



# Malawi Sustainable Energy Investment Study: Building a Project Pipeline

Department of Energy Affairs | Ministry of Natural Resources, Energy and Mining | Malawi



**Government of Malawi**

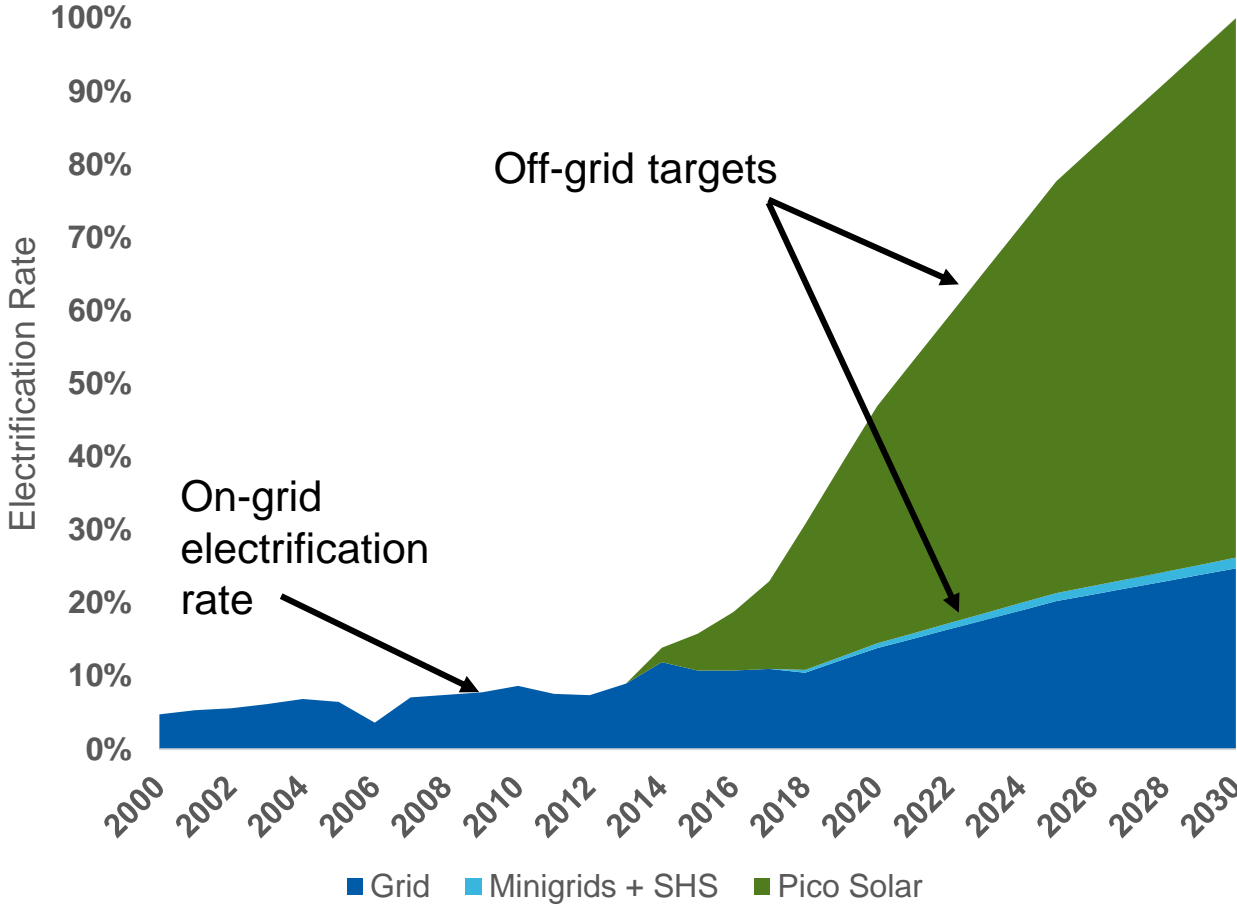
# Increasing the supply of and access to reliable, affordable energy is at the core of Malawi's development goals

Malawi Growth and Development Strategy III (2017) aims to:  
**“Provide sufficient sustainable energy for industrial and socio-economic development”**

Malawi’s Sustainable Energy for All Action Agenda (2017) aims to:  
**Provide access to modern energy services for all by 2030, through on- and off-grid electrification and improved cookstoves**

The goal of the Malawi Energy Policy (2018) is:  
**“To increase access to affordable, reliable, sustainable, efficient, and modern energy for every person in the country”**

Historic Electrification Rates and SE4All targets



# Recognizing the scale of this challenge, we are collaborating with UN-OHRLLS and Rocky Mountain Institute in the implementation of a sustainable investment study

## Malawi Sustainable Energy Investment Study:

- Aims to provide a clear and specific **investment prospectus** for meeting Sustainable Development Goal 7 and improving power sector financial health and service
- Identifies **immediate** and **near-term opportunities** to make progress and **unlock investment** in Malawi
- Supports Malawi in **securing the right finance** at the right time
- **Builds on extensive work** carried out by Malawi government and development partners over the past years

## Department of Energy Affairs:



Government of Malawi

DoEA coordinates formulation of energy policies, planning & ICT; the provision of rural electrification services; and the provision of alternative energy and energy conservation services

## Implementation partners:

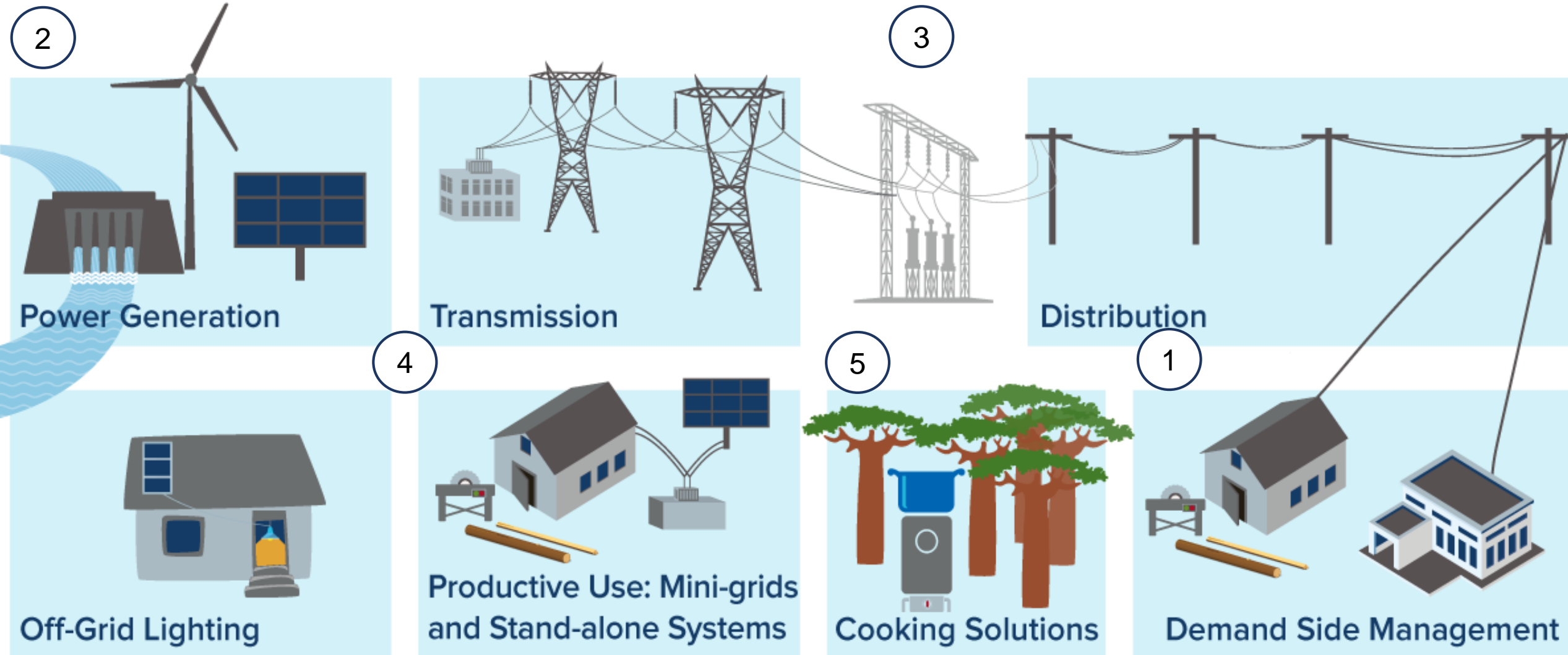


UN-OHRLLS

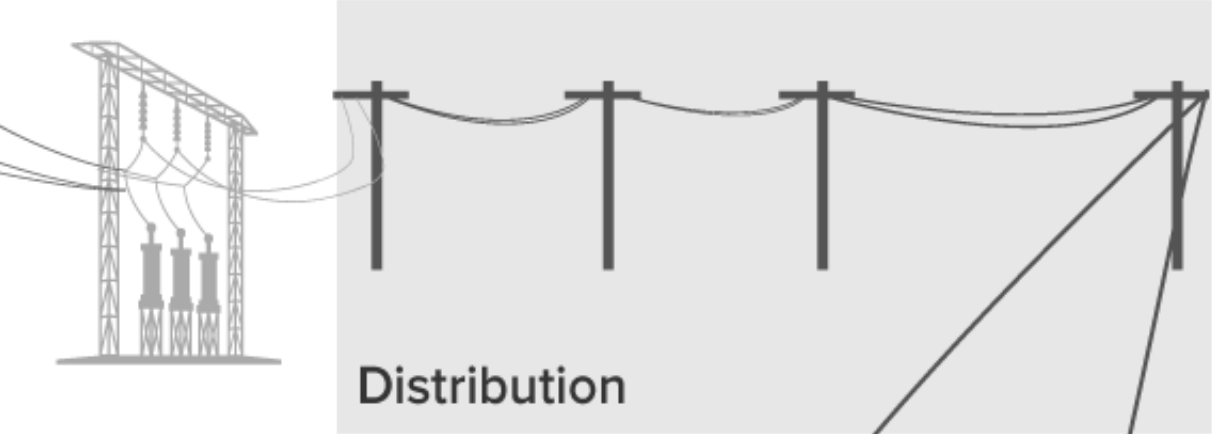
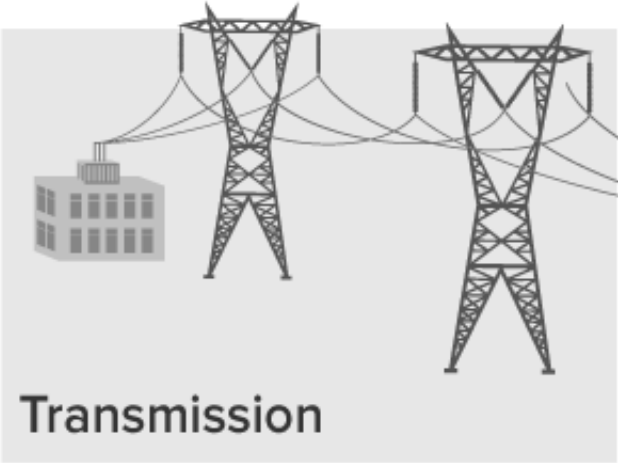
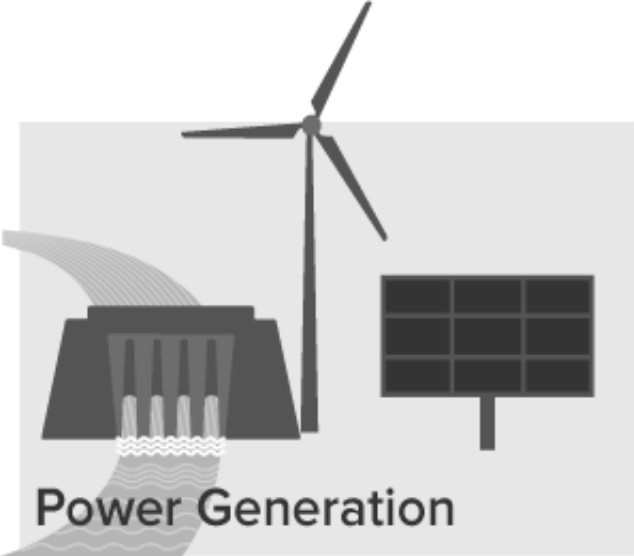




# By adopting an integrated approach to power systems planning, we build out a clear list of priorities for Malawi's investment needs

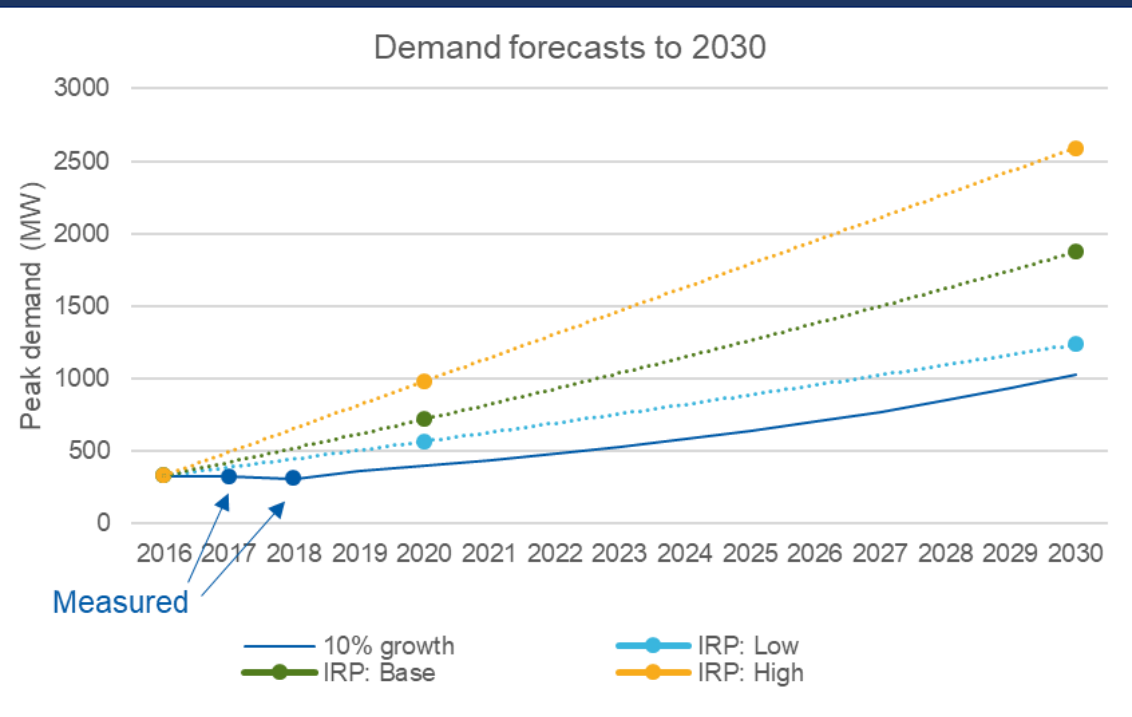


# #1 – Improve demand-side management



# Demand forecasting must be dynamic to account for rapid changes and the adoption of distributed energy resources

Demand forecasts must be regularly updated to reflect changing conditions and avoid risks of a supply–demand imbalance



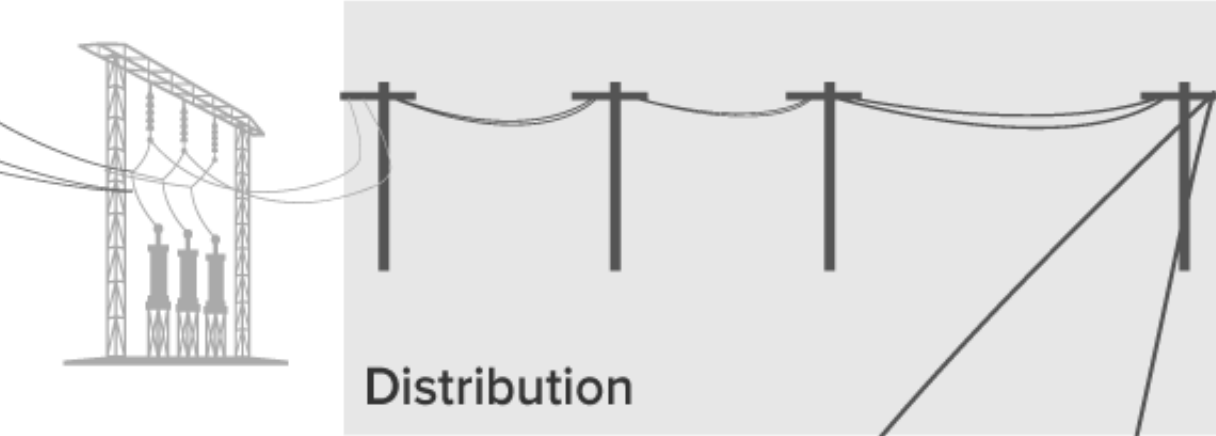
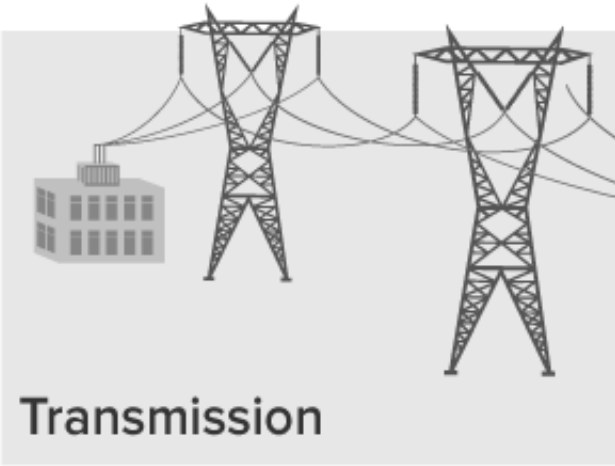
Distributed energy resources change demand profiles

- **Suppressed demand** from load shedding is difficult to quantify
- **Self-generation** with solar + battery or hybrid systems is increasingly common
- **Captive power** solutions are being developed in several major industries
- **Tariff increases** and time-of-use tariffs have depressed demand

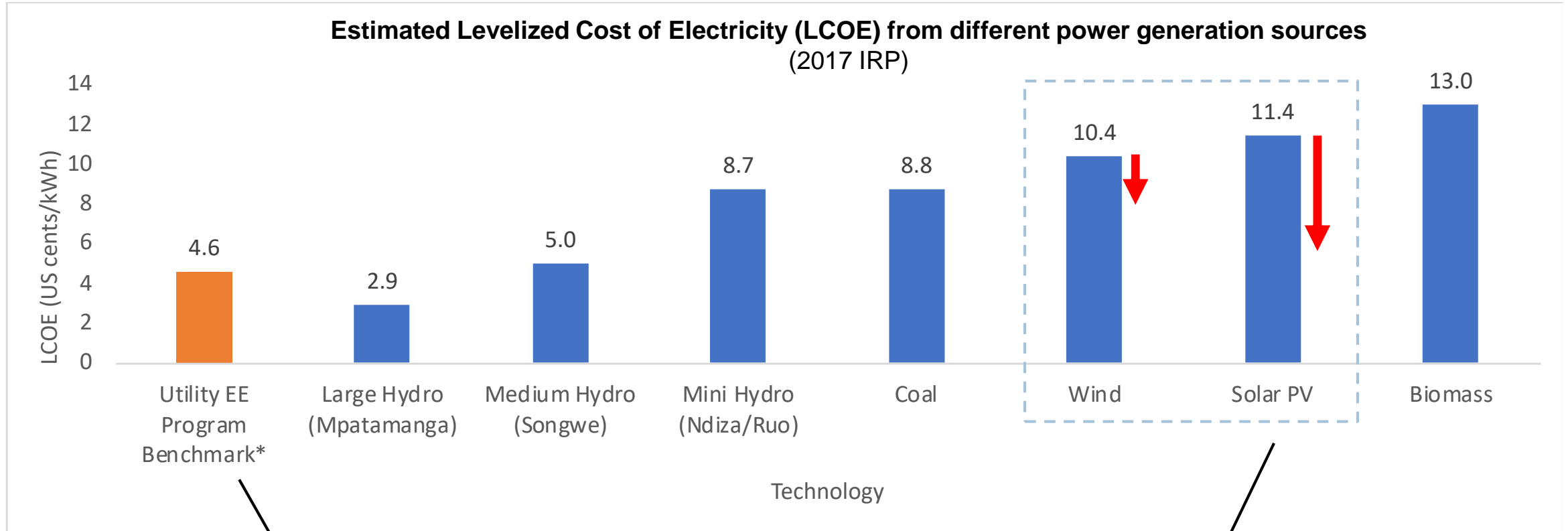
Energy efficiency programs reduce demand

A comprehensive efficiency program could reduce **peak demand** by **15–20%** and save **10–15%** of total **energy consumption**, while providing the same levels of energy services

# #2 – Develop an optimized power generation pipeline



# Malawi has a range of available energy sources from which the most cost-effective portfolio can be developed



Savings from efficiency cost less than generating electricity, and should therefore be considered the **“first fuel”**

There is **rapid cost reduction** in renewables, especially solar photovoltaics (PV) + batteries.

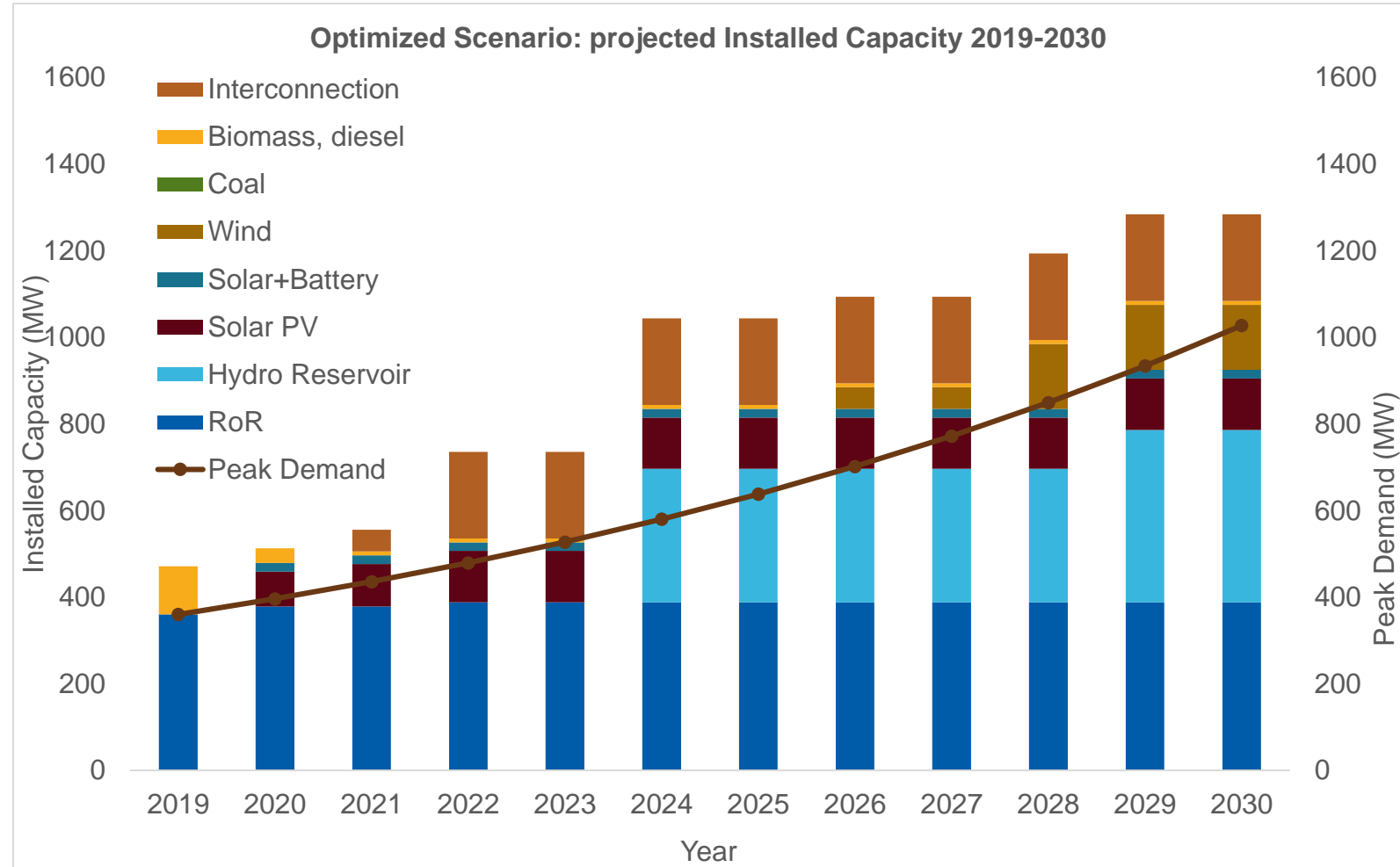
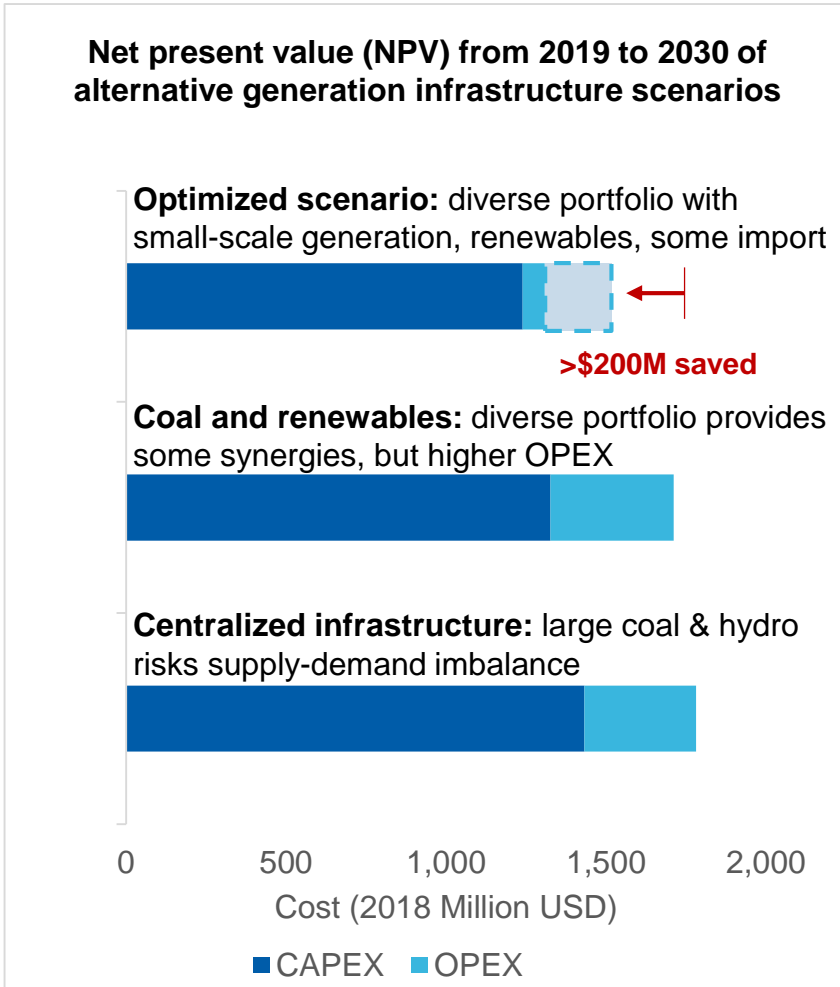
- Malawi PV prices reached **8¢/kWh** in 2018
- Zambia awarded PV tenders with bids of **4¢** in 2019

LCOE source: RMI's calculation based on the 2017 IRP.

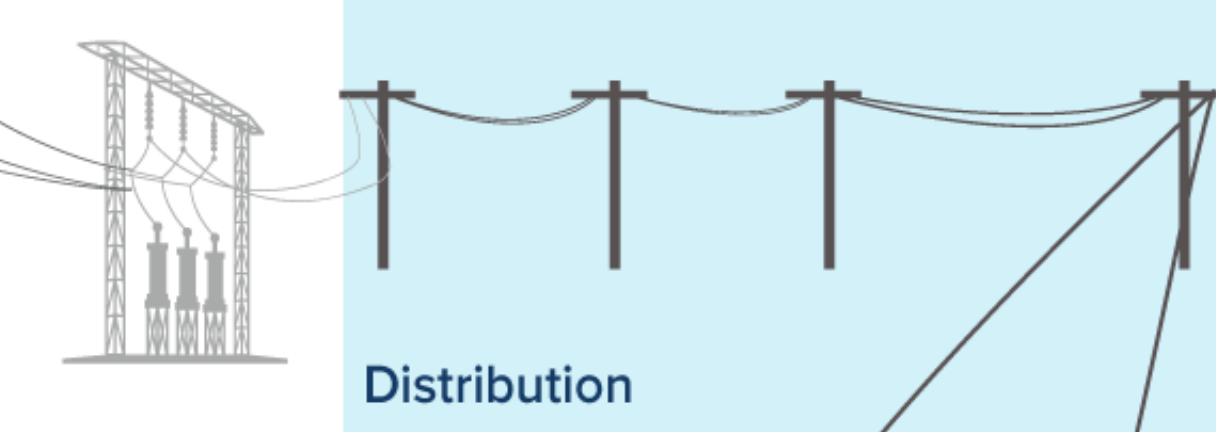
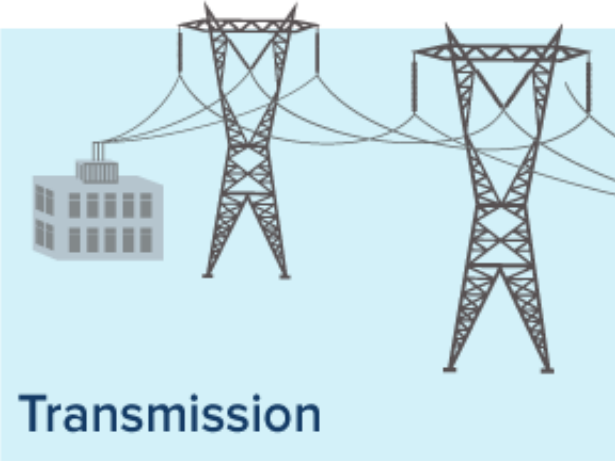
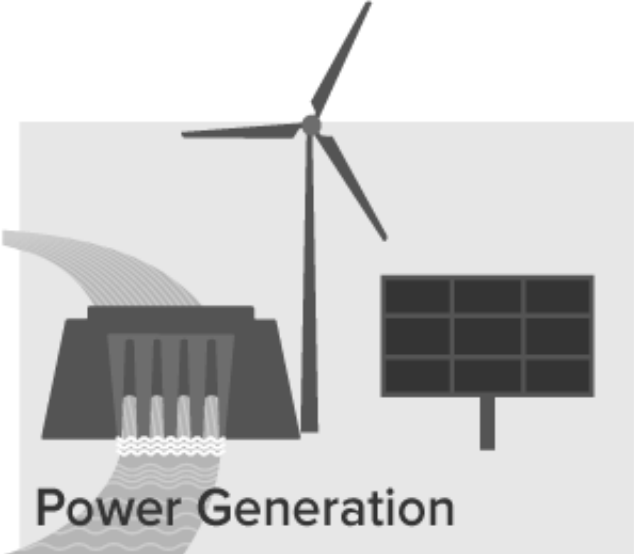
\* The efficiency cost is an average cost across all utility efficiency programs in the United States. Source: <https://emp.lbl.gov/sites/all/files/total-cost-of-saved-energy.pdf>



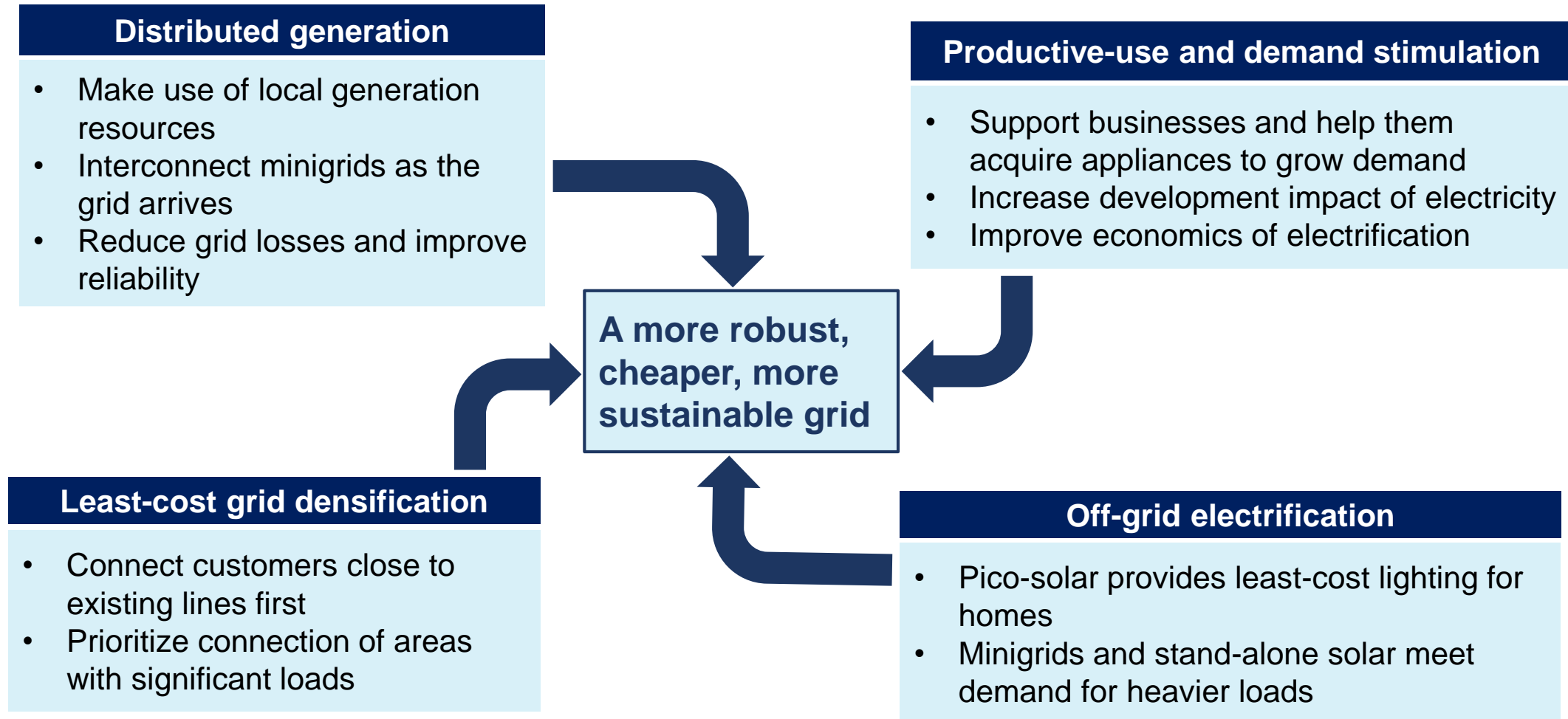
# A least-cost generation pathway mixes renewables with flexible power provision to meet Malawi's power needs at 25% lower cost than alternative scenarios



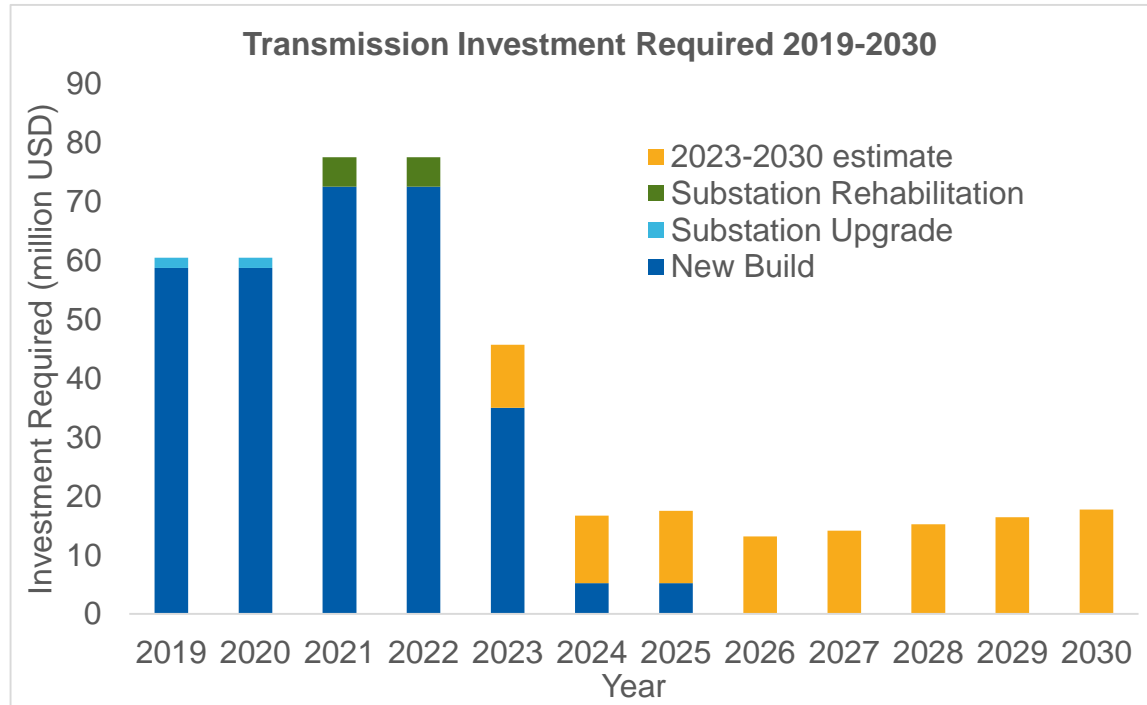
# #3 – Ensure appropriate grid infrastructure for power take-off and grid connection



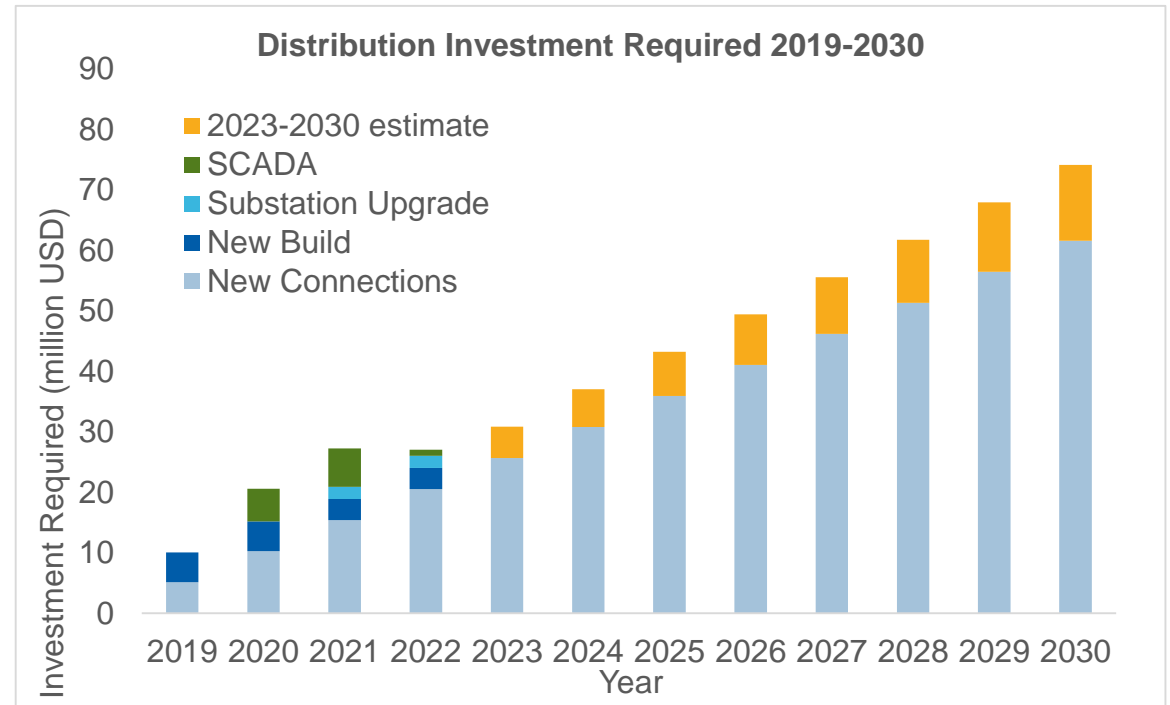
# Grid densification and expansion coordinated with off-grid solutions is the most cost-effective way of expanding electricity access



# Continued investment in the transmission network is essential; increasing access will require ongoing investments for adding new connections

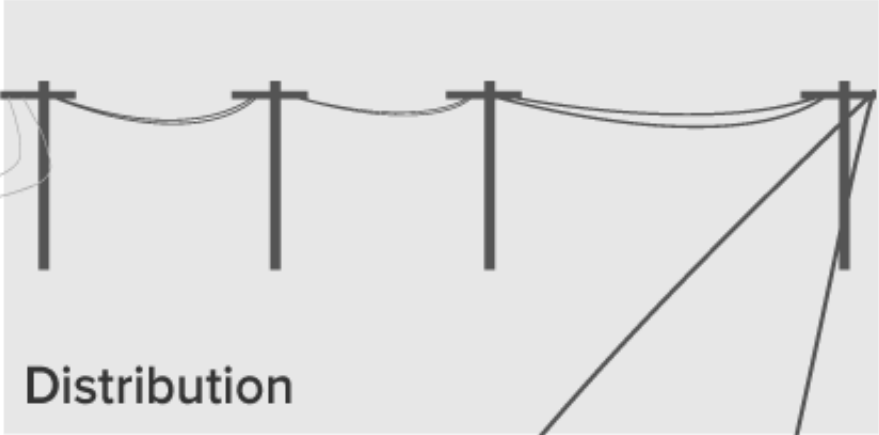
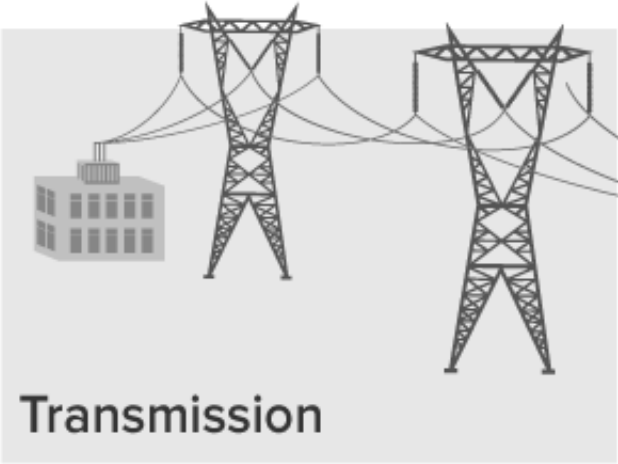
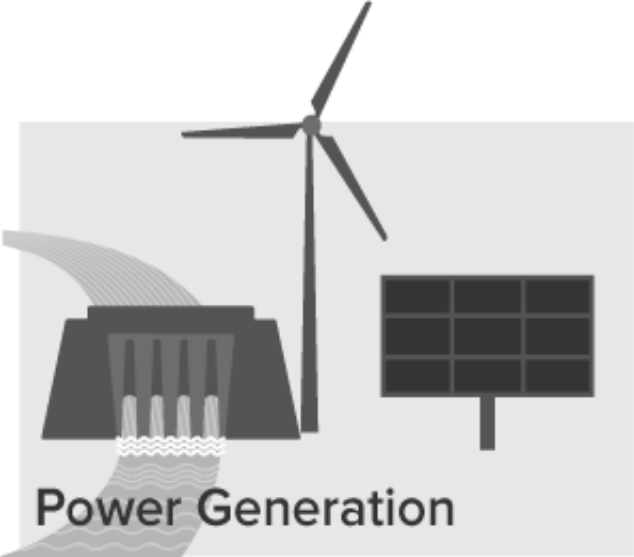


Intensive investments to build out the transmission backbone and interconnectors to Southern African Power Pool (SAPP)



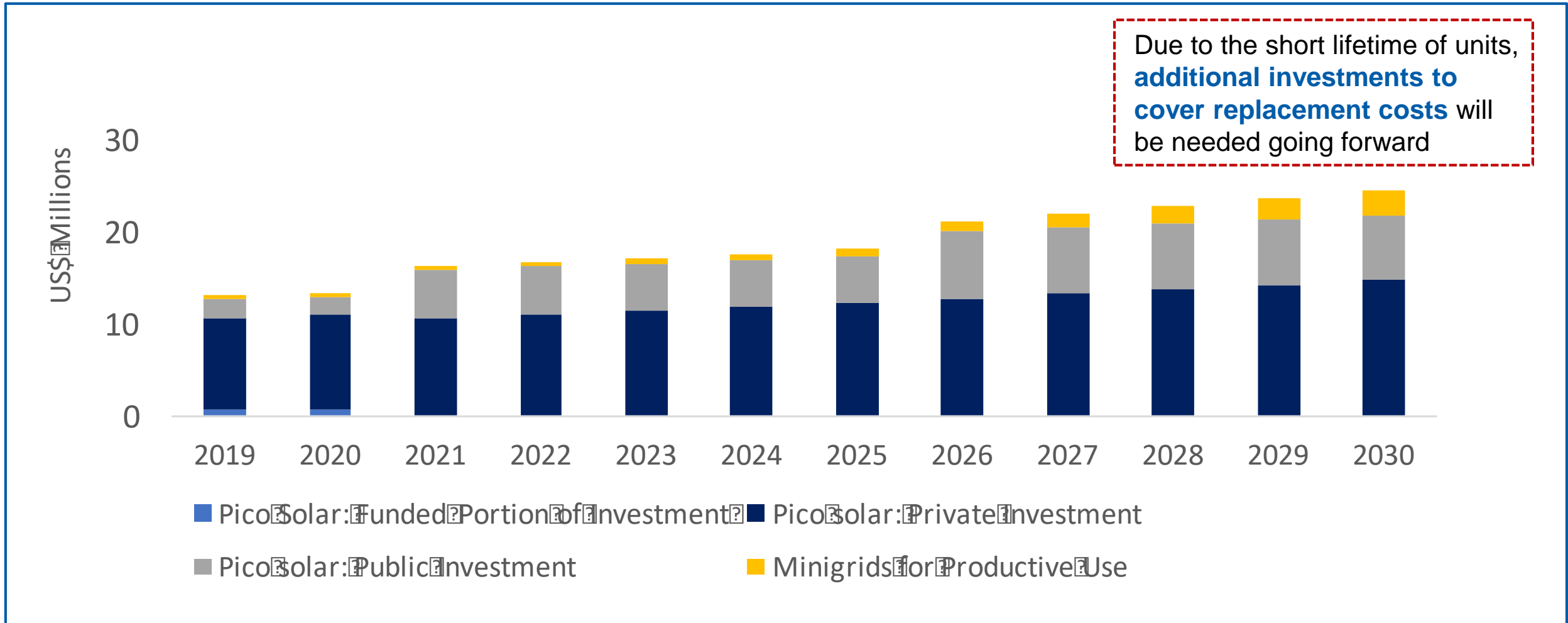
Grid expansion and densification to increase electrification are significant costs  
*(Note that the exact distribution of new connection costs over this time is still to be determined)*

# #4 – Build in complementary off-grid solutions

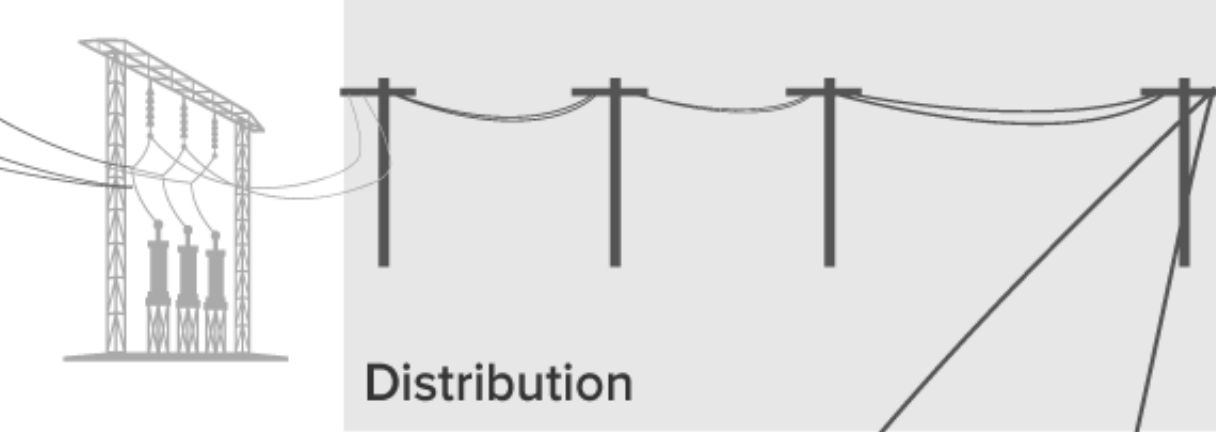
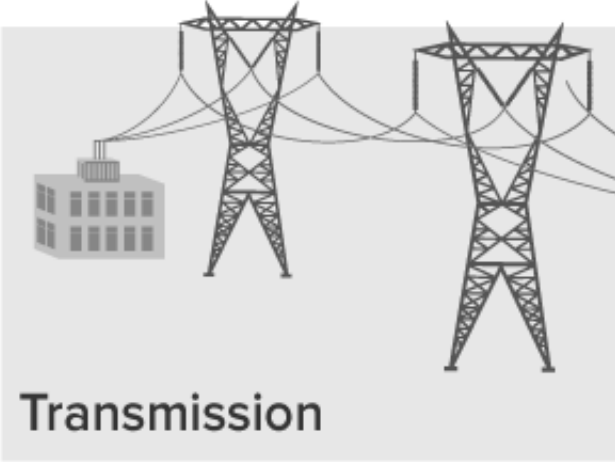
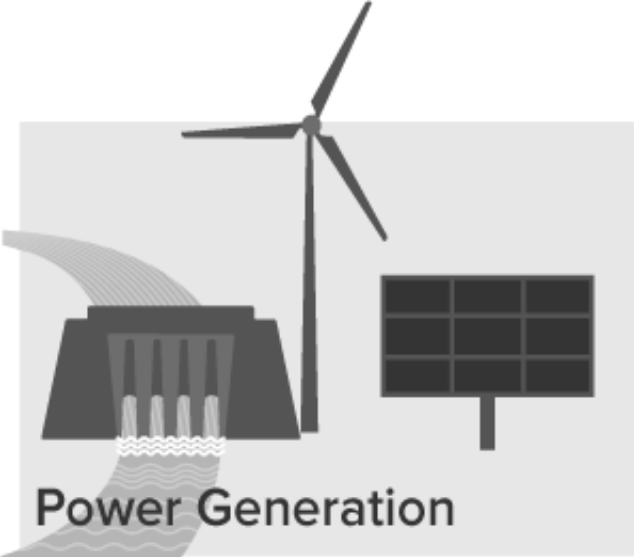




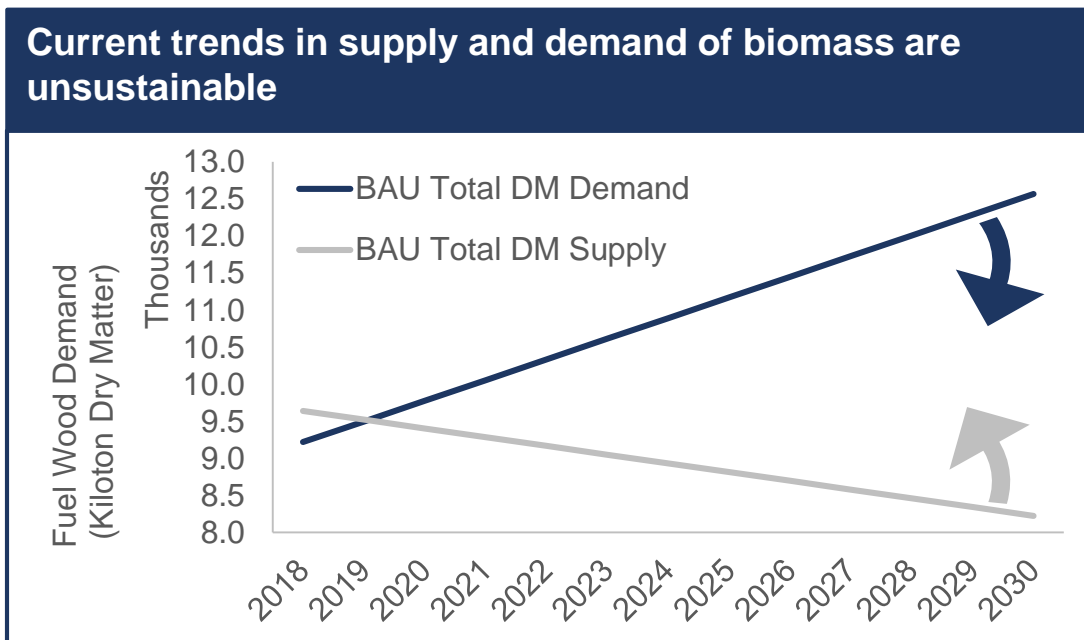
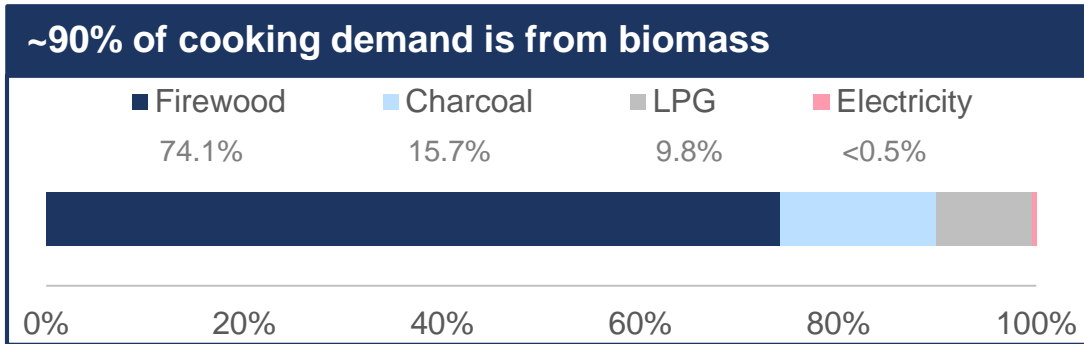
# To reach universal access, Malawi can complement grid development with around 3.5M additional off-grid connections by 2030, subsidizing the poorest households



# #5 – Develop a cohesive strategy for cooking energy provision



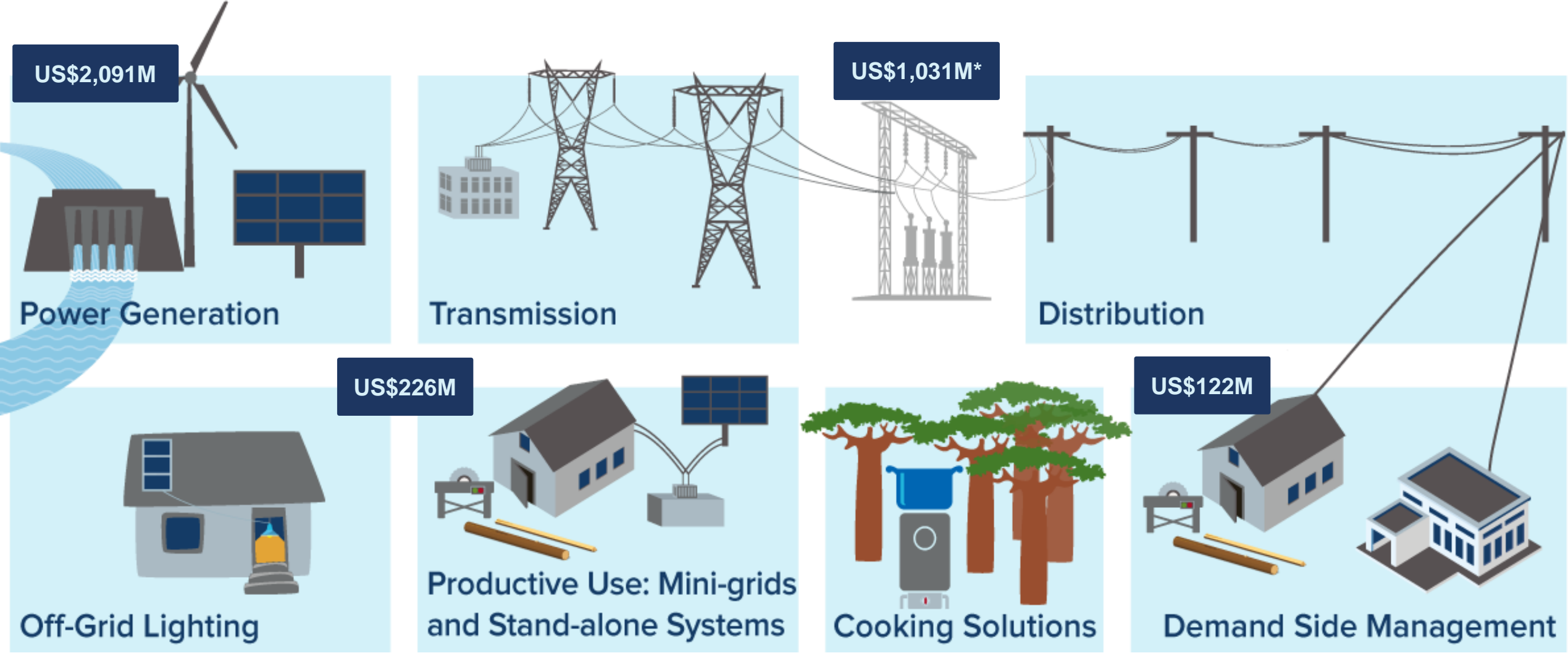
# Malawi can develop an integrated approach to clean cooking in order to address urgent national needs and an unsustainable biomass supply–demand balance



**Next Step: interministerial planning process for development of a clean cooking strategy with quantitative targets**

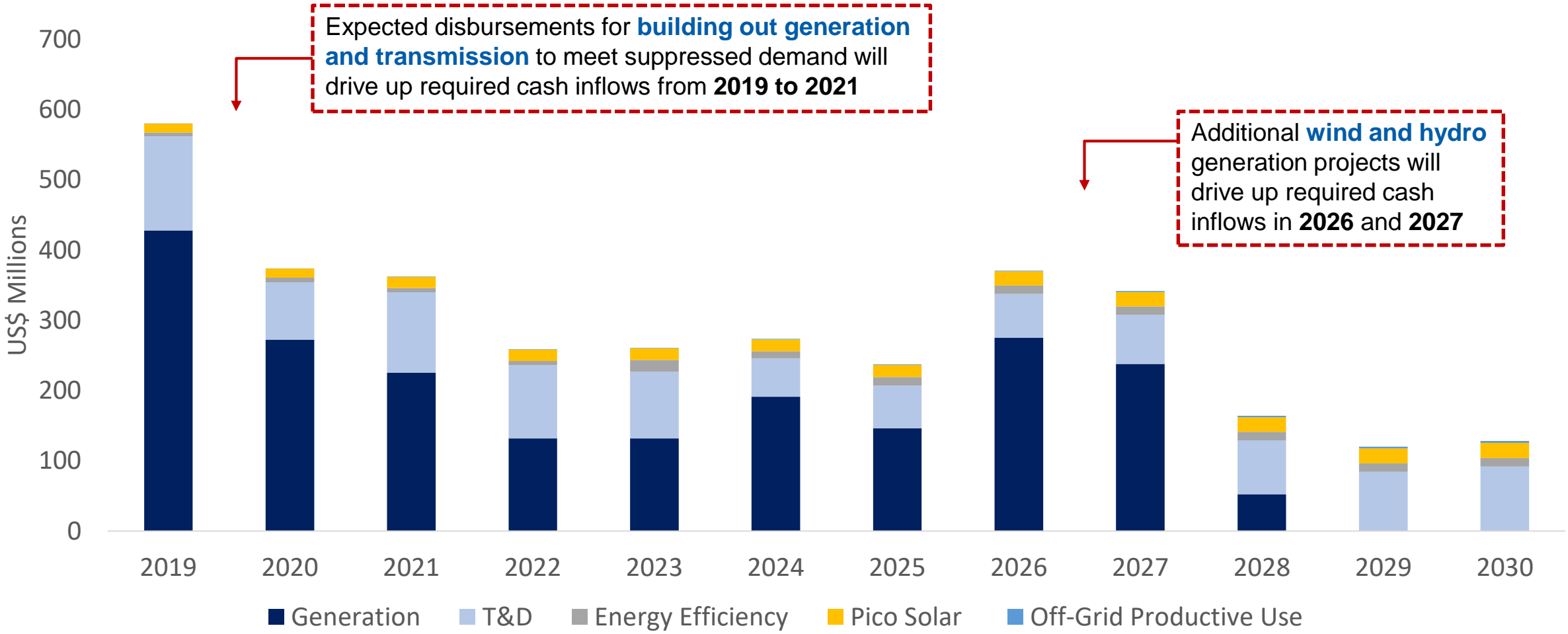
- **Reducing Biomass Demand for Cooking**
  - Rapidly increase uptake of cooking alternatives: Liquefied petroleum gas (LPG), ethanol, electricity, briquettes
  - Improved efficiency in biomass use and charcoal production
- **Restoring Biomass Supply**
  - Conservation agriculture
  - Farmer-managed natural regeneration
  - Community plantations and private woodlots
- **Addressing national targets related to health and gender equality**

# By mapping the funding requirements and candidate projects across each of these sectors, Malawi is building a clear investment prospectus



\* Investment requirements for both Transmission & Distribution

# The government can now provide increasing clarity on investment needs through to 2030, in accordance with national targets



\*Investment requirements do not include cooking solutions





Thank you



Government of Malawi

**Saidi Banda**  
Chief Energy Officer  
Department of Energy Affairs  
[saibanda@hotmail.com](mailto:saibanda@hotmail.com)