Global Climate Action Partnership
regional leadership, global change

Global Energy Alliance for People and Planet

Harnessing Clean Energy for Rural Transformation and Achieving NDCs

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Which sector are you most interested in or associated with? (Select one)

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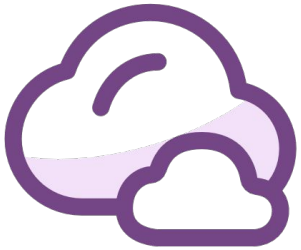

What are you hoping to learn or share today?

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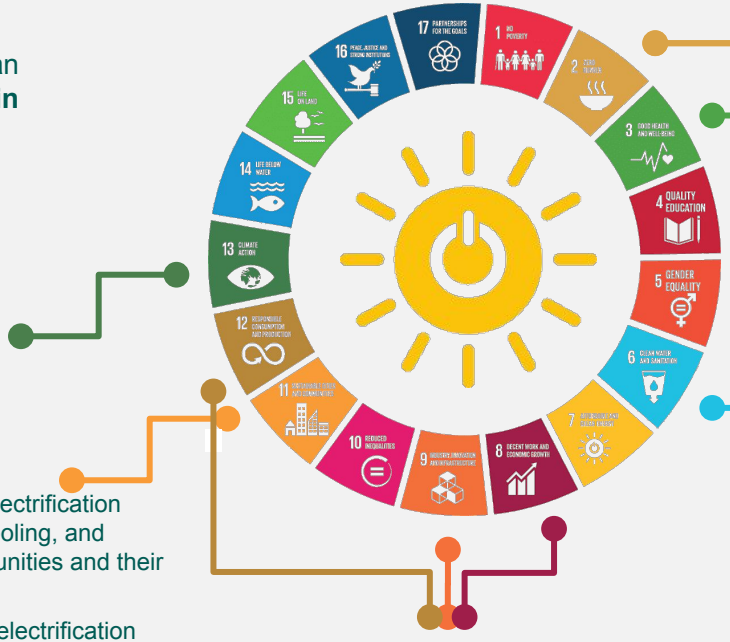
Clean Energy: Unlocking the SDGs

Access to and **Use of** Clean Energy play a **crucial role in enabling sustainable development**.



Powering Agriculture: Electrification with renewable energy of agriculture and agrobusiness system, agriPV promotion, and cold chains for sustainable agriculture and higher efficiency

Powering Nutrition: Electrified cold chains with renewable energy for processing and distribution of healthy food, and clean cooking for better health and the environment

Powering Healthcare: Facility and equipment electrification with renewable energy, sustainable cold chains for vaccines, medicine and effective healthcare

Powering Education: School electrification with renewable energy, clean cooking, efficient lighting and thermal comfort for effective teaching and learning at school and home

Powering Water: Electrification with renewable energy for clean water production, distribution and the efficient use of fresh and clean water for healthier people

Powering Climate action: Displacing and avoiding fossil fuels by using renewable energy mitigates emissions and builds future resilience

Powering Communities: Buildings electrification with renewable energy, sustainable cooling, and efficiency to improve cities and communities and their resiliency

Powering Mobility: Transport sector electrification with renewable energy and sustainable and affordable mobility options to reduce environmental and climate impacts

Powering Business: Electrification with renewable energy of high value-added business activities for income generation, stronger value chain and economic growth

Defining Productive Use of Energy

Productive uses of energy are activities that use energy to enhance production, efficiency, or value addition of an activity.

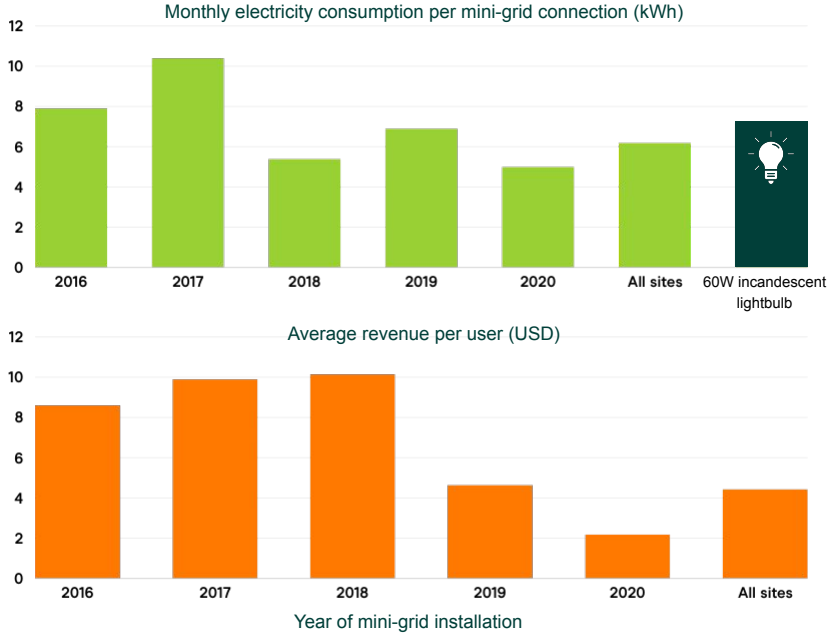
When linked to commercial sectors they increase profitability of enterprises.

When powered by renewable energy and linked to social sectors- PUEs can improve the social welfare and climate resilience of underpowered communities or those reliant on fossil fuels for energy[2]

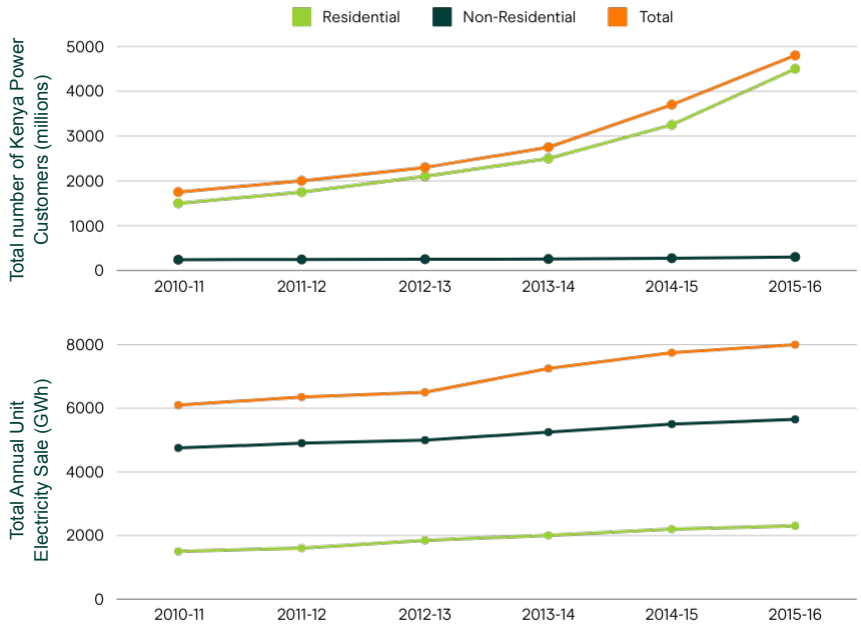
Sources: 1 Endev, 2 PREO, 3 BCG Analysis

Focus on the supply of energy alone isn't enough...

Energy use at mini-grid sites is low

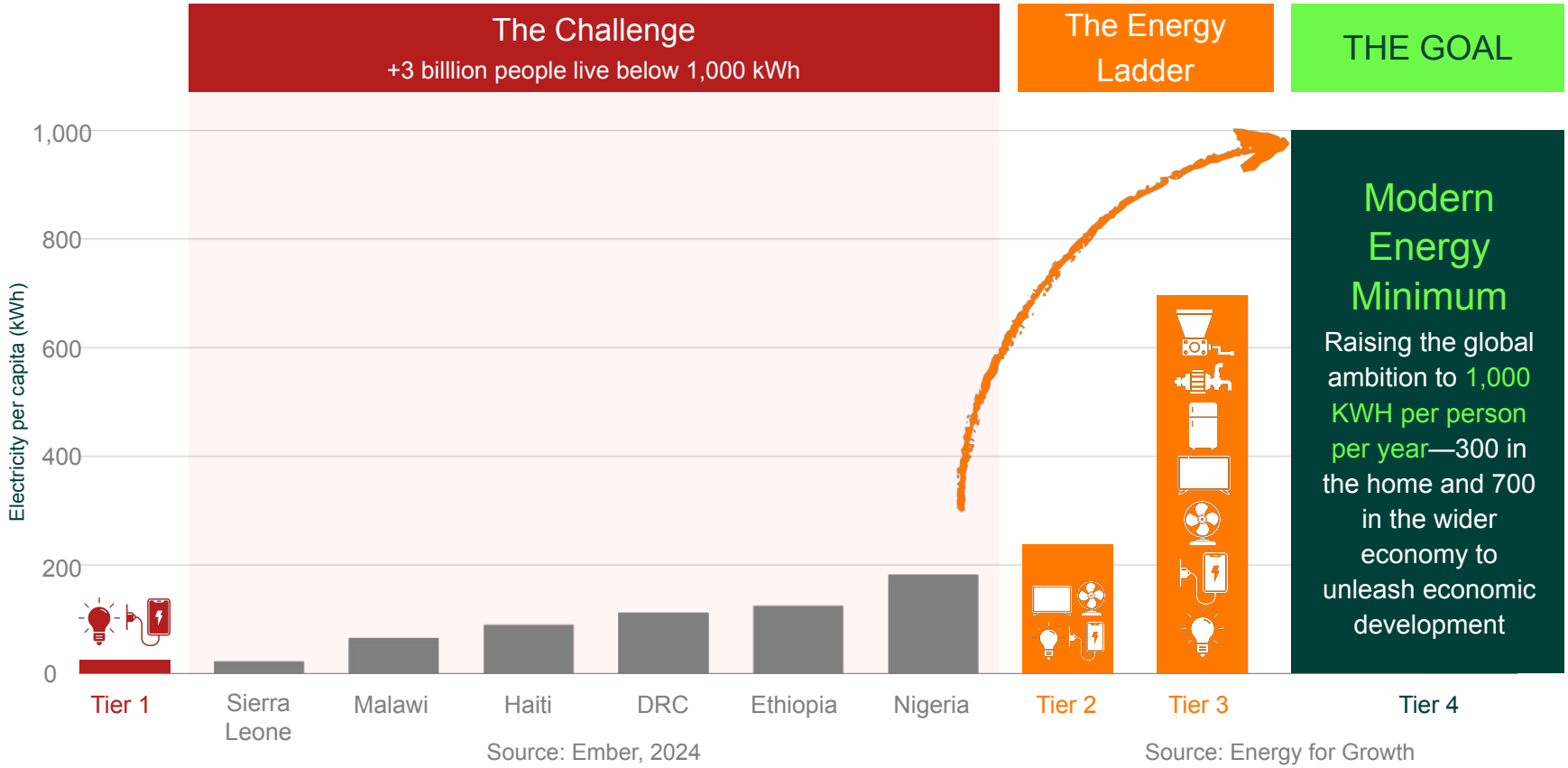


Energy use on the grid is also low



We need to invest in the use of energy because
the 'build it and they will come' model has not worked.

Productive use of energy drives economic activities and development



What sectors?

We assessed all primary sectors of LMIC economies…

- Agriculture & agri-processing
- Trade & retail
- Light-to-med manufacturing
- Social service sectors
- Transport
- Mining & quarrying
- Heavy manufacturing
- Electricity & water
- Construction
- Tourism
- Other service sectors[1]

…and 5 present clear opportunities for PUE intervention based on productivity impact of electrification, sector growth and jobs potential

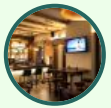
	Productivity impact (Energy intensity diff[2])	Sector growth (GDP growth '17-'19)	Job potential (Share in current empl)
Agriculture & agri-processing	3-5x[3]	5-10%	30-40%
Trade & retail	~2x[3]	~5%	10-15%
Light-to-med manufacturing	1-2x[2]	5-10%	5-10%
Social service sectors	~2x[3]	5-10%	5-10%
Transport[5]	2-4x[4]	~5%	~5%

High priority *Medium priority*

1. Financial and insurance activities, Real estate activities; Professional, scientific and technical activities; Administrative and support service activities; Arts, entertainment and recreation; Other service activities; 2. Average energy intensity in the sector in LMICs relative to developed countries; 3. Comparing service sector energy intensity in LMICs and high-income countries; 4. Comparing energy intensity of ICE vs BEV; 5. transport opportunity assessed separately - relatively small job impact but significant mitigation impact
Source: ILO employment data, World Bank, OECD GDP data, Our World in Data

Not exhaustive

Where | We defined sectors in terms of common energy applications

	Agriculture & agri-processing	Trade & retail	Light-to-medium manufacturing	Social service sectors
Sector definition	**SHF[1] & small agri-processors** (1 SHF on average & 1-2 jobs per agri processing MSME[2]) producing & processing agri products	**Small retail shops & outlets** (1-2 employees on avg per MSME) selling **consumer goods & providing services**	**Small and micro-enterprises** (approx. 2 employees per micro-enterprise in light manufacturing) producing **consumer goods**	**Small rural health facilities & clinics** (*average size varies significantly across regions*)
Common energy applications	 **Irrigation – solar water pump** for up to 5 farmers  **Cooling – cold room** for 10+ farmers  **Processing – grain mill & food dryer** for up to 5 farmers	 **Cooling – fridges & freezers** for up to 10 jobs  **Cooking – oven & pressure cooker** for up to 10 jobs  **ICT – computers, TVs & radios** for 1 shop/ 1-2 jobs	 **Carpentry – saw, lathe & drill** for up to 5 jobs  **Textiles – sewing machine** for up to 5 jobs  **Welding & metalwork – welding or soldering machine** for up to 5 jobs	 **Cold storage** – vaccine fridge *(to be assessed)*  **Health equip** – monitors (*to be assessed)*  **ICT & lighting** – computers & wifi (*to be assessed)*

1. SHF = Smallholder Farmer; 2. MSMEs = Micro, Small and Medium Enterprises (micro-enterprises with <10 employees and SMEs with 10-50 employees)
Source: USAID Productive use of energy in African micro-grids report, PRE PUE report, World Bank report, IFC report, job multipliers from Niras (September 2023): Target setting for Acumen's Hardest to Reach Market Support Facility

Productive uses of energy covers a wide range and scale of application

For example in the agricultural sector...

PUE spectrum varies from individual use to large industrial scale applications

	Individual use e.g. farmer	Medium scale e.g cooperatives	Industrial scale
COLD STORAGE	 KOOLBOKS	 Cold Hubs	 ARCH
MILLING	 AGSOL	 RELEAF	 Smart Power Myanmar
IRRIGATION	 SunCulture	 DREAM	 Phata

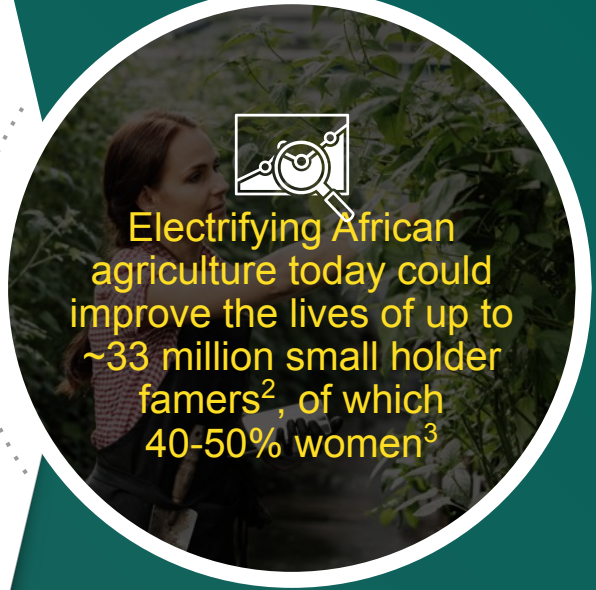
GEAPP project
Sources: 1 Endev, 2 PREO,

Productive uses of energy applications exist across entire value chains

For example, in the agricultural sector...

Not exhaustive[1]

Input	Production	Pre-processing	Processing	Post-processing
Irrigation	Harvesting	**Cold storage**	Shelling	**Cold storage**
Insecticide spraying		Shelling	Drying	
Mechanized & preparation		Drying	Oil pressing	
			Milling	



1. Not exhaustive - Only activities with potential to increase productivity by electrification shown
2. Source: FAOUN
3. Source: ILO employment data

GEAPP's investments in PUE to date shows interventions yield results

Energizing Agriculture Program, Nigeria

Challenge: multisectoral partnerships needed to energize key ag value chains

Interventions:

Impact: Energizing 9 agri-value chains with 20+ implementation partners: income improvements 30%+ in rice milling, palm oil processing, cold storage for fish, etc.

Haiti

Challenge: Ensuring profitability of off-grid solutions

Intervention:

Impact: Delivered appliances and business development training to micro-entrepreneurs with incomes increasing 2 to 3 times. Scale-up will focus on agricultural processing centers to reduce food waste and combat food insecurity

India

Challenge: Facilitating financial linkages for adopting energy efficient appliances

Intervention:

Impact: Develop a digital platform to connect customers to financial institutions (MFIs, NBFCs etc) to adopt energy efficient PUEs. Built partnerships with 13 financial institutions mobilizing $10M fund to support 1800 micro enterpri

Productive Use Financing Facility

Challenge: Piloting results based financing as an Incentives to increase sales of quality assured PUE and test design of consumer financing to enhance affordability.

Intervention:

Impact: 20,000 PUE supported impacting more than 100,000 people. 30% have expanded their businesses. From survey responses: 56% in DRC say their lives have improved. 81% in Ethiopia report increased crop yields and average business income increase at 100% in Kenya

Reporting Back

- Possible PUE applications
- Business models / collaboration models
- Key risks and challenges for implementing PUE
- Enabling factors
- Entrypoints for NDCs and other national planning/strategies

Break-Out Session Title:

Key Insights
(Gaps, Needs, Opportunities, Successful Approaches and Lessons Learned)

- Involve in design that appropriately incorporate indigenous and traditional communities
- Financing main challenge to leverage energy pledges
- Brazilian ministry launched national strategy for clean cooking
- Cooperation and exchange of experiences to learn insights
- Reflect how you engage youth in your job – opportunities to showcase projects, how you're supporting them?

Next Steps/Actions/Requests

- Get more information on involvement of indigenous communities
- Have deeper conversations about how to link work to bring agenda and data
- Think about connection between PUE and clean cooking
- More inclusion
- Clarify role of different actors
- Standardize stocktake,
- Consider water-energy-food nexus to be equitable
- Talk with Brazilian colleagues on data – could be entry point to NDCs
- Development of local communities with more collaborative approach
- Design collaboration with GEAPP to bring more synergy and engage youth
- Identify financing for technology for better access and PUE

Opportunities for Collaboration and Champions

- Come to African continent and see work
- Learning between regions on how to actually implement PUE
- Learn from other indigenous communities and share Brazilian experience with strengthening institutions and cultural teaching
- Work with microfinance
- Think about how GCAP can organize Africa-LAC exchange
- Collaboration of irrigation
- Need to create opportunities to unite/involve public policies and bring non-governmental partners for more adequate solutions
- Understand clean cooking better
- Better layer elements of data to see whole picture – technical, social, etc

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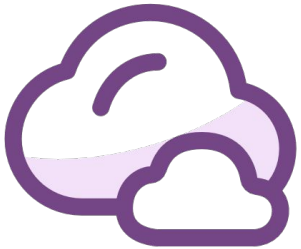

What one thing have you learnt that you will apply in your future work?

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