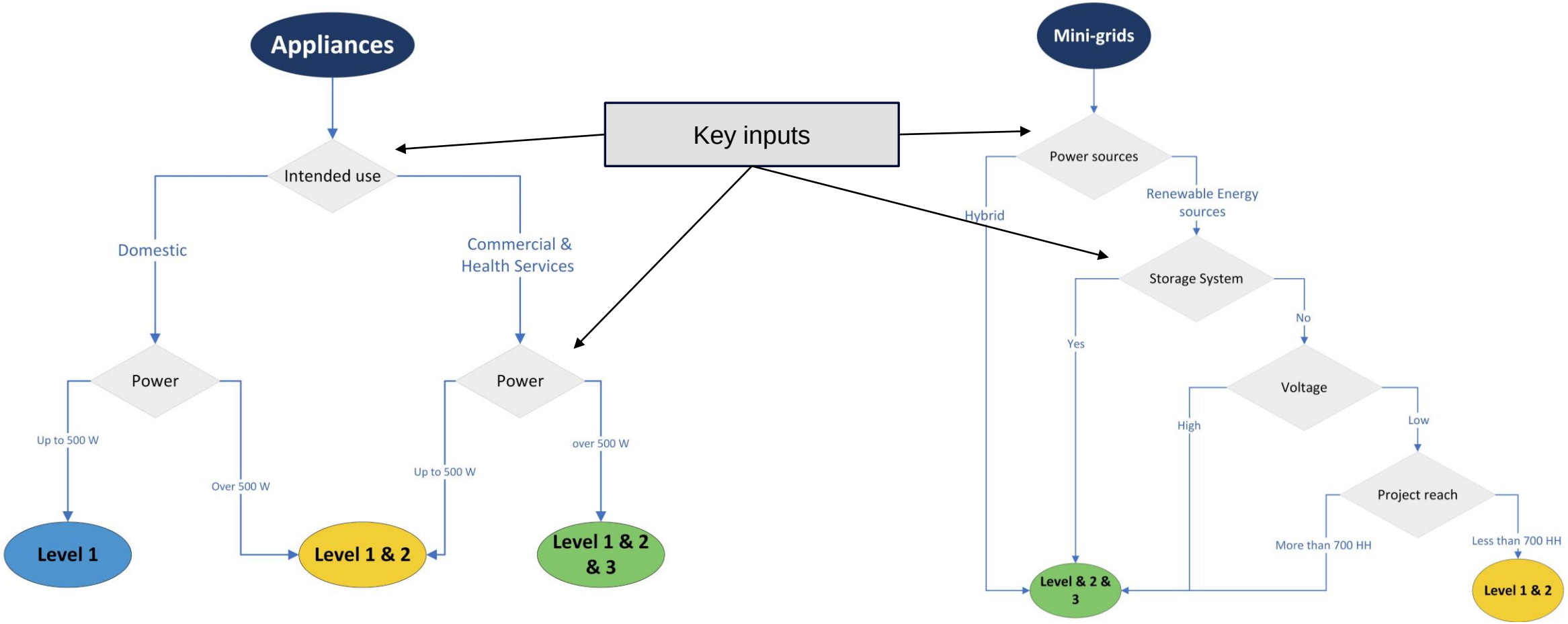
## Clarity in Complexity: Decision Trees for Strategic H&S Planning



# Game Changers: Driving Impact in H&S

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Unveiling the Proposals That Will Make a Difference

| | | | |
|---|---|---|---|
| Energy Access H&S – Community of Practice (CoP) | Energy Access H&S Database | Regional Collaboration: Establishing Thematic Health & Safety (H&S) Working Groups for Energy Access | Alleviating H&S Costs Across Project Lifecycles |
| Train-the-Trainer (ToT) Program for Sustainable Capacity Building | H&S Training and Learning Modules | Enhancing Electrical Mobility Safety and Integration | Integrating H&S Criteria into Energy Access Project Selection |
| Targeted Funding for Dedicated H&S Personnel | TEA Platform Technical Assistance and Pilot Project for Establishing Minimum H&S Standards | Mini-Grid Safety Excellence – Task Force | Empowering Energy Access Consumer Protection |

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# Partnerships Towards Scale

Jonathan Clowes, The Carbon Trust

5th March 2025

CARBON TRUST

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Transforming Energy Access

# Partnerships Towards Scale- Panel Discussion


Jonathan Clowes, The Carbon Trust

Nicholas Jones, Shell Foundation

Nico Tyabji, Mirova

Sandra Halilovic, Acumen


CARBON TRUST

Shell Foundation

mirova
Investing in sustainability

Acumen

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Energy
Access

# Closing Reflections Roundtable

Steven Hunt, FCDO

Foreign, Commonwealth
& Development Office


# Transforming Energy Access Delivery Review Workshop 2025

6th March, 2025

# People: Enabling Transformations

| | | | | | |
|---|---|---|---|---|---|
| Session Introduction | Chevening Scholar presentation | Chevening Scholar presentation | TEA Learning Partnership presentation | Global Distributors Collective presentation | Panel Discussion |

# The people behind the numbers

UKaid from the British people

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## Key Facts

**675 million**
People lack access to electricity (9% of global population)
SDG7 Tracking Report 2023

**Over 50%**
Of people in Sub-Saharan Africa lack access to electricity
SDG7 Tracking Report 2023

**2.3 billion**
People lack access to clean cooking (31% of global population)
SDG7 Tracking Report 2023

**3.2 million**
People die each year due to the lack of clean cooking
SDG7 Tracking Report 2022

**£1 billion**
Committed by UK under Ayrton Fund for clean energy innovation
UK Gov 2019

# Uchechukwu Okoro

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## Education

**University of Nigeria**
*B.Sc. Geology (2012)*

**University of Dundee**
*M.Sc. Sustainability and Renewables (2025)*

## Work Experience

**Off-grid Energy Advisor - NPSP**
*2022 - 2024*

**Head of Operations**
*2021 - 2022*

**Energy Analyst**
*2019 - 2021*



## Career to date

- Licensed engineer, a power sector expert, 17 years of experience in consulting, construction and manufacturing serving international development agencies, Ethiopian government, and private sector, focusing on off-grid energy, clean cooking, grid extension, energy efficiency, lighting, and demand-side energy management.
- Advocate for women in the energy sector, initiated and served as the first president of the Ethiopian women in energy Association (EWiEn).
- spearheaded a women solar business incubation program,

## Year in the UK

- Energy and Environmental technology and economics, City, University of London
- Provide me global perspective of the local problems and solutions
- Top 10 finalist at city venture, challenging

## Return to Ethiopia

Started new initiative (PUE, solar powered milk cooling), energy education with EEU, research and advisory of EV
Led the EWiEn event , posts and articles


Filagot Tesfaye, Founder and managing director, On Energy Consult

ON ENERGY CONSULT

EWiEn

Transforming Energy Access
LEARNING PARTNERSHIP

# TEA-LP graduates making an impact in their countries

Leslie Ashburner
6 March 2025

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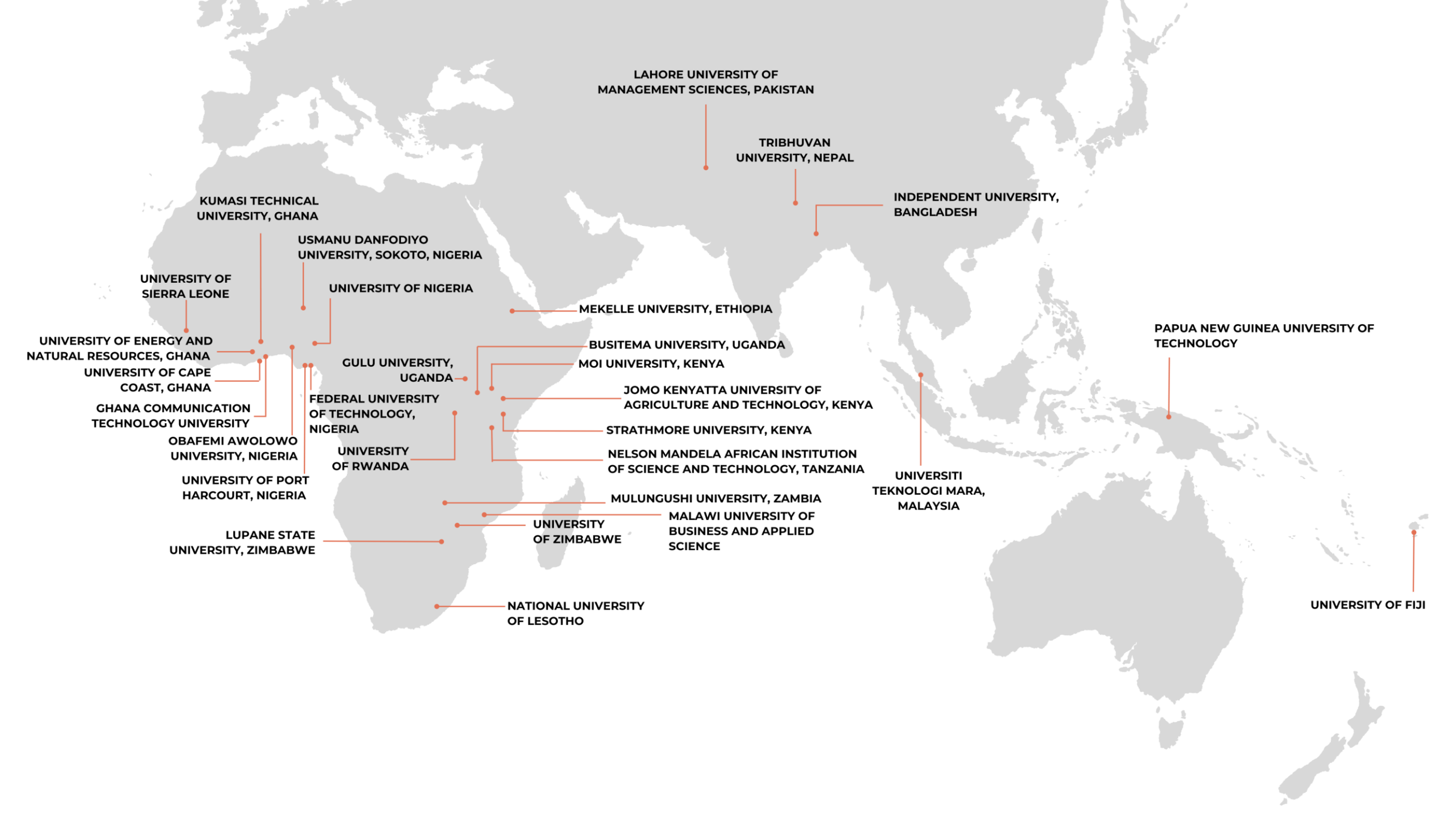

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES, PAKISTAN
TRIBHUVAN UNIVERSITY, NEPAL
INDEPENDENT UNIVERSITY, BANGLADESH
KUMASI TECHNICAL UNIVERSITY, GHANA
USMANU DANFODIYO UNIVERSITY, SOKOTO, NIGERIA
UNIVERSITY OF SIERRA LEONE
UNIVERSITY OF NIGERIA
MEKELLE UNIVERSITY, ETHIOPIA
UNIVERSITY OF ENERGY AND NATURAL RESOURCES, GHANA
BUSITEMA UNIVERSITY, UGANDA
UNIVERSITY OF CAPE COAST, GHANA
GULU UNIVERSITY, UGANDA
MOI UNIVERSITY, KENYA
GHANA COMMUNICATION TECHNOLOGY UNIVERSITY
FEDERAL UNIVERSITY OF TECHNOLOGY, NIGERIA
JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, KENYA
OBAFEMI AWOLOWO UNIVERSITY, NIGERIA
STRATHMORE UNIVERSITY, KENYA
UNIVERSITY OF RWANDA
NELSON MANDELA AFRICAN INSTITUTION OF SCIENCE AND TECHNOLOGY, TANZANIA
UNIVERSITY OF PORT HARCOURT, NIGERIA
MULUNGUSHI UNIVERSITY, ZAMBIA
MALAWI UNIVERSITY OF BUSINESS AND APPLIED SCIENCE
UNIVERSITY OF ZIMBABWE
LUPANE STATE UNIVERSITY, ZIMBABWE
NATIONAL UNIVERSITY OF LESOTHO
PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
UNIVERSITI TEKNOLOGI MARA, MALAYSIA
UNIVERSITY OF FIJI


# Sebota Mokeke

***MSc in Sustainable Energy***

Aug 2018 – March 2020

- Masters' thesis published by Elsevier2021
- Working at National University of Lesotho
- Modelled the grid integration of the **Hirundu Wind Energy** project
- Currently designing PV charging stations for **EVs for the Mazero** project


Contents lists available at ScienceDirect

Electric Power Systems Research

journal homepage: www.elsevier.com/locate/epsr

The impact of intermittent renewable energy generators on Lesotho national electricity grid

Sebota Mokeke, Leboli Z. Thamae *

*Energy Research Centre, Department of Physics and Electronics, National University of Lesotho, P.O. Roma 180, Lesotho*

# Anne Wacera Wambugu

***MSc in Sustainable Energy Transitions***

March 2022 – June 2024

Previous to doing the MSc, Anne worked as a manager at the SERC:

- Managing training and testing activities on solar photovoltaic systems and energy efficiency
- Developing standards and quality assurance frameworks

- Currently, working at Strathmore University, Head of Electrification and Electricity Access

- Founder of SunSafe , a start up company, with an app to simplify the sizing and configuration of Component Based SolarSystems,
- SunSafe received a grant from PREO

*Technicians testing the Sunsafe app*

# Benneth Oyinna

***MSc in Energy Access and Renewable Energy***

LISD REED/TEA-LP Scholarship

Oct 2022 – Nov 2024

- **Lectures on Geographical Information Systems (GIS)** for masters' students at UniPort
- **Employed as a Planning Engineer for hydropower** at Nigerian Electricity Supply Corporation.
- **Published and presented papers on GIS** for hybrid renewable energy systems
- Founded the Centre for Renewable Energy Research Jos
- Co-founded the Sustainability Academy, a capacity-building platform for sustainability studies, and
- support a 2MW Solar Mini-grid project at Ugwuoba, Oji-River LGA, Enugu State, by Integrated Africa Power Ltd.
- secured admission for a PhD in Distributed Renewable Energy Systems at the University of Aberdeen starting in October 2025, and I am currently seeking funding for the program.

# More outstanding graduates

## Alfred Ndorbele

- LISD/TEA-LP scholarship
- Dissertation on Green Hydrogen
- Energy Planning InternEnergy Planning Intern at SEforALL
- Accepted into a Masters degree at IFP School, France

## Isaace Ngedu

- Founder of Nio-Tech Energy and Digital Technologies

## Anthony Akpasoh Co-Founder of Tovero Energy

- Africa International Conference on Clean Energy and Energy Storage (AICCEES)

## Ntsebo Sephelane

- Employed at IRENA

## Desire Mussa

- Selected to attend AICCEES in Nigeria
- Dissertation published in Scientific.net – using Solar UV energy for water disinfection
- Established a Smart Village Student branch of Institute of Electrical and Electronics Engineers (IEEE)

## Elizabeth Banda

- Project manager at United Purpose/ Self Help Africa

## Abraham Mezgebe

- From MU to Moi University to Norwegian University of Life Sciences

# GDC STORIES OF IMPACT

Global Distributors Collective

# GDC MEMBERS

Global Distributors Collective

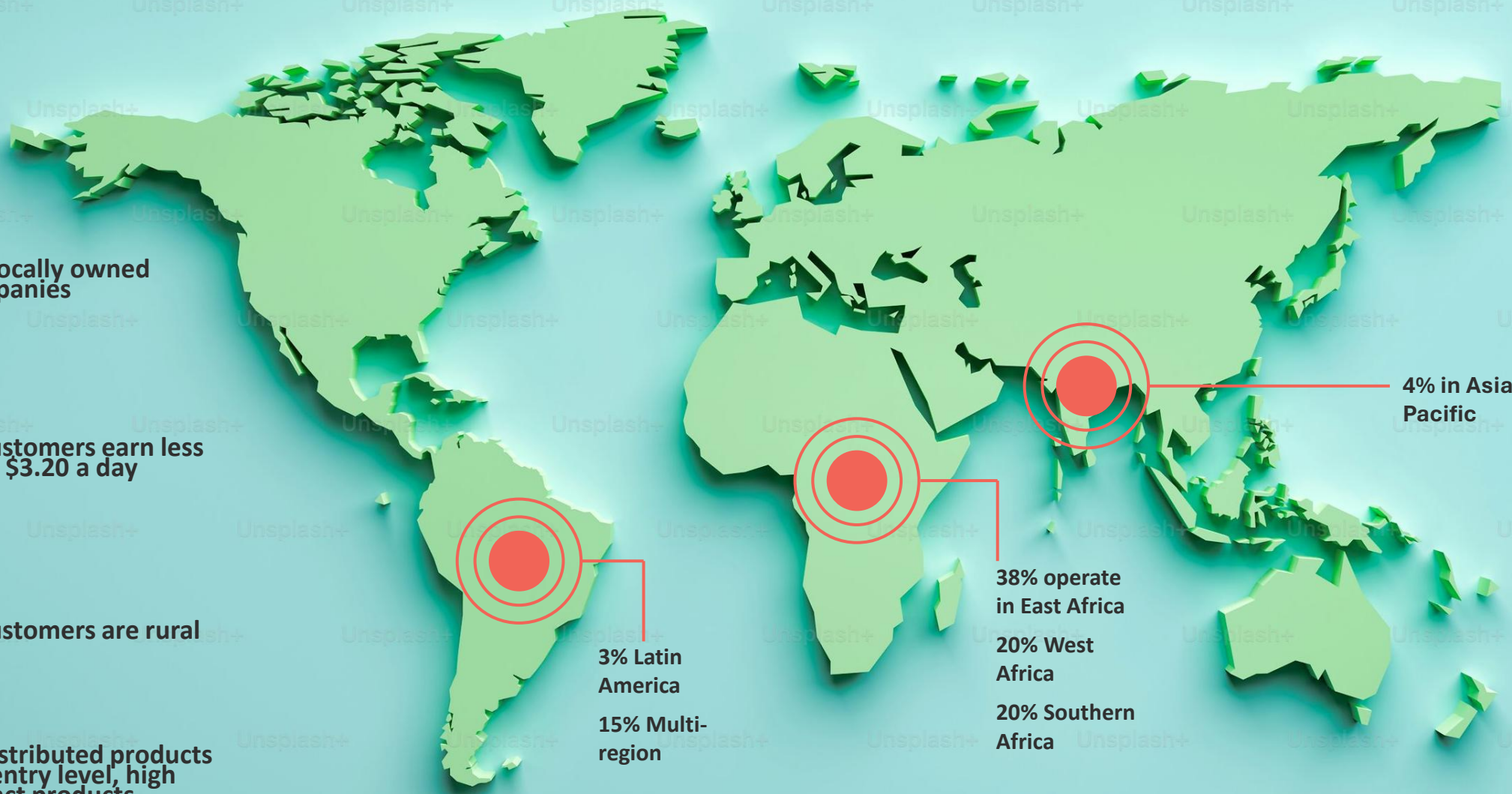
**44m**
number of people reached by GDC members

**88%** are locally owned companies

**67%** of customers earn less than $3.20 a day

**78%** of customers are rural

**50%** of distributed products are entry level, high impact products




# GENDER CHAMPIONS

**47%**
**of GDC members are women led**

**56%**
**of staff at LMDs senior – and mid-management are women**

**57%**
**of GDC member sales agents are women**

**66%**
**of customers are women**


# GDC INITIATIVES

## BENCHMARKING KPIS FOR LMDS

- 23 Key Performance Indicators (KPIs)
- Value Proposition / Sales and Marketing / Backend Infrastructure
- Report and tool viewed over 2100 times

## INNOVATION & TRAINING

- 67 members trained in 2024
- 81% of members stated that GDC had increased their knowledge and capacity to do their job.
- Since 2019 ran three innovation challenges supporting 22 companies

## INVESTMENT CATALYST FACILITY

- Access to finance number one challenge for members
- Aims to provide debt for small ticket size transactions
- Addressing barriers and reducing risk to borrowers and lenders

# INNOVATION AT THE GDC

**Inexpensive ‘rent-a-shelf’ solar retail kiosks**

- Frugal designed solar kiosks, costing just a few hundred dollars. Built by the community, for the community, using local materials = sustainable model
- Local women entrepreneurs (chamas) sell their own agri-produce, and other last mile distributors can ‘rent-a-shelf’ to sell products such as solar lanterns and fast-moving consumer goods.
- GDC provided £10k seed investment in 2019, since then 10 kiosks have scaled to 40 kiosks in 5 regions of Kenya
- 30 Kiosks are now equipped with solar refrigerators


ECOBORA
makaa akaa
Empowering lives

# Investment Catalyst Facility

- Founded in 2021 in Uganda
- 100% locally-owned; 100% women-owned and led.
- Last mile distributor of pico lanterns, phone charging lights, solar home systems and stand-alone PV systems.
- 100% cash sales until April 2024; credit-based sales – PAYGO was rolled out in April 2024
- Target customers are refugees and people living in hard-to-reach areas
- 2024 sales revenue $81k; compared to 2023 $30k - $50k range;
- Additional revenue from EEP Africa (Grant), GIZ BDS (Grant), EnDev / GIZ RBF and UECCC- EASP project RBF
- Raised debt from Charm Impact £75k in July 2024; local bank $20k (2022 – 2023)
- Require grant to purchase a CRM system and for logistics

**Harriet Nongoola**
CEO Fena Solar

# Panel Discussion

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Transforming Energy Access

**Patricia Maina [Chair]**

Director of Partnerships

African Management Institute

**Deisy Pinto**

2024/25 Chevening TEA Scholar

City, University of London

**Lolade Alonge**

2025 Future Female Leader in Energy graduate

Global Business Communications and Projects Manager

Koolboks

**Samuel Bunnya**

Projects Coordinator

African Forum for Utility Regulators (AFUR)

**Shveta Sarin**

Business Development Director

Shell Foundation

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# Technology: Breakthrough Agendas

Angus Vantoch-Wood, TEA Programme Lead
Carbon Trust

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ENERGY
ACCESS TEAM

# Breakthrough Innovations

ZE-Gen.

James Coombs OBrien, Innovate UK

06/03/2025

James.coombsobrien@iuk.ukri.org

Innovate UK

UKaid from the British people | AYRTON FUND

# Zero Emission Generators

Advance renewable energy-based alternatives in countries that currently depend on fossil-fuelled generators.

## ZE-Gen programme (TEA) – Tech accelerators

- Demonstrator 24/25 - 2 projects, 25/26 - 6 projects
- Accelerator 24/25 - 20 projects, 25/26 – 5 projects

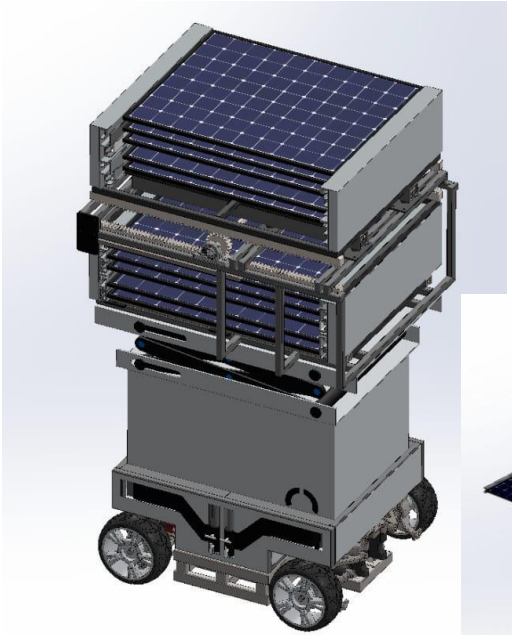
## Ayrton Challenge

- also bridge into open calls (not directly funded by ZE-Gen)

Use cases for gensets are diverse and so are the clean alternatives

# MobACE-β - Smart Mobile Solar Generator with Rentable Energy Capsules

- **ZE-Gen Accelerator phase 1** – progressed to **phase 2**
- Nigerian market
- Mobile, Li-ion battery rental, monitoring
- Market – MSMEs creative industries
- Moniepoint - uninterrupted digital transactions
- TRL 4 progressing to TRL 7

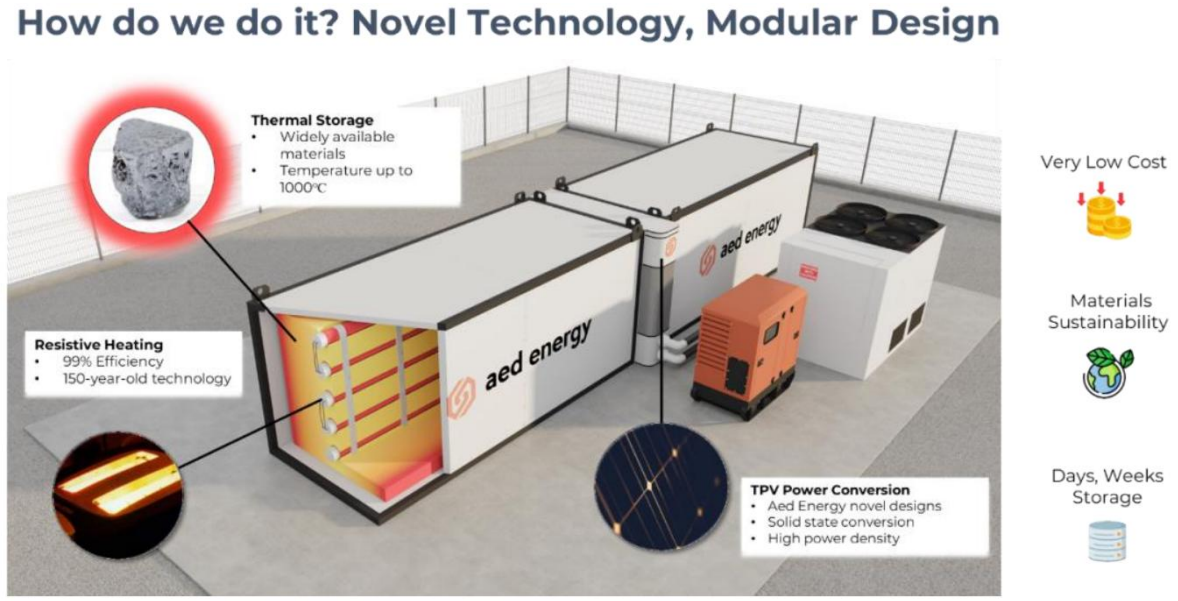


# Thermophotovoltaic Zero-Emission Generators

## ZE-Gen phase 1 accelerator project

## Smart Energy and Storage Demonstrators

- 25/26: 75 kW solar array, 10 kWh thermal storage demonstrator
- Nigerian market
- All solid-state thermal battery
- Large stationary storage, low CAPEX and OPEX



# UK Battery Energy Storage & Battery Pack Manufacturer

- Two Energy Catalyst projects, Nigeria
- Opening an Africa office this year
- 2nd life batteries, Sodium ion, portable, local manufacturing
- Disaster response, construction, energy access
- Encompass several Ayrton challenges




## ZE-Gen Demonstrator 24/25 - Cote d'Ivoire and Fiji

- Cutting edge hybrid wind and solar generation and storage
- Bridging into new use cases

## Energy in a Box

- Six community-level workshops were held to build 15-watt turbines.
- Five 1.5 kW turbines were installed in pilot villages
- Follow on funding from FCDO Cote D'Ivoire

# Energy Catalyst Round 11: Early and Mid Stage

UK registered organisations can apply for a share of up to **£4.5 million** in total across the two stages of this competition to create new or improved clean energy access in sub-Saharan Africa, South Asia or the Indo-Pacific regions.

Applications can be submitted:**12th March 2025 – 30th April 2025**

Your project must:

- have total costs of between £50,000 and £300,000 for early stage and up to £1.5 million for mid stage
- start by 1 September 2025 and end by 31 August 2026 for early stage and end by 31 March 2027 for mid stage
- provide a just transition to ensure gender equality, disability and social inclusion (GEDSI)
- help deliver innovation for clean energy access in sub-Saharan Africa, South Asia, or the Indo-Pacific
- include a local partner
- involve at least one micro, small or medium sized enterprise (SME) from anywhere in the world

Department for Energy Security & Net Zero

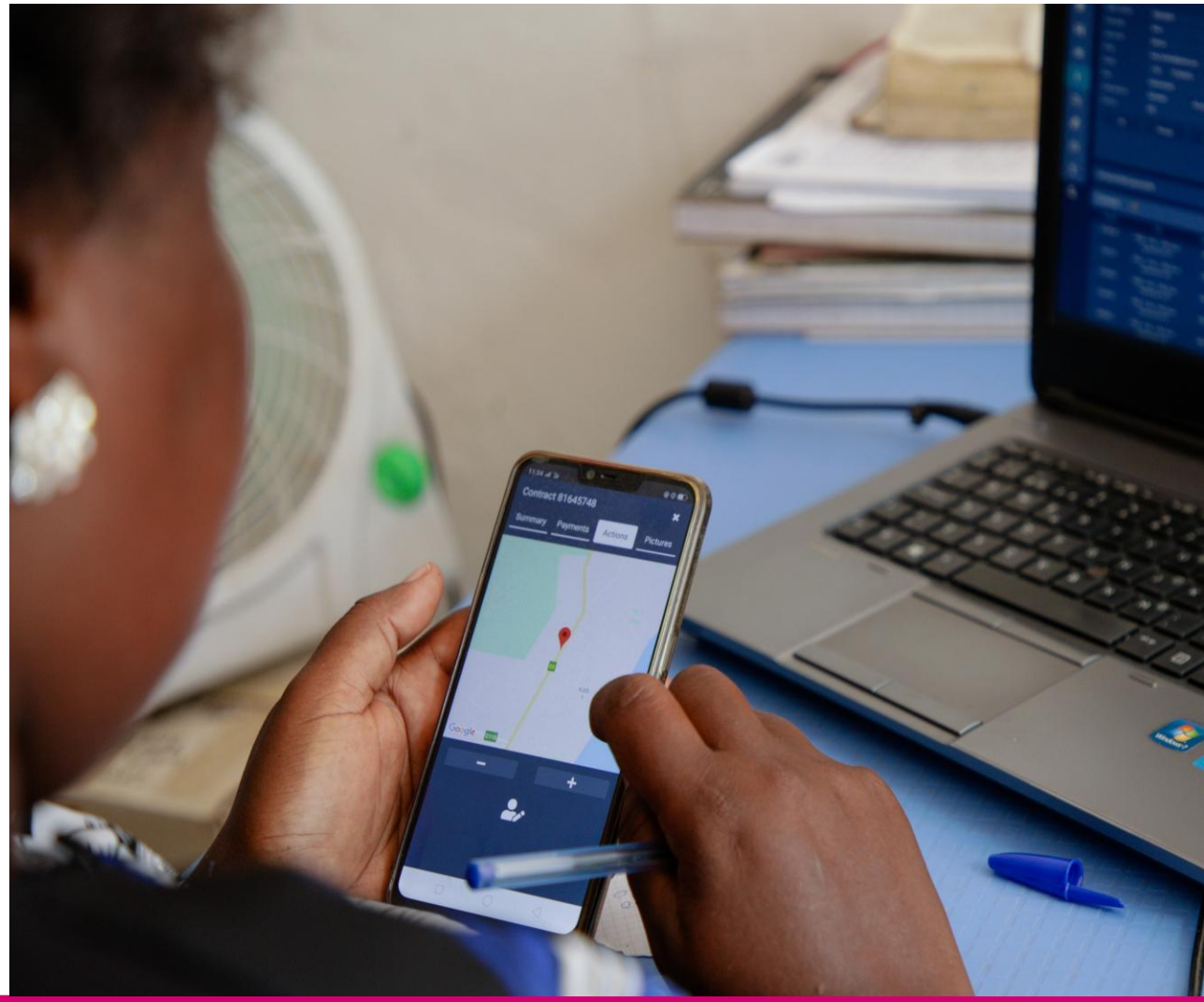
# Contracts for Innovation: Clean Energy Demonstrators

Organisations can apply for a share of up to **£5 million** to develop innovative clean energy technologies through leveraging local partnerships in an ODA eligible country.

Applications can be submitted:**12th March 2025 – 30th April 2025**

Your project must:

- start on 1 July 2025 and end by 31 March 2027
- last between 12 months and 21 months
- have total costs of between £500,000 and £1.5 million, VAT inclusive
- involve demonstrating or field testing of your innovation in an ODA eligible country for a minimum of three months duration, with in country users in real life operating conditions
- clearly demonstrate local partnerships, for example with subcontractors who are based in the focus ODA eligible country



Department for Energy Security & Net Zero

ENERGY
ACCESS TEAM

# Thank you

James.coombsobrien@iuk.ukri.org
Energycatalyst@iuk.ukri.org
ZEGEN@iuk.ukri.org

UKRI Innovate UK

UKaid from the British people | AYRTON FUND


# Technology: Breakthrough Agendas
# Energy Storage

Andrew Deadman – The Faraday Institution

6th March 2025

THE FARADAY INSTITUTION

# Faraday Institution Seed Projects

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Transforming Energy Access

New project

**ReSTOR**: Designing recyclable flow batteries for locally managed energy storage in developing countries

University of Strathclyde with StorTera

UKaid | AYRTON FUND

THE FARADAY INSTITUTION

# Faraday Institution Seed Projects

UKaid from the British people
Transforming Energy Access

New project

## NaBEDA: Sodium-ion batteries for interchangeable e-mobility and stationary storage in Africa

University of Sheffield with Mobile Power

UKaid | AYRTON FUND

THE FARADAY INSTITUTION

# Faraday Institution Seed Projects

UKaid from the British people

Transforming Energy Access

New project

**SUSLEAD**: Sustainable lead flow battery for enabling accessible renewable energy

Southampton University


UKaid from the British people | AYRTON FUND

THE FARADAY INSTITUTION

UKaid from the British people

Transforming Energy Access

# Ayrton Clean Hydrogen Challenge

Fiona Landy, Senior Manager, The Carbon Trust

CARBON TRUST

# Ayrton Clean Hydrogen Challenge - Overview

# Project Objectives

| | WP1 – Literature Review | WP2 – Briefing Note | WP3 – Implementation Plan |
|---|---|---|---|
| **Aim** | Provide an overview of the clean hydrogen sector in the context of energy access transitioning to industrial scale accounting for innovative technologies, applications and stakeholders. | Create a state of the sector briefing note for publication, covering the areas identified in WP1. | Identify a preferred partnership or consortium creation approach for leadership of the Ayrton Clean Hydrogen Challenge fund. |
| **Approach and activities** | • Review previous materials, e.g., UNIDO report.<br>• Identify and map key academic and industry research.<br>• Identify and map key stakeholders and networks.<br>• Review novel technologies and applications<br>• Review international policies, funding and programmes.<br>• Conduct interviews.<br>• Distribute questionnaire. | • Provide in depth case studies into with recommendations of where and how hydrogen technologies **could** be utilised from energy access transitioning to industrial scale.<br>• Provide a detailed state of the sector briefing note pdf based on the interview findings, literature review and stakeholder map. | • Write a scope of lead delivery partner, outlining work for the Ayrton Clean Hydrogen Challenge - the key functions, representation and optimum configuration.<br>• Write-up of analysis and recommendations into a clear and presentable PowerPoint presentation.<br>• Write-up of a detailed scope of work into a clear and presentable PowerPoint presentation and/or report pdf. |
| **Outputs** | D1 Workshop and presentation on findings. | D2a 10–15-page briefing note.<br>D2b Interactive stakeholder/systems map | D3 Workshop and presentation on findings.<br>D4 Scope of work for proposed Clean Hydrogen Challenge programme delivery partner. |

# Themes identified

**THEME 1: Opportunities**

**THEME 2: Barriers**

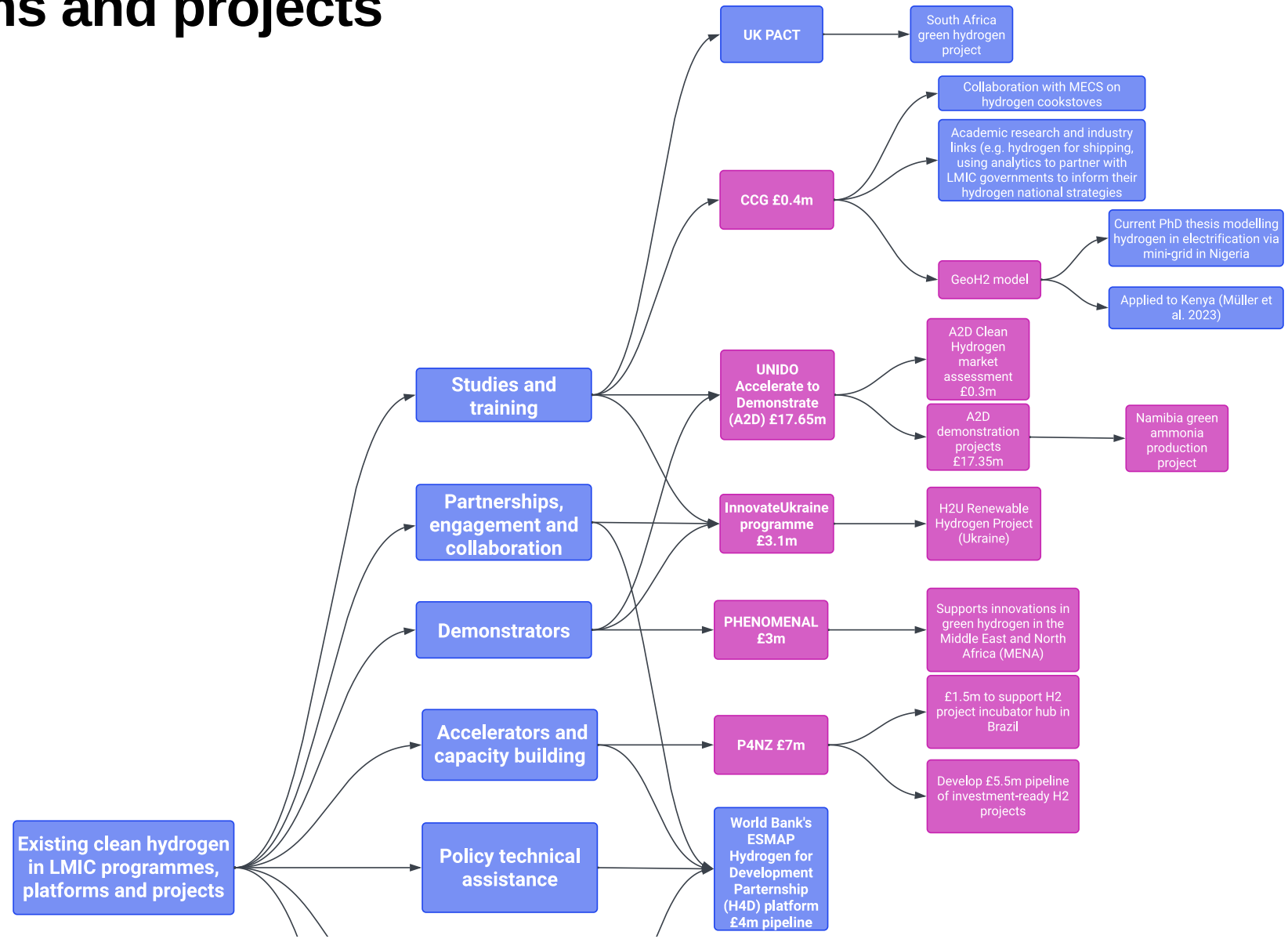
**THEME 3: Research/implementation gaps**

**THEME 4: Key literature**

**THEME 5: Existing clean hydrogen in LMIC programmes, platforms and projects**

*Applications and stakeholders identified in the interviews and questionnaire are captured later in this presentation and Kumu Stakeholder Map respectively.*

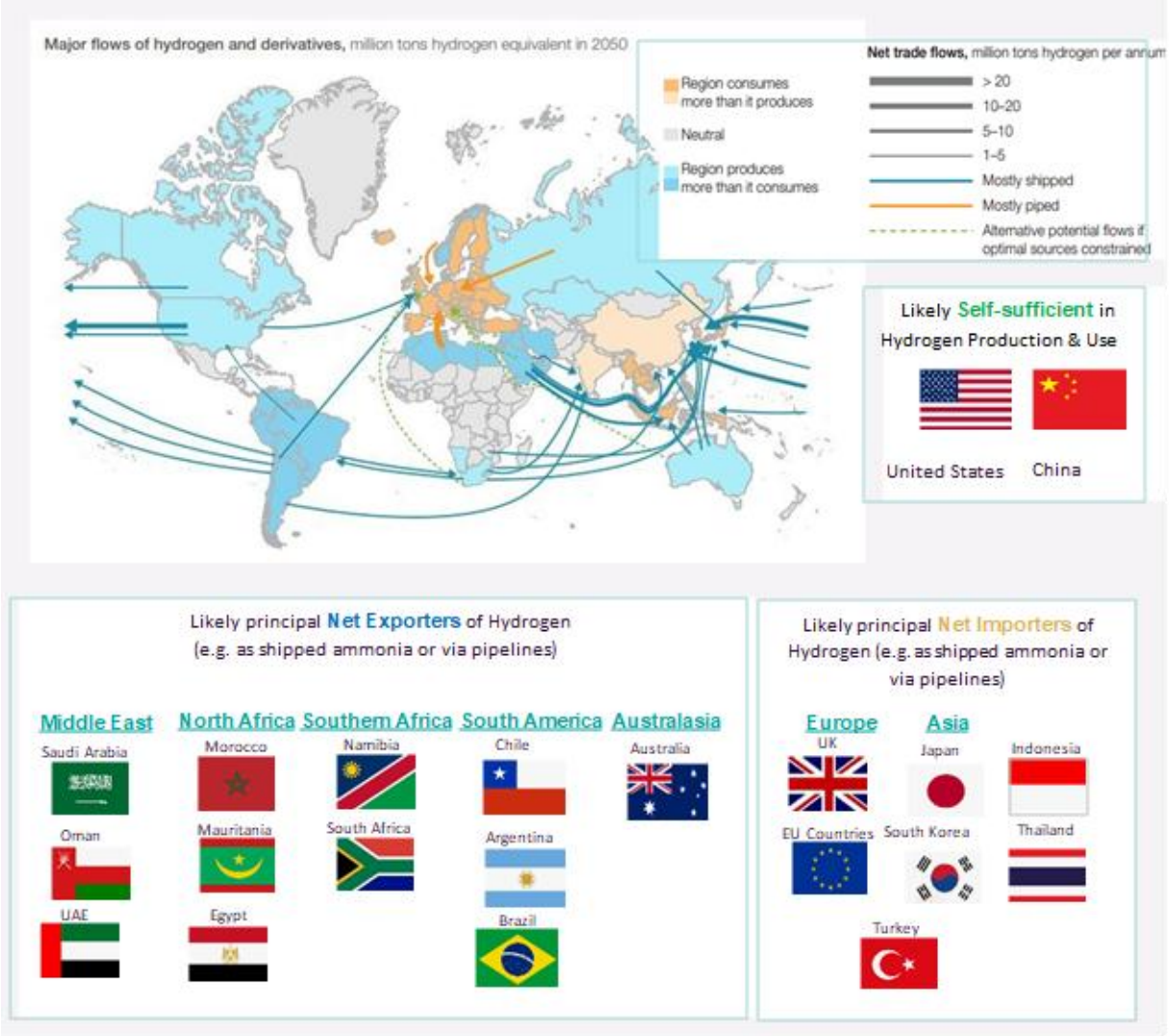
# THEME 5: Existing clean hydrogen in LMIC programmes, platforms and projects




AYRTON FUND

# Opportunities

# Global Clean Hydrogen




**Key points:**

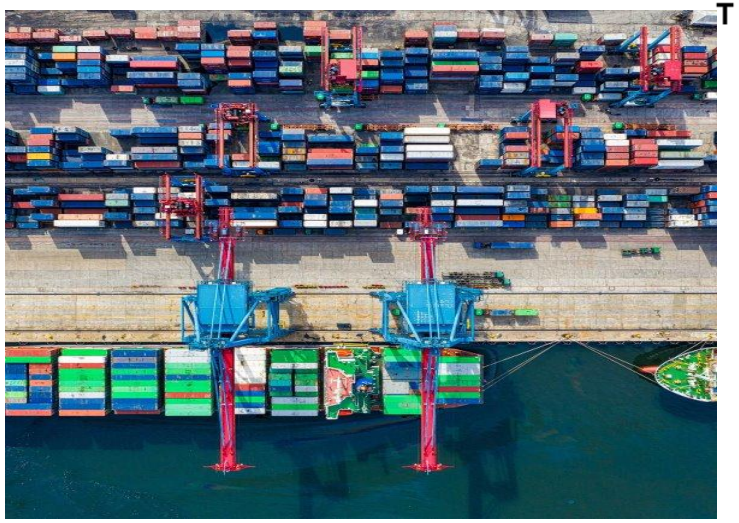
- Analysis by The Hydrogen Council/McKinsey & Co. forecasts that by 2050, there are likely to be more than 40 different trade routes with capacity of >1m MT per year.
- The map shows forecasted net exporters of hydrogen in blue and net importers in beige.
- The Middle East is likely to emerge as a hydrogen export powerhouse, particularly with extensive and large trade flows to Asia that primarily comprise shipped hydrogen, as well as ammonia and synthetic kerosene.
- Europe will require material hydrogen imports, opening up significant piped imports, particularly of North African renewable hydrogen.
- Growing demand for green steel and synthetic kerosene in Asia and Europe allows South American exports to scale.
- Australian exports diversify as the country increasingly becomes a mainstay exporter of ammonia to the rest of Asia, with North America also a significant ammonia exporter.

Source – Hydrogen Council/McKinsey Report – Global Hydrogen Flows: Hydrogen Trade as a key enabler for decarbonisation 2022

## Green Ammonia Fertiliser - Paraguay

## Green Ammonia Plant - Kenya Nut Co.


## E-fuels



CARBON TRUST

## Cheapest H2 – H2 Chile

## Clean Transport - India


## Green Hydrogen Village - Namibia

# Developing countries benefit from the clean hydrogen economy, decarbonising hard to abate sectors and unlocking long duration energy storage.

Renewable Electricity Farm East Africa

## Thank you for listening

TEA@sunrise

# NEXT GENERATION SOLAR (NGS)

## Break on Through To a Better Side

UKaid from the British people

Transforming Energy Access

Swansea University Prifysgol Abertawe

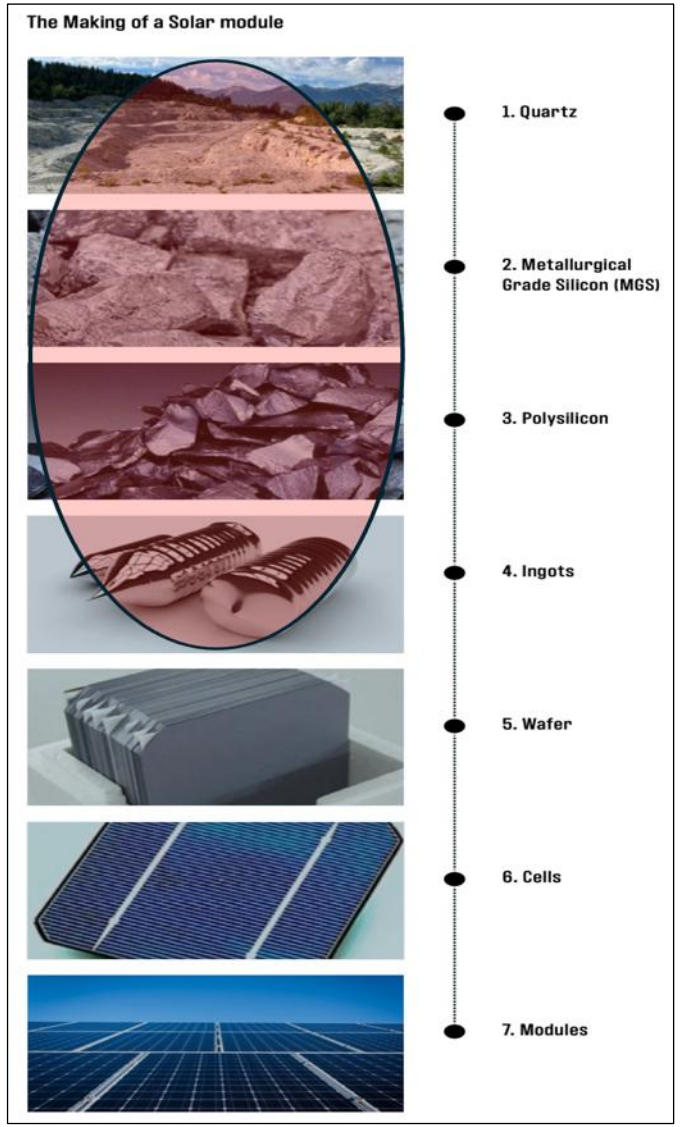
# HUMAN RIGHTS

Forced labour concerns in the Xinjiang Uyghur Autonomous Region

- Raw material production
- Coal mining and power
- Solar-grade polysilicon
- Aluminium
- Glass

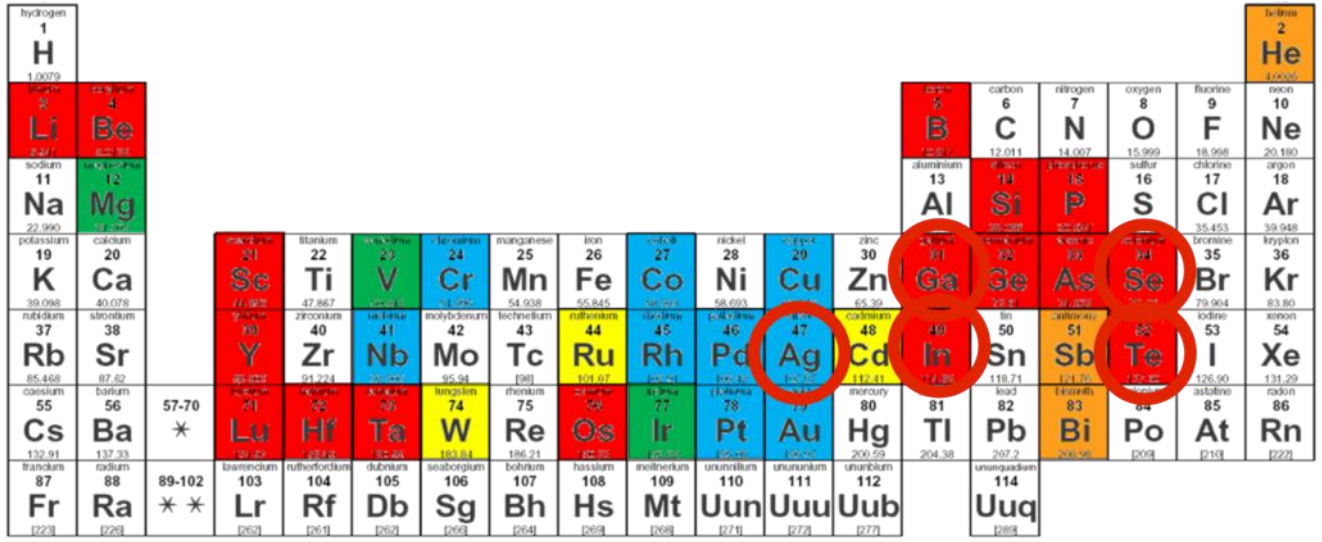
Beyond the XUAR

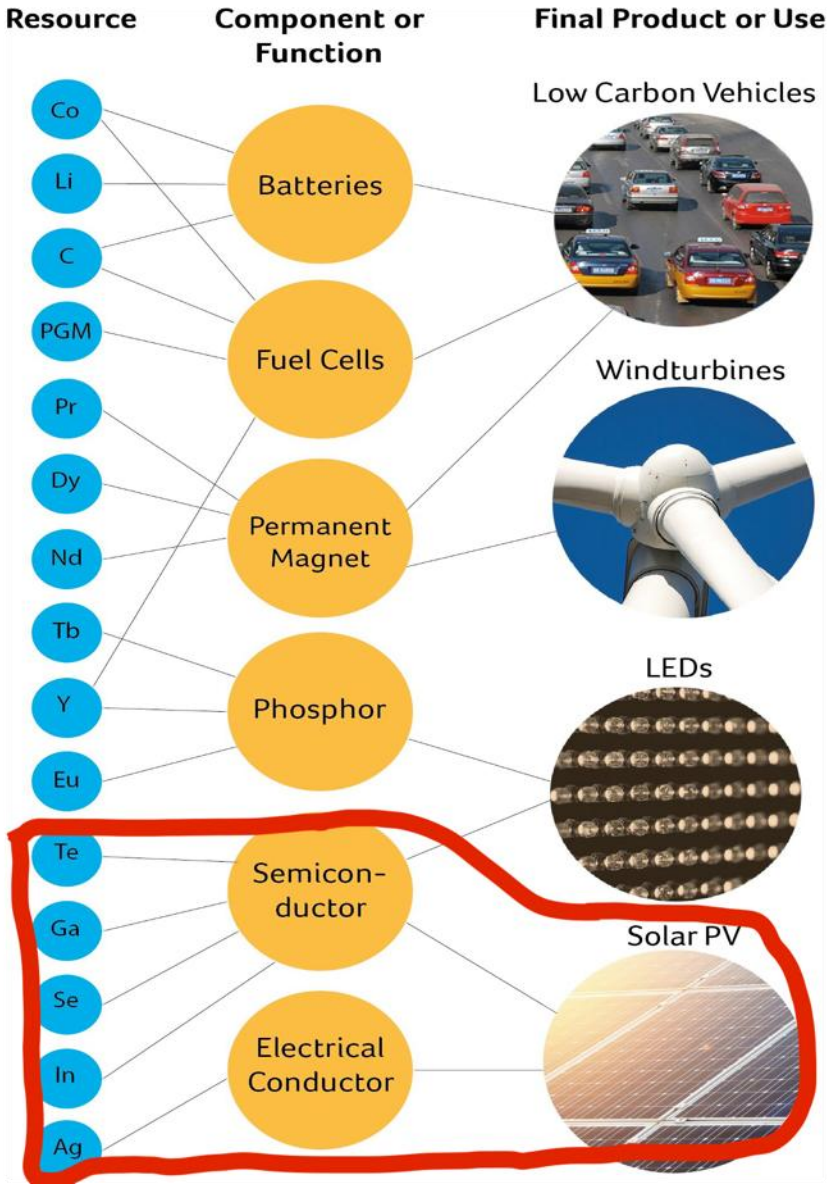
- Sand grabs, forced displacement

# CRITICAL RAW MATERIALS

PV relies on 40% of the global tellurium supply, 15% of the silver supply, a large portion of semiconductor quality quartz supply, and smaller but important segments of the indium, zinc, tin, and gallium supplies.



# MANAGING WASTE

- Vast majority of WEEE is landfilled or exported to regions where it is recycled by informal sectors in a crude and inappropriate manner e.g. parts of Africa & Asia.
- Hazardous components of WEEE accumulate in the environment and within food chains.

- Crude recycling practices such as ‘open burning’ of PCBs and cables results in generation of dioxins and other hazardous substances.
- Existing module designs mean re-use of materials is challenging in a local context

**Hazardous chemicals** leaching from e-waste results in polluted land & groundwater

EWaste Africa

# ENERGY

- Electricity represents more than 40% of the cost of manufacturing a unit of solar-grade polysilicon
- XUAR polysilicon heavily dependent on coal fired power stations

*Table 2: Greenhouse gas payback time required to negate life cycle emissions for a monocrystalline PERC solar PV installation with different life cycle $CO_2$ intensities, installed in either California or China.*

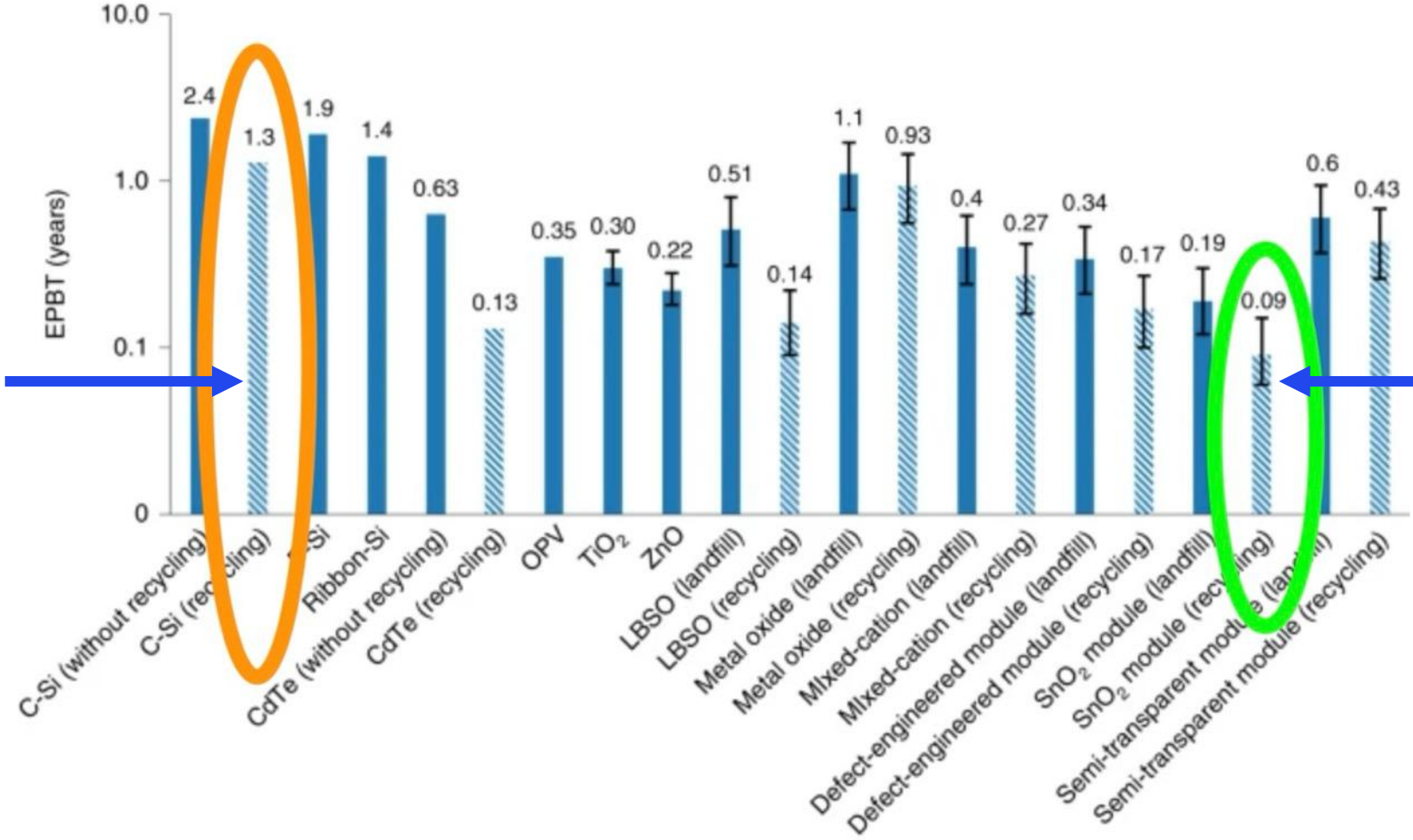
| | CO2 payback time for panel installed in California | CO2 payback time for panel installed in China |
|---|---|---|
| High CO2 intensity solar PV | 9.8 years | 3.2 years |
| Low CO2 intensity solar PV | 2.6 years | 0.8 years |



Sins of a Solar Empire. Wang, Lloyd.

# NGS – ENERGY PAYBACK

Silicon (recycled)



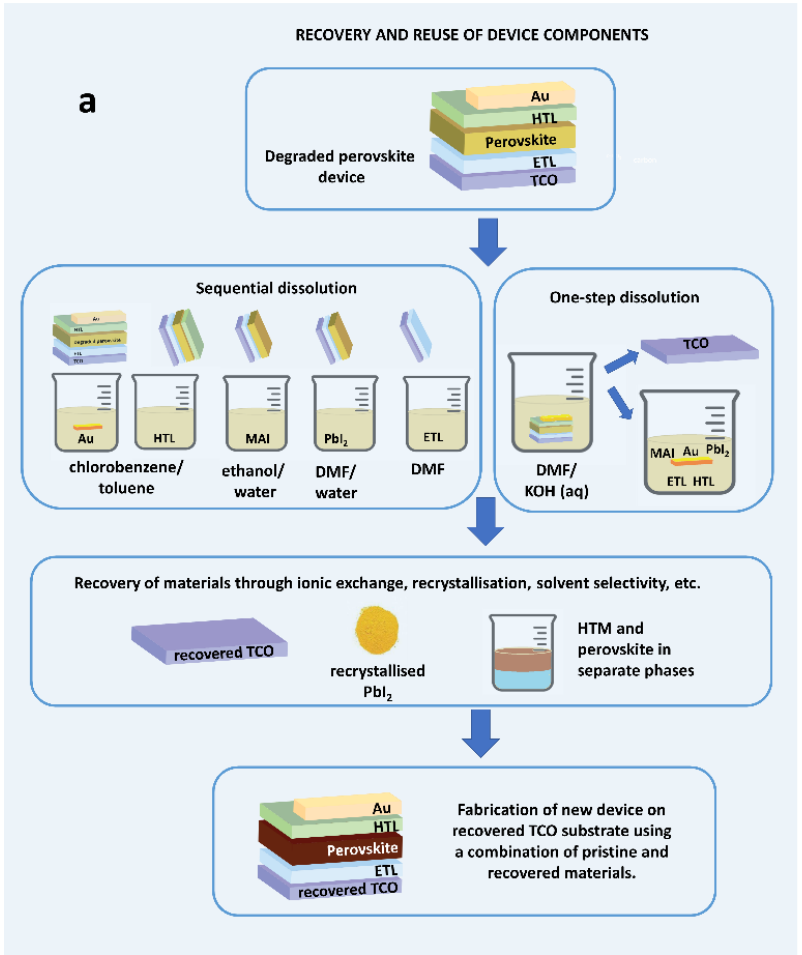

Printed Perovskite

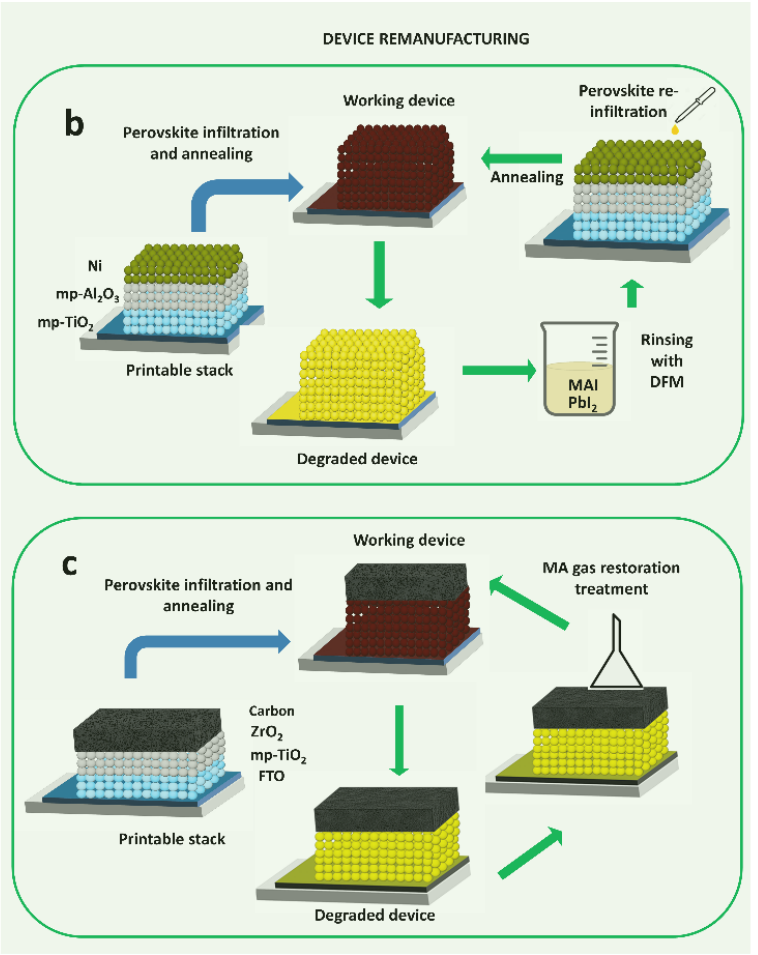
Tian, Stranks, You. Nat. Sust. 4, 2021

# NGS - REMANUFACTURE

**Finite natural resources** means that the **circular economy** is necessary

E-waste has a **social impact & job creation** potential that can support the "Just Energy Transition" (JET)

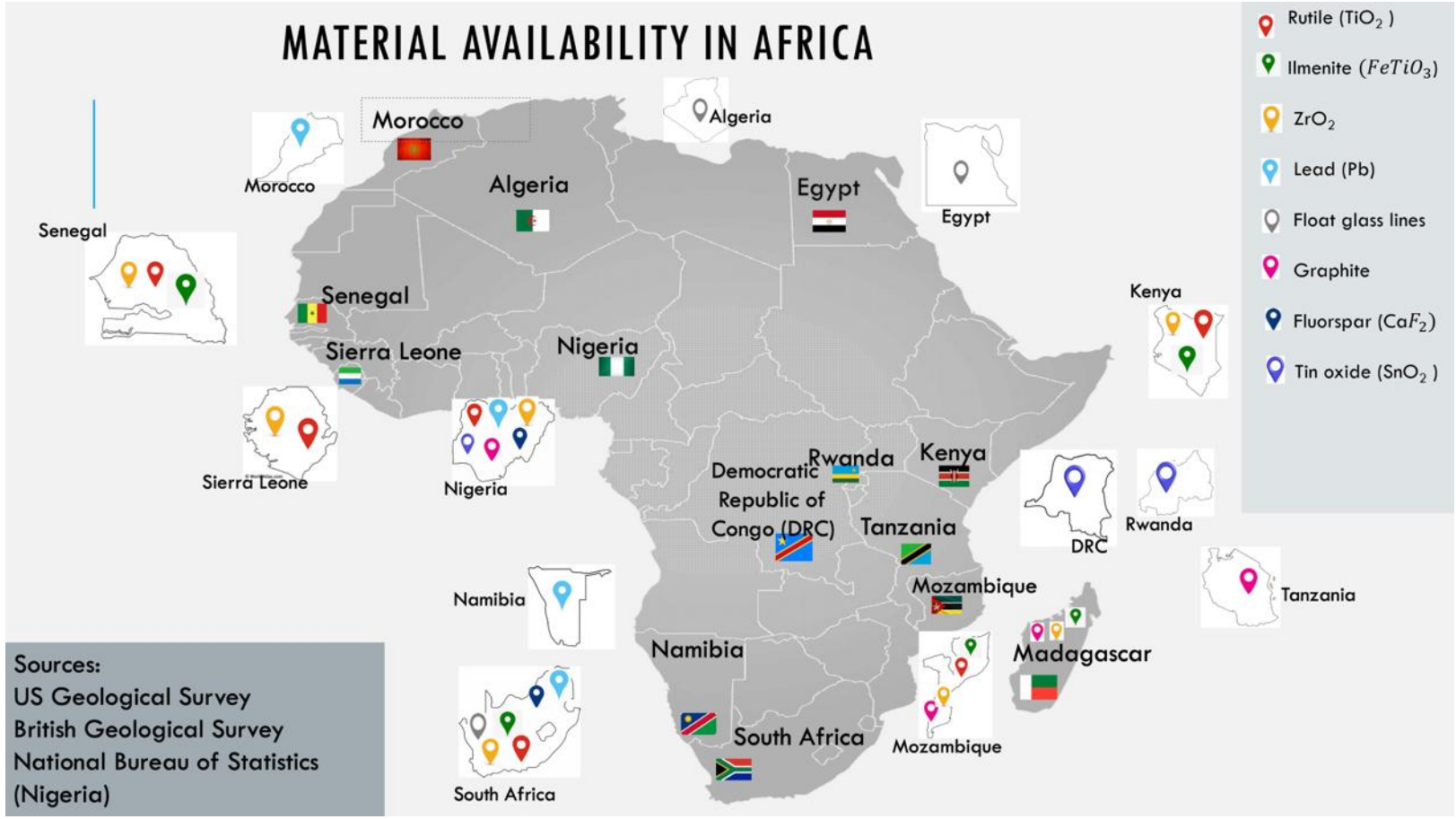


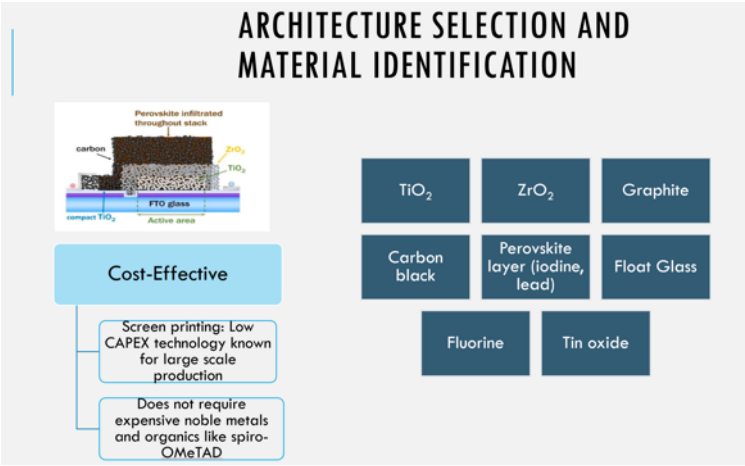




EWaste Africa

*RSC Sustain.*, 2024, **2**, 2057-2068

# NGS – MATERIAL AVAILABILITY

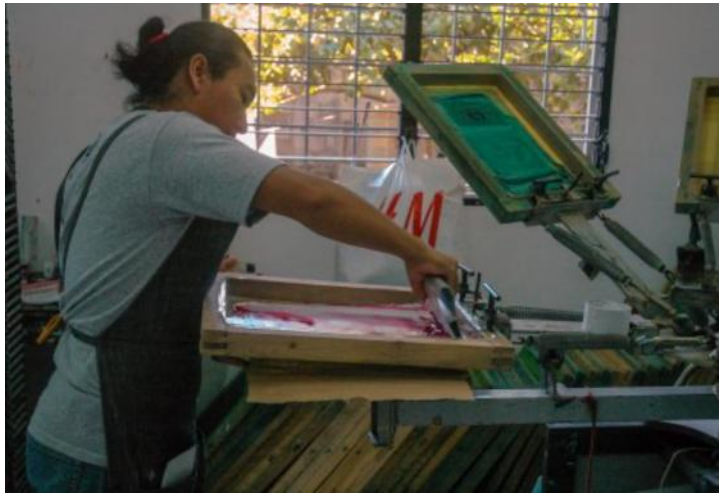


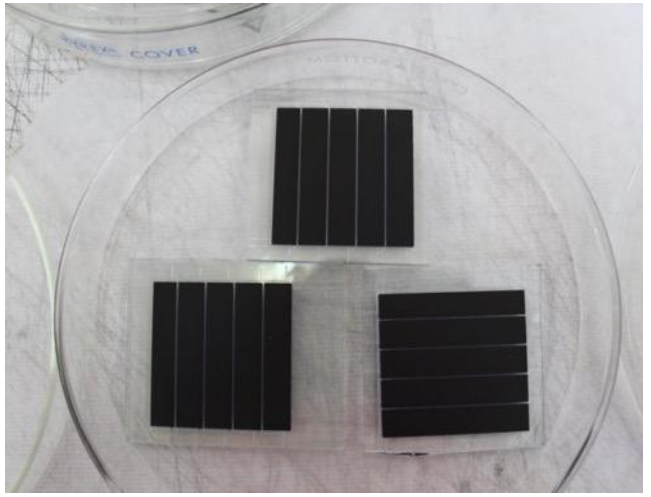




# NGS – LOCAL EMPLOYMENT

- Next Generation Solar Modules can be manufactured using transferable skills (printing)
- Low CAPEX  manufacturing
- Equipment and materials available locally
- Designs enable local remanufacturing, retaining value locally

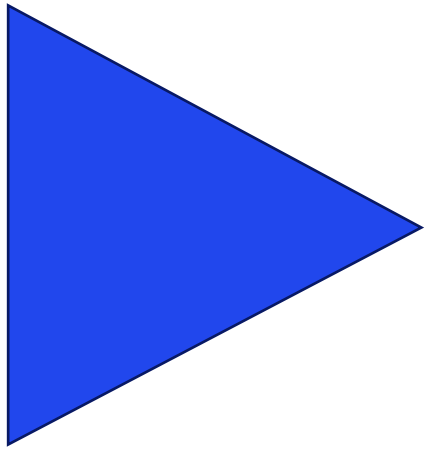
- Inclusive local employment opportunities throughout the supply chain





# NGS – LOCAL MANUFACTURE

- Skills and workforce
- Material availability
- Embedded circular economy
- Modest energy requirements
- Low CAPEX



Enablers of a Just Energy Transition

- “Our findings suggest local manufacturing is economically competitive to importing silicon modules in up to 71 out of 80 LLMICs analysed”.  (Stranks et al, RSC 2022)

**New, locally-manufactured solar PV supplies reduce the costs of solar expansion.**

**First perovskite-based solar panel manufactured in Africa by March 2026.**

UKaid from the British people

Transforming Energy Access

# Panel Discussion & Q&A

Angus Vantoch-Wo0d – The Carbon Trust - Moderator
James Coombs Obrien – Innovate UK – Zero Emissions Generators
Andrew Deadman – Faraday Institute – Energy Storage Challenge
Fiona Landy – The Carbon Trust – Clean Hydrogen
Mark Spratt – Swansea University – Next Generation Solar

CARBON TRUST

UKRI Innovate UK

THE FARADAY INSTITUTION

Swansea University Prifysgol Abertawe

# Second mid-term review of the TEA platform

Summary findings for Delivery Review Workshop

**6th March 2025**

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# Review timeline / activities

**Review period** – inception commenced 1st June 2024. 2nd draft report submitted 21st February 2025

**Work included:**

- Development of a more articulated or expanded version of the existing Theory of Change
- Extensive document review
- 61 semi-structured key informant interviews with a total of 74 people.
  (tier 1, tier 2 and beneficiary partners as well as a wide range of external stakeholder groups including academia, bilateral donors, commercial financiers, foundations, a government department, industry associations, an international organization, a development bank and a regulator).
- Conduct of a parallel VfM assessment

**Limitations:**

- Review budget vs scale of TEA

**TEA's extensive network of partners and contacts across the sector provides it with a good grasp of the key barriers to progress towards SDG7.**

**TEA's output areas are deeply relevant to resolving the key challenges to building market-oriented solutions to achieving universal energy access.**

# Contents

Doing Well

Could build on to do even better

Needs attention / strengthening

Take home messages

Oxford Policy Management

# Doing Well

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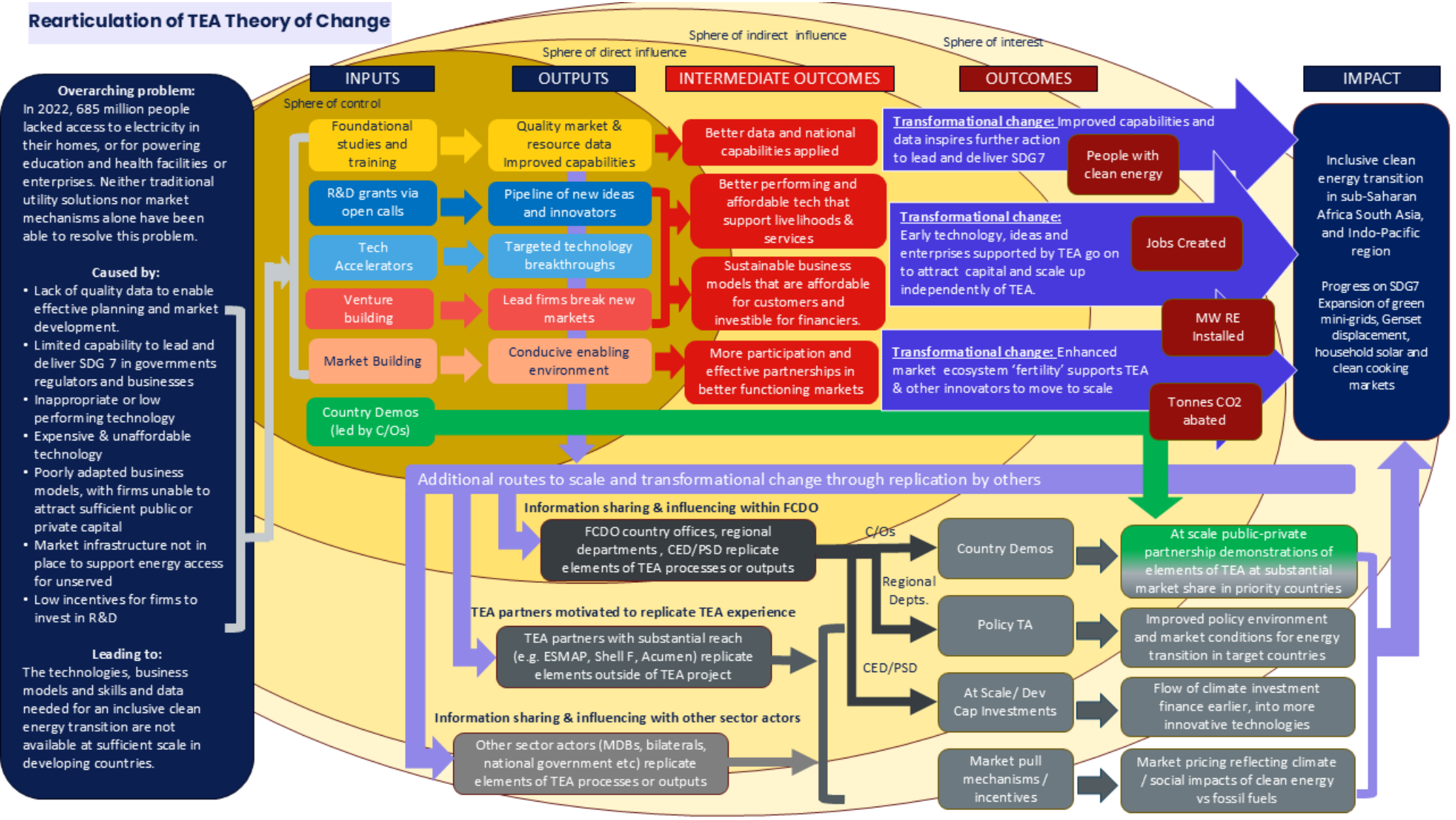
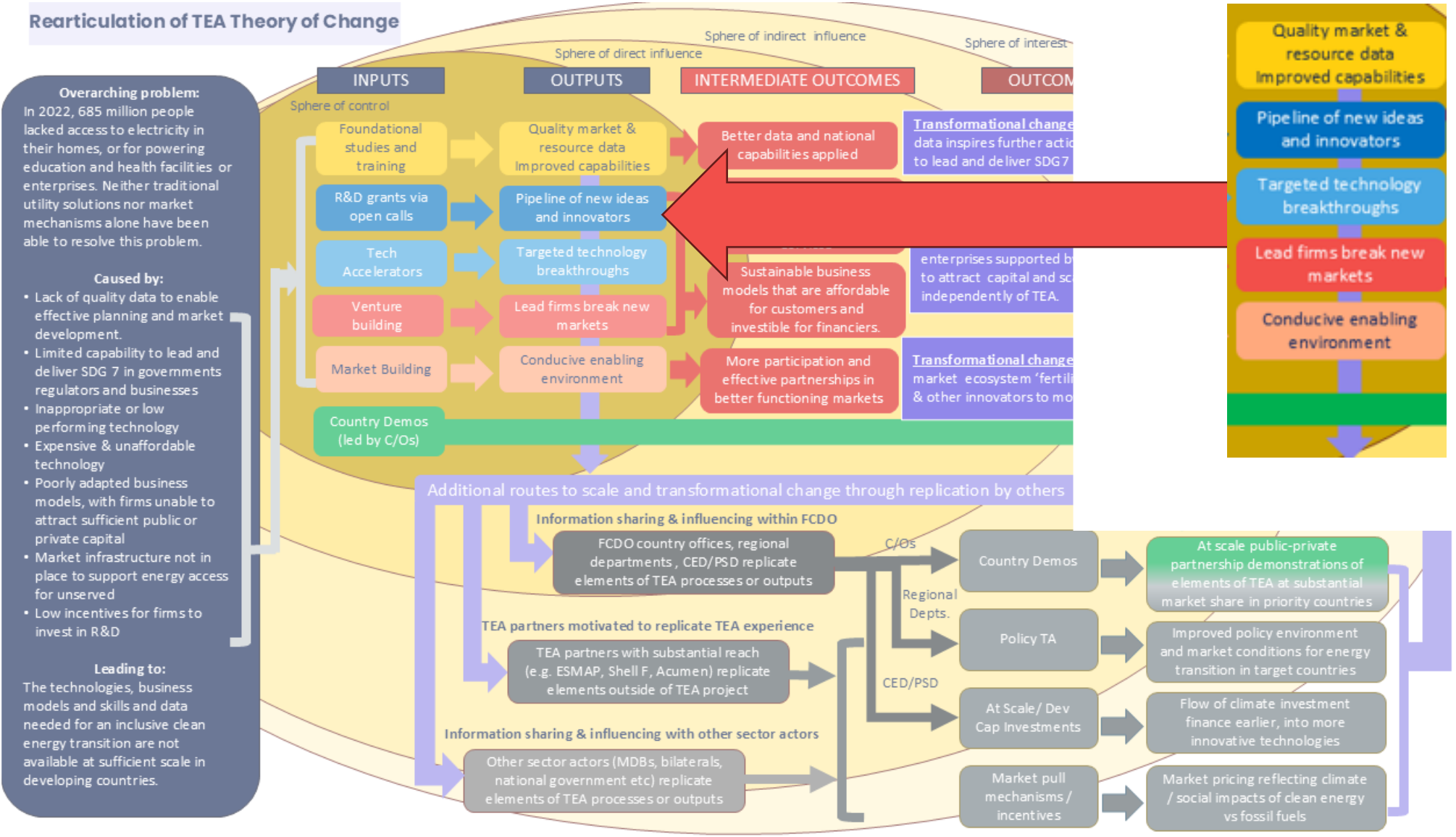
# Doing well – Theory of Change



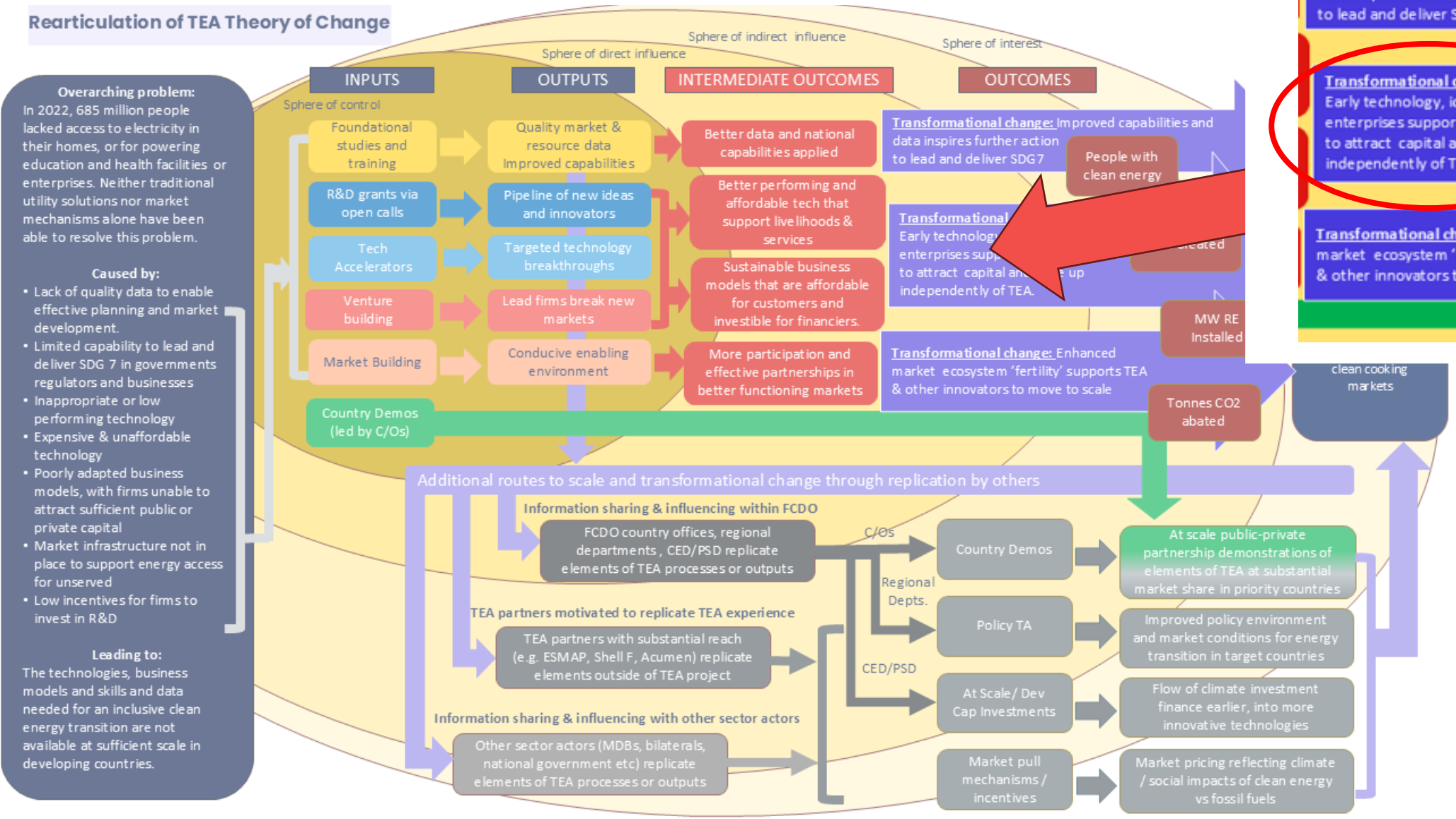

**TEA's activities are well aligned to the Scale Up Business Case and are broadly delivering against the TEA theory of change**

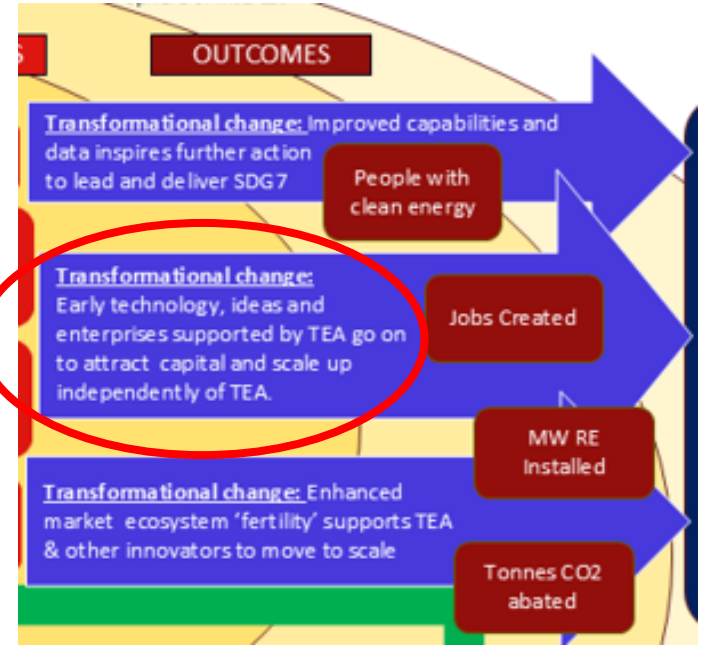
# Doing well – ToC




**Some evidence of businesses making a journey across the TEA offer**

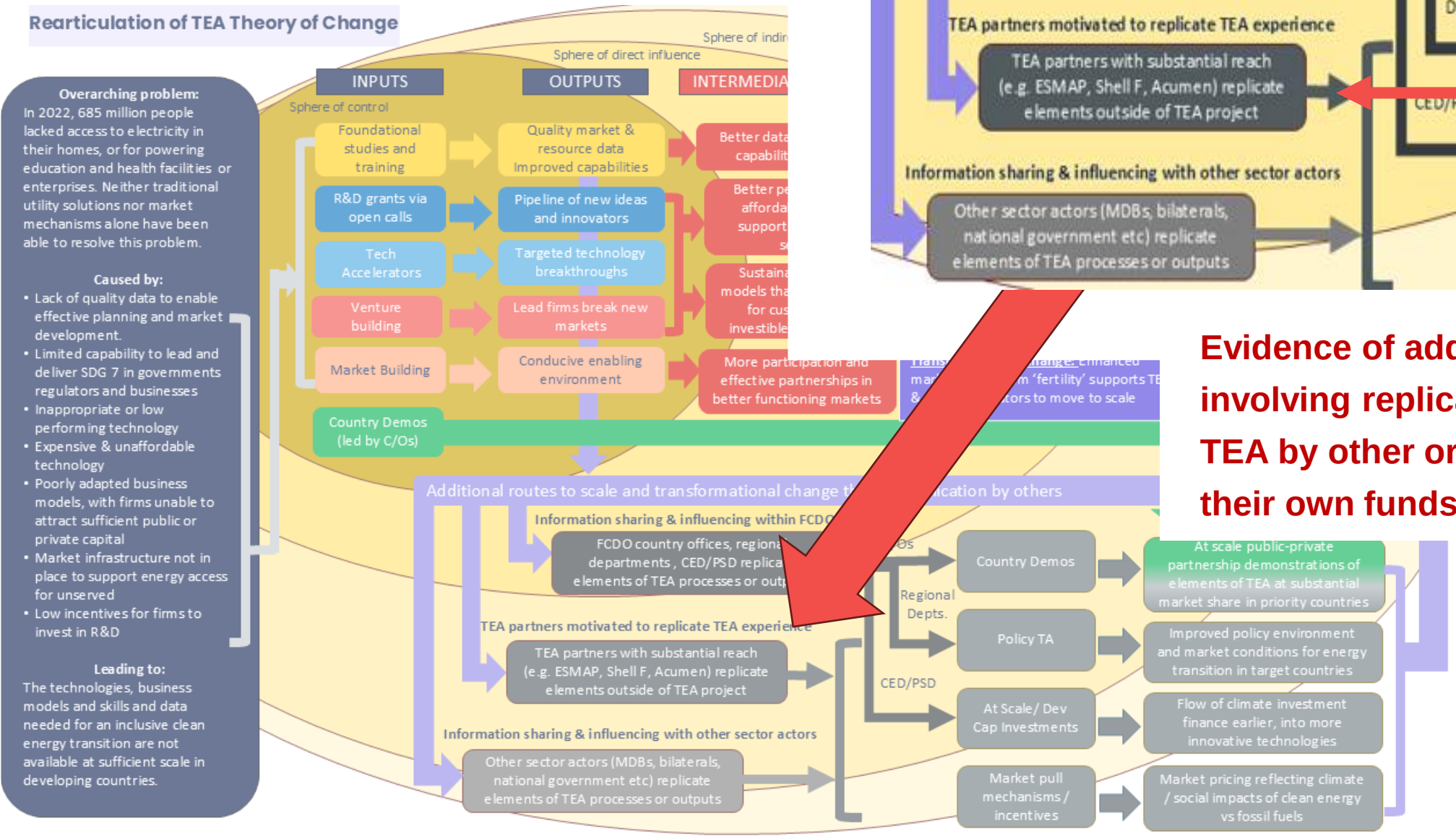
# Doing well – ToC




**Clear evidence of some scaling occurring across TEA's Venture & Market Building output areas**

# Doing well – ToC




FCDO Tanzania, FCDO Pacific etc.

*Acumen's Hardest-to-Reach initiative (GCF)*

**Evidence of additional routes to scale involving replication of aspects of TEA by other organisations using their own funds**

# Doing Well – Logframe Outputs

**Table 10: Summary of progress against TEA logframe output milestones to March 2024**

| Logframe Output | Number of indicators with milestone targets | Number of indicators at or exceeding milestone [11] | Number of indicators >=5% behind milestone | Indicators ahead overall but >= 5% behind on gender targets |
|---|---|---|---|---|
| Data, Skills and Capabilities | 9 | 9 | 0 | 2 |
| Open Calls | 7 | 4 | 3 | - |
| Tech Accelerators | 30 | 17 | 13 | - |
| Venture Building | 3 | 3 | 0 | - |
| Market Building | 23 | 21 | 2 | - |
| Support services & management | 19 | 14 | 5 | - |
| Subtotals | 91 | 68 | 23 | 2 |
| Adjusted for gender targets | 91 | 66 | 25 | |
| % of indicators on or ahead / behind milestones | | 73% | 27% | |
| Analysis repeated without Ayrton Challenge group management indicators | | | | |
| Subtotals adjusted for gender targets | 70 | 55 | 15 | |
| % of indicators on or ahead / behind milestones | | 73% | 27% | |

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# Doing Well – Logframe Outcomes

**Table 16: Cumulative progress against logframe outcome milestones to end of FY23/24**

| Log frame indicator as per 2024 Annual Review | Milestone to end FY 23/24 | Achieved to end FY 23/24 | % exceeded |
|---|---|---|---|
| P1 People with improved access to clean energy | 20m | 27.4m | +37% |
| P2 Sustainable long term jobs created | 125,000 | 124,853 | 0% |
| P3 Investment Leveraged | | | |
| P3.1 Private sector funding leveraged | £750m | £981m | +31% |
| P3.2 Public sector funding leveraged | £225m | £532.3m | +136% |
| P3.3 Returnable funding deployed | N/A | £25.23m | - |
| P3.4 Returnable funding reinvested | N/A | £1.84m | - |
| P4 Installed clean energy capacity (MW) | 200 MW | 268.9 MW | +34% |
| P5 $CO_2$ reduced or avoided | 1.6m $tCO_2$ | 2.73m t $CO_2$ | +71% |

Based on TEA Annual review for FY 23/24

# Doing Well – Other examples

- **Data, Skills and Capabilities -** support to organisations that publish important sector data ranging from ESMAP to GOGLA and AMDA / strategic investments in building skills and capabilities in the sector, running from improving content in MSc courses, through industry job placements, to addressing the gender balance in the sector's work force.
- **Open Calls -** investments must make TEA one of the most significant global players in terms of investment in energy access technology innovation,
- **Technology Accelerator** - very interesting stage gate process to facilitate rapid innovation in zero emissions generators
- **Venture Building -** the major contributor to TEA exceeding its logframe outcome KPIs and the area with clear evidence of movement to scale
- **Market Building** as a co-creator without which market institutions / funds / platforms such as Odyssey and Factor(E) Ventures would not have been seeded and scaled as quickly as they have.
- **Partner Support –** Significant efforts on inclusion – GEDSI strategy and support, KPI disaggregation, Local Partnership inclusion strategy, Disability inclusion service

# Could build on to do even better

# Could build on to do even better – Visibility?

**The visibility of TEA lower than might be expected:**

- Beneficiary partners tend to be familiar with their tier 1 or 2 partner contact, but much less familiar, or sometimes even unaware of TEA itself
- Low visibility was also sometimes seen amongst external stakeholders as well, who again sometimes seem more familiar with individual programmes like TIME or the Energy Catalyst than they are with the TEA brand

**Is this a problem? / What's the strategy?**

| Pros | Cons |
|---|---|
| Sustainability approach – TEA supports the visibility & brand of those organisations that will be supporting the sector long after TEA funding eventually ends (GOGLA, AFUR, AMDA, Shell Foundation / TIME, IUK / Energy Catalyst etc) | Beneficiary partners may be unaware of other support they could get from TEA<br><br>TEA may not be so well known as an important source of knowledge (cross-sectoral lessons / synthesis?) |

# Could build on to do even better– mind the gap

Figure 5: Company journeys across TEA offer[44]

| Company | Open Calls | | | Technology Accelerators | Venture Building | | Market Building |
|---|---|---|---|---|---|---|---|
| | Energy Catalyst | PREO | LEIA | ZE-Gen | TIME | PEII+ | Crowd Power |
| SureChill | | X | | | X | | |
| mopo | X | X | | X | X | | |
| enee | X | | | | X | | |
| WASE | X | | | | X | | |
| ROAM | | X | | | X | | |
| Charm | X | X | | | | | X |
| 4R Digital | X | X | | | X | | |
| Burn | X | | | | X | | X |
| ClearSky | X | X | | | X | | |
| Heifer Int. | X | X | | | | | |
| M-KOPA | X | X | | | X | | |
| InspiraFarms | X | | | | X | | |
| SokoFresh | | X | | | | X | |
| KOOLBOKS | | X | | | | X | |
| Swanbarton | X | | | X | | | |
| C Global Equity | X | | | X | | | |
| CP | X | | | X | | | |
| bpp Cable Sols | X | | | X | | | |
| Wave Insight | X | | | X | | | |
| Gamma Meon | X | | | X | | | |
| Nevadic Solar | X | | | X | | | |
| AGSOL | X | | X | | | | |
| Equatorial P | | X | | | X | | |
| BioMassters | X | | | | | X | |
| BioLite | | | | | | X | X |

Note – direction of arrow shows progress of time from start of journey


There does appear to be a gap in TEA's offer, between Open Calls and Venture Building activity, with limited movement of companies between the former and the latter.

25 companies identified making a journey
vs
886 unique company names on the EPA data base

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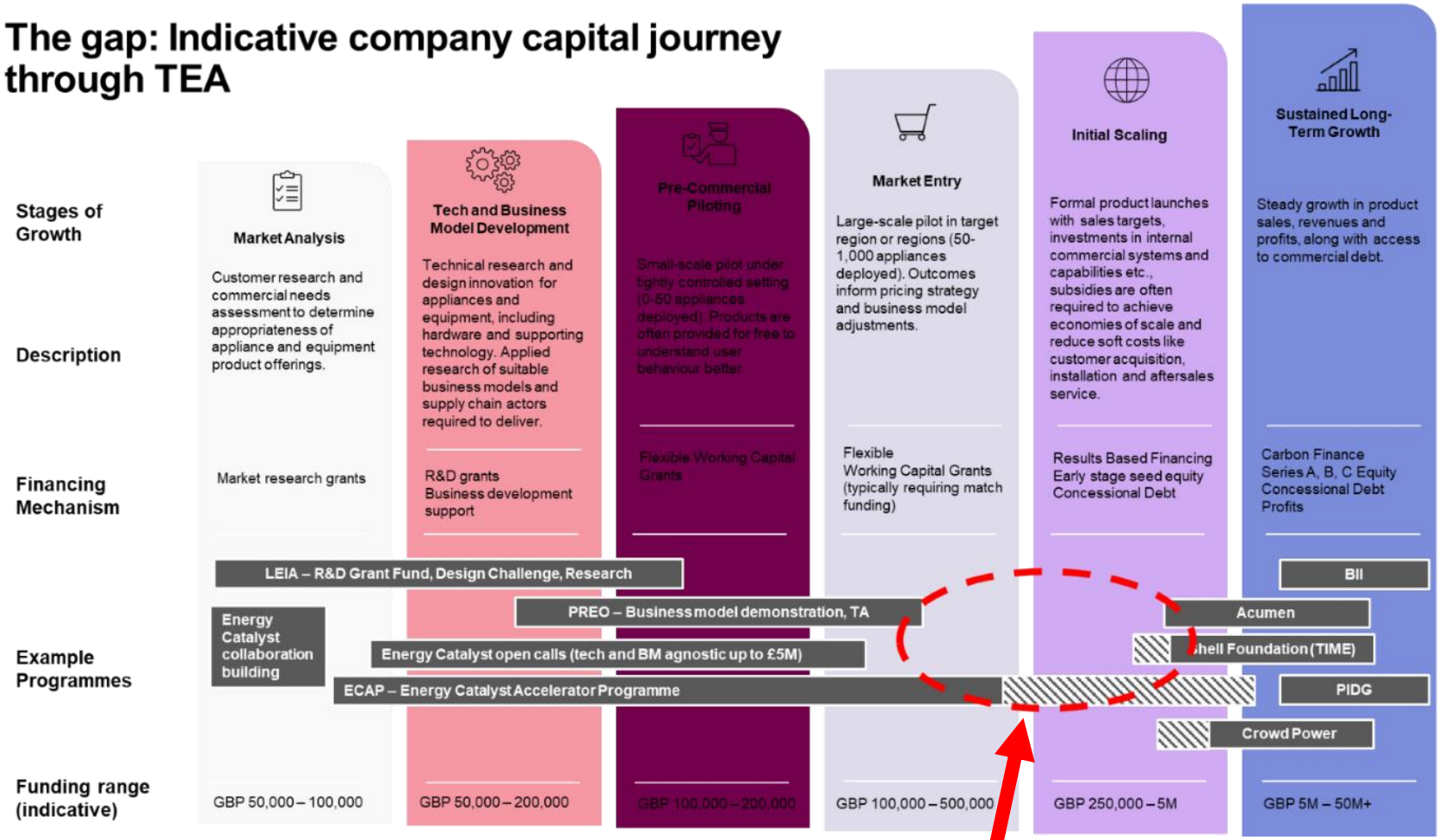
# Could build on to do even better – mind the gap

Figure 5: Company journeys across TEA offer[44]

| Company | Open Calls | | | Technology Accelerators | Venture Building | | Market Building |
|---|---|---|---|---|---|---|---|
| | Energy Catalyst | PREO | LEIA | ZE-Gen | TIME | PEII+ | Crowd Power |
| SureChill | | ← X | | | X → | | |
| mopo | X | X | | X | X → | | |
| enee | X | | | | X → | | |
| WASE | X | | | | X → | | |
| ROAM | | X | | | X → | | |
| Charm | ← X | X | | | | | X → |
| 4R Digital | X | X | | | X → | | |
| Burn | ← X | | | | X | | X → |
| ClearSky | X | X | | | X → | | |
| Heifer Int. | X | X → | | | | | |
| M-KOPA | ← X | X | | | X → | | |
| InspiraFarms | ← X | | | | X → | | |
| SokoFresh | | X | | | | X → | |
| KOOLBOKS | | X | | | | X → | |
| Swanbarton | X | | | X → | | | |
| C Global Equity | X | | | X → | | | |
| CP | X | | | X → | | | |
| bpp Cable Sols | X | | | X → | | | |
| Wave Insight | X | | | X → | | | |
| Gamma Meon | X | | | X → | | | |
| Nevadic Solar | X | | | X → | | | |
| AGSOL | X | | X → | | | | |
| Equatorial P | | X | | | X → | | |
| BioMassters | X | | | | | X → | |
| BioLite | | | | | | ← X | X → |

Note – direction of arrow shows progress of time from start of journey




**Venture Grant Facility already under consideration to address this gap between market entry and initial scaling capital sources**

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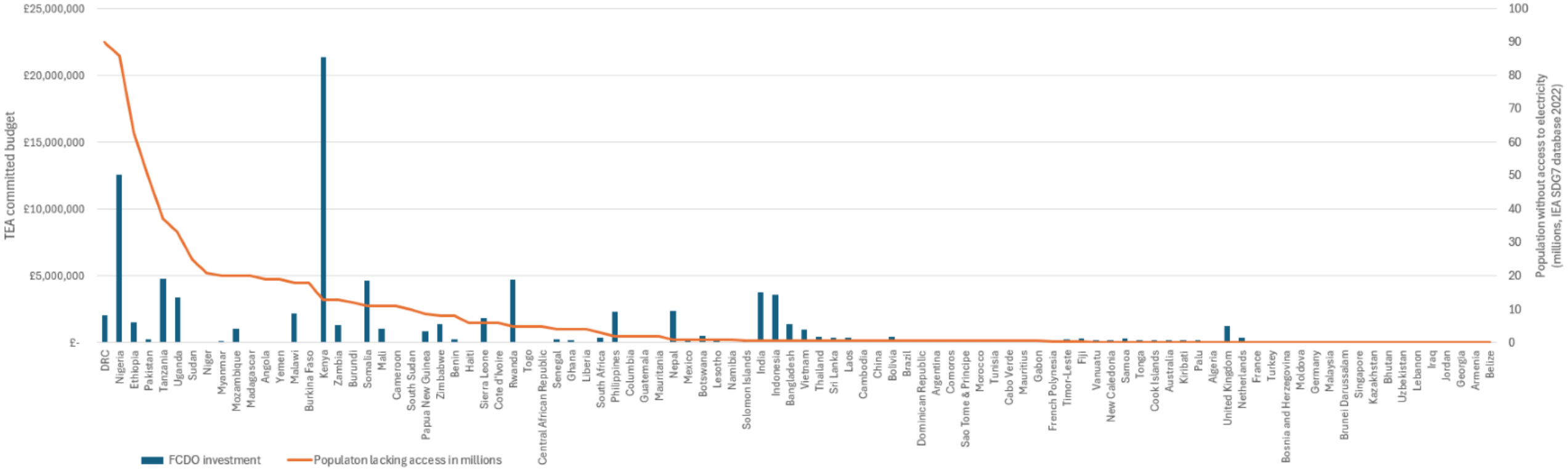
# Could build on to do even better – Big deficit countries

**TEA has focussed a lot of its support across all output areas on more developed markets such as Kenya and Nigeria. Could it do more in less developed markets with big energy access deficits?**

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# Needs attention / strengthening

# Needs attention / strengthening – Outcome KPIs

**Handful of TEA Venture Building partners responsible for vast majority of TEA's outcomes*.**

**Existing outcome KPIs don't say anything useful about how large parts of TEA's work is contributing (or not) to its Theory of Change.**

**Table 10: Contributions to TIME and Overall TEA outcomes (cumulative to March 2024)**

| | Output KPI description | TIME major contributors | % of TIME outcomes | % of TEA outcomes |
|---|---|---|---|---|
| P1 | People with improved access to clean energy' | **Top 2** – Odyssey, Persistent | 59% | 49% |
| P2 | Sustainable long-term jobs created' | **Top 3 –** Persistent, SunCulture, Lendable | 67% | 65% |
| P3 | Funding leveraged | **Top 10 –** Lendable, CrossBoundary, Persistent, EEGF, Calvert Impact Capital, SIMA EARF, BBOXX, Factor(E), TNC, Odyssey | 76% | 59% |
| P4 | Installed clean energy capacity (MW) | **Top 1** – Odyssey | 76% | 39% |
| P5 | CO2 reduced or avoided (t/CO2) | **Top 5 –** Envirofit, Persistent, EEGF, Greenlight Planet, responsAbility | 76% | 46% |

* 886 unique company names on the EPA data base

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# Needs attention / strengthening – Outcome KPIs

Propose intermediate outcomes be identified for areas other than Venture Building. Some suggestions:

**Data Skills and Capabilities –** some post-training data already collected but more could perhaps be done in this area. Possible post training follow up surveys on individuals' rating of how training / job placements / MSc courses have impacted on career progression and whether there are opportunities to use new skills in their home organisation environment; firms' ratings on how training / job placements etc have improved firm capabilities could be considered to trial.

**Open Calls & Technology Accelerators** – Tracking of how companies move along a Technology Readiness Level and / or Commercial Readiness Level index during and up to 3 years after TEA investment. Embed as contractual requirement (c.f. ESRC).

**Market Building** - Possibly utilising the new Energy Access Institutions Facility (EAIF) support to individual MIs to define their own specific theory of change (if they do not have one already) and their contribution to changing market outcomes. This would entail specifying what market outcomes the MI intends to improve, how it intends to do so, and how it would know if it was successful. Use latter as intermediate outcome KPI

# Needs attention / strengthening – Outcome reporting

- **The review was unable to verify outcome reporting** due to insufficient documentation of process followed to arrive at figures quoted.
- ICF KPI methodology supplementary guidance partners are supposed to follow is quite complex, especially where leverage is being claimed for the actions of companies supported indirectly by TEA via funds and platforms.
- Annual reporting should in future include an account of how 7 steps of the ICF KPI methodologies have been applied, the judgements and assumptions that have been made and any adjustment factors that may have been used.


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# Take home messages

# Take home messages

**TEA is delivering**

- TEA can show progress across its Theory of Change
- Delivery is ahead of targets in many areas and there is a wealth of examples of innovation across the platform.

**TEA could think further about:**

- Its visibility and its communications strategy
- Closing the gap between TEA's Open Calls and Venture Building Offer
- Doing more to address the challenges of more difficult countries with some of the biggest access deficits

**TEA should:**

- Develop intermediate outcome indicators so it can adequately track and manage the effectiveness of all of its work, not just venture building
- Strengthen its reporting on existing outcomes to provide a more robust

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# Thank you

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| Recommendations: | Priority |
|---|---|
| 1. Consider developing intermediate outcome indicators along the lines suggested in this report for the Data, Skills and Capabilities, Open Call and Market Building output areas to ensure the totality of TEA's efforts towards achieving its theory of change are better monitored and future investment decisions across the output areas better informed. | High |
| 2. For investments in skills and capabilities and in Open Calls consider extending monitoring of the intermediate outcomes proposed in recommendation 1 above beyond the period of TEA funding to understand the results of TEA's inputs better. | High |
| 3. Improve documentation of partner reporting on outcome indicators. TEA should consider requiring partners to set out the basis for how they meet each of the 7 steps of the ICF KPI methodologies when reporting on KPIs 11 and 12 and any assumptions or adjustments made. | High |
| 4. Consider a tapered 3 year limit to post-TEA investment claims for outcomes from Venture Building (and other) investments to recognise the gradual dilution of influence over time of initial investments made by TEA. | High |
| 5. Consider developing a clearer communications strategy that sets out the approach and ambitions for TEA's visibility, how learning from across tier 1 programmes can be better synthesised, and a platform-wide strategy for how learning should be disseminated. Ensure the TEA website is better linked to partners websites so the breadth of TEA outputs is more easily seem and accessed. | Medium |
| 6. Simplify the logframe by removing output KPIs that do not provide useful management information, for example those tracking the number of meetings of Ayrton Challenge Fund groups or market institutions | Low |
| 7. Continue with current efforts to develop a Venture Grant Facility to address the gap that currently exists between Open Call and Venture Building activity. | High |
| 8. Consider reviewing the TOR for the external advisors' group and members could also be consulted for their views on how they might best be utilised moving forwards | Medium |

| Recommendations: | Priority |
|---|---|
| 9. Set a disaggregated target for logframe output 2.1.2 so it is clear what TEA's intention is with respect to supporting UK, international and local innovators. | Low |
| 10. To provide clarity for Management and to inform future reviews, assessments or evaluations, we suggest that a formal response to the recommendations made in this review and the accompanying VfM assessment is documented. | Medium |
| 11. Assess how TEA could do more to ensure its work is relevant to countries with the highest absolute numbers of people without access to energy. Whilst this would include Nigeria (one of the countries TEA has invested in regularly to date), it might require a reassessment of the proportion of TEA's future investment that goes into countries such as Kenya and a willingness to increase exposure in more difficult environments such as the DRC. | High |
| 12. Complete work on implementing TEA's GEDSI framework and toolkit and continue efforts to implement the new disability service | High |
| 13. Consider addressing current gaps in disaggregation of data for KPIs in the logframe including:<br>• Output 1.2.1a (Young people supported with job placements) – disaggregate target into male and female<br>• Output 1.2.1b (Average job retention rate following job placement) – set disaggregated targets for male and female and track separately<br>• Output 2.1.2 (Innovators supported via open calls) – set targets for local, UK and international exc. UK to signal strategy / intention.<br>• Outputs 2.2.2 a and b (Journal articles and research reports) – disaggregate by whether the lead author is southern or northern and male or female. | Medium |

# MTR Breakout Discussion Briefing

Time: 20 mins

Brief:

- Form groups by intervention.
- A moderator has already been assigned to each group.
- Please discuss the below (next slide).
- At the end there will be 10mins for Moderators to feed-back to the room.

# MTR Breakout Discussion: 20 mins

- **Question:** What are your initial reflections upon the MTR findings and their resonance in relation to both your work and the platform more broadly? Which points are pertinent to you and which are less so?

- **Finding**: Develop intermediate outcome indicators so it can adequately track and manage the effectiveness of all of its work, not just venture building
- **Question**: How well do you feel the TEA outcome KPIs demonstrate the impact of your work against the TEA ToC? Are there any intermediate KPIs that could improve this?

- **Finding**: TEA could think about Its visibility and its communications strategy
- **Question**: What are the opportunities to improve visibility and comms? Who should it be more visible to?

- **Finding:** Doing more to address the challenges of more difficult countries with some of the biggest access deficits
- **Question:** What opportunities are there to work in more energy deficit countries? What are the constraints and considerations around this?

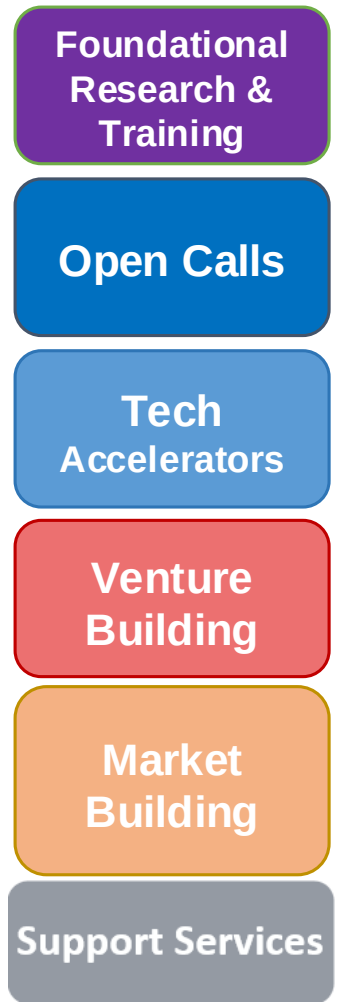
# Roundtable Feedback:

- **Question:** What are your initial reflections upon the MTR findings and their resonance in relation to both your work and the platform more broadly? Which points are pertinent to you and which are less so?

- **Finding**: Develop intermediate outcome indicators so it can adequately track and manage the effectiveness of all of its work, not just venture building
- **Question**: How well do you feel the TEA outcome KPIs demonstrate the impact of your work against the TEA ToC? Are there any intermediate KPIs that could improve this?

- **Finding**: TEA could think about Its visibility and its communications strategy
- **Question**: What are the opportunities to improve visibility and comms? Who should it be more visible to?

- **Finding:** Doing more to address the challenges of more difficult countries with some of the biggest access deficits
- **Question:** What opportunities are there to work in more energy deficit countries? What are the constraints and considerations around this?



UKaid
from the British people

Transforming
Energy
Access

# Looking Forward: Opportunities for the Future of TEA

Steven Hunt, FCDO

Foreign, Commonwealth
& Development Office

# TEA Mid-Term Review Recommendations (FCDO to respond)

UKaid Transforming Energy Access | Foreign, Commonwealth & Development Office

## High Priority

1. Develop KPIs for intermediary outcomes.
2. Extend monitoring of outcomes beyond TEA funding (especially for Foundation Research/Training and Open Calls).
3. Improve documentation on partner reporting on KPIs (methodological assurance).
4. Implement a limit on post-TEA investment claims.
5. Develop a Venture Facility.
6. Ensure relevance to countries with high energy access needs.
7. Complete and implement the GEDSI framework and toolkit.

## Medium Priority

1. Develop a clearer communications strategy and improve website linkage.
2. Review TOR for the external advisors' group.
3. Address gaps in data disaggregation for KPIs.
4. Document a formal response to review recommendations.

## Low Priority

1. Simplify logframe by removing less useful KPIs.
2. Set disaggregated targets for supporting innovators.

# Ayrton 2.0 principles and shifts



- **Build on what has been working**, including Ayrton brand
- Increase focus on **localisation and modern UK-Southern partnerships,** including Innovate X country platforms for joint commissioning.
- Improve **links from RD&D to downstream investments and scale-up**, integrating with a more joined-up ICF4 Energy Mission TA offer and more Strategic Venture Investing
- Strengthen **integration of system change**, go from market "building" to "shaping"
- **Evolve Ayrton Challenge approach –** Transformation Sectors, Ayrton Challenges and Cross-Cutting Foundations.
- **Internationalise Ayrton partnership framework**, partnering more with other bilateral donors at Challenge or Regional levels (e.g. considering multi-donor facilities)
- **Develop country approach**, linking with Country Platforms, JET-Ps and GCPA, focussing on working with the willing, and a race to the top in transition.
- **Leverage UK expertise**, aligning where relevant with UK Net Zero RD&D

# TEA 3 proposed principles / shifts (by Output)

- **Deepening focus on Research Excellence** within Foundational Studies and Training, including more emphasis on peer-reviewed outputs, Research Groups and PhDs.

- **Deliver Open Calls increasingly in co-funding partnerships**, with joint commissioning and coalitions of clean energy leaders in north and south.

- **Increase use of Stage-Gated Tech Accelerator Approaches,** aligned with Ayrton Challenges and with more **ambitious integration to Venture Building and DevCap investments,** consciously building energy access/transition champions.

- **Shifting from Market Building to Market Shaping**, doubling down on market institutions, policy and standards - but also strengthening links to TA facilities and Incentives/AMCs.

- **Extending Country Demonstrators Offer** in response to continued demand.

- **Continue building on Support Services** and advancing the Gender, Equality, Social Inclusion and Disability (GESDI) work.

# Some questions for discussion



- Open discussion on views on what TEA is doing well and not well, and could strengthen immediately, or in the future
- Feedback on straw man of possible shifts for Ayrton and TEA?
- In the future should we focus more on energy access technologies relevant to 2030, or future technologies, or continue working on both?
- How should we balance the emphasis in TEA between early-stage research, and transition to scale and impact?
- Should we have a more explicit set of focus countries? If so, how many countries, and how to select (greatest need, greatest opportunity for success/critical mass, greatest willingness/interest of partner countries etc?)