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United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries and Small Island Developing States

UNITY AND FREEDOM

ROCKY MOUNTAIN INSTITUTE

UNITED NATIONS MALAWI

LAUNCH
9 OCTOBER
2019

MALAWI SUSTAINABLE ENERGY INVESTMENT STUDY

09:00	**Welcome**	**Mr. Joseph Kalowekamo**, Deputy Director of Energy Affairs, Department of Energy Affairs, Ministry of Natural Resources, Energy and Mining
09:10	**Opening remarks**	**Ms. Heidi Schroderus-Fox**, Director, UN-OHRLLS **Ms. Maria Jose Torres Macho**, United Nations Resident Coordinator, Malawi **Ms. Chimwemwe Banda**, Chief Director, Department of Energy Affairs, Ministry of Natural Resources, Energy and Mining
09:40	**Project overview: Key outcomes and a way forward**	**Mr. Edward Borgstein**, Rocky Mountain Institute
10:00	**Moderated discussion: Questions on the study**	**Mr. Eric Wanless**, Rocky Mountain Institute
10:40	**GROUP PHOTO, PRESS BRIEFING & COFFEE/TEA BREAK**	
11:00	**World Café: Addressing key issues**	Several groups will be formed, in response to the key questions raised in the previous session. Participants will circulate among the groups to discuss the issues.
11:45	**Responses from development partners: key actions and plans**	**Representatives of the development partners working group.** (Lead: USAID)
12:00	**Responses from government representatives: actions and commitments**	**Ms. Chimwemwe Banda**, Director of Energy Affairs, Department of Energy Affairs, Ministry of Natural Resources, Energy and Mining **Mr. Joseph Kalowekamo**, Deputy Director of Energy Affairs
12:15	**Next steps and wrap up**	**Mr. Eric Wanless**, Rocky Mountain Institute
12:25	**Close**	**Mr. Joseph Kalowekamo**, Deputy Director of Energy Affairs
12:30	**LUNCH AND DEPARTURES**	

Malawi Sustainable Energy Investment Study

9th October 2019

VALIDATION WORKSHOP

UN-OHRLLS

GOVERNMENT OF MALAWI
Ministry of Natural Resources, Energy and Mining

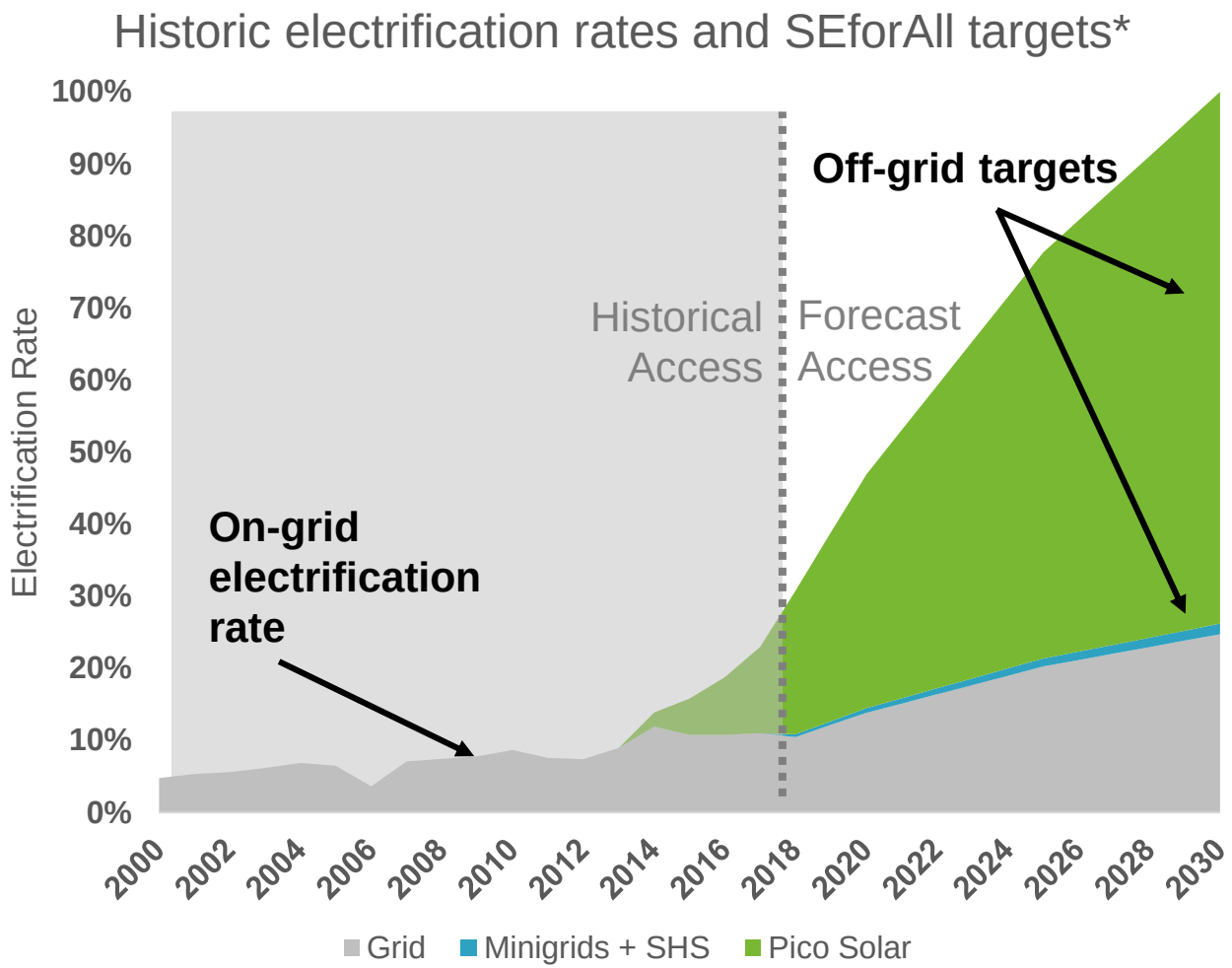
ROCKY MOUNTAIN INSTITUTE

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."

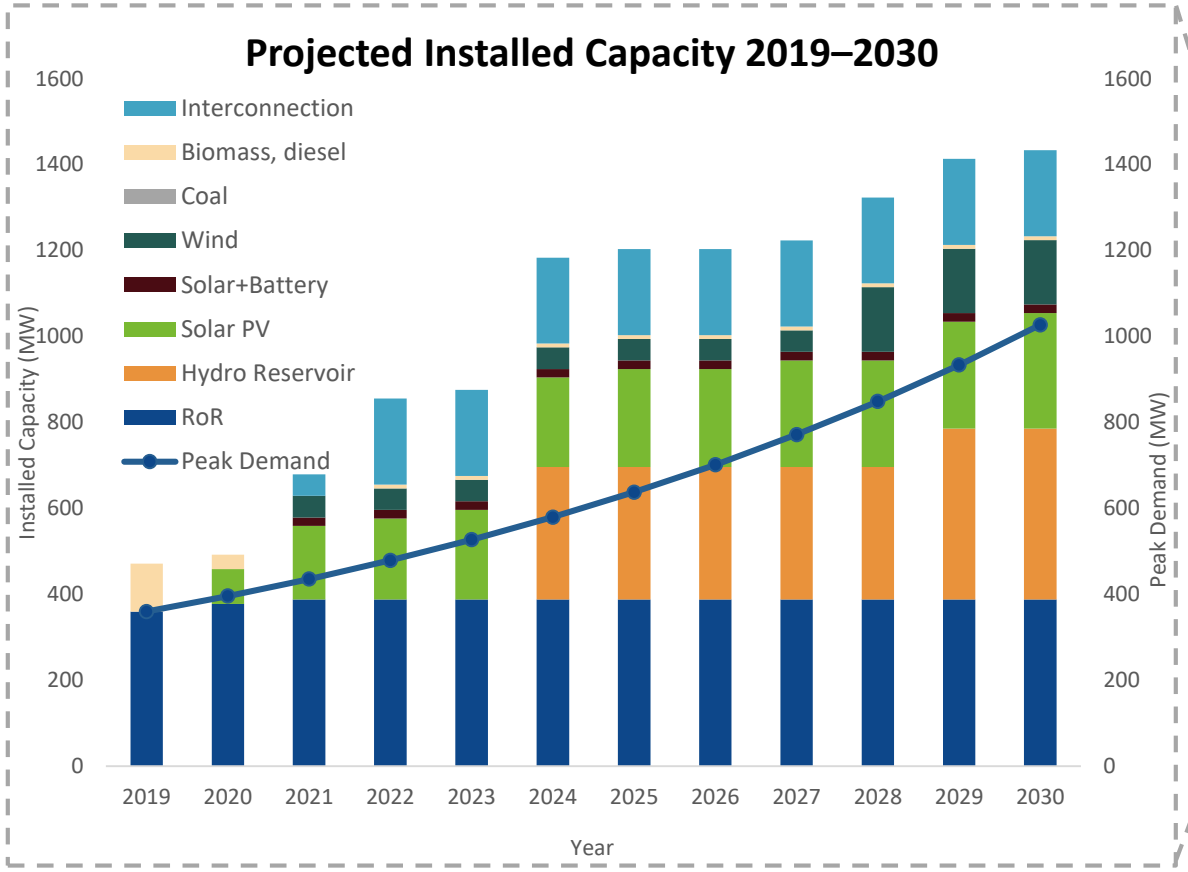
Malawi's Sustainable Energy for All (SEforAll) Action Agenda (2017) intends to:
"Provide access to modern energy services for all by 2030, through on- and off-grid electrification and improved cookstoves."

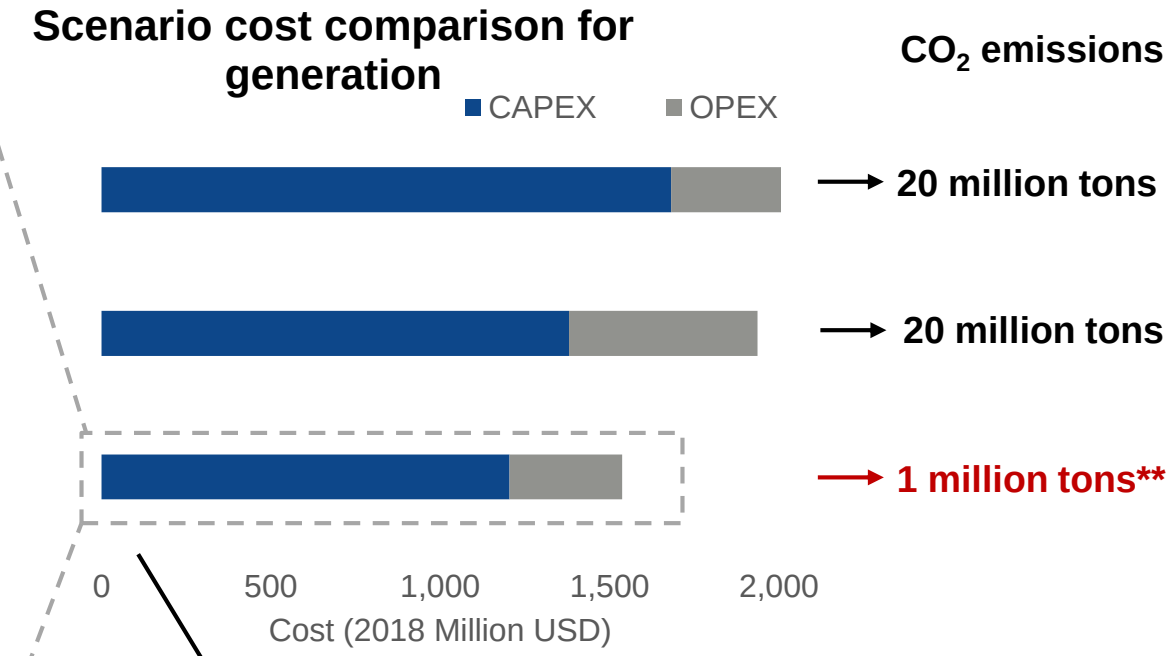
The goal of the Malawi Energy Policy (2018) is to:
"Increase access to affordable, reliable, sustainable, efficient and modern energy for every person in the country."



*Targets taken from the 2017 SEforAll Action Agenda

Malawi has an opportunity to meet these targets while saving up to $500M by 2030 compared to the baseline plan

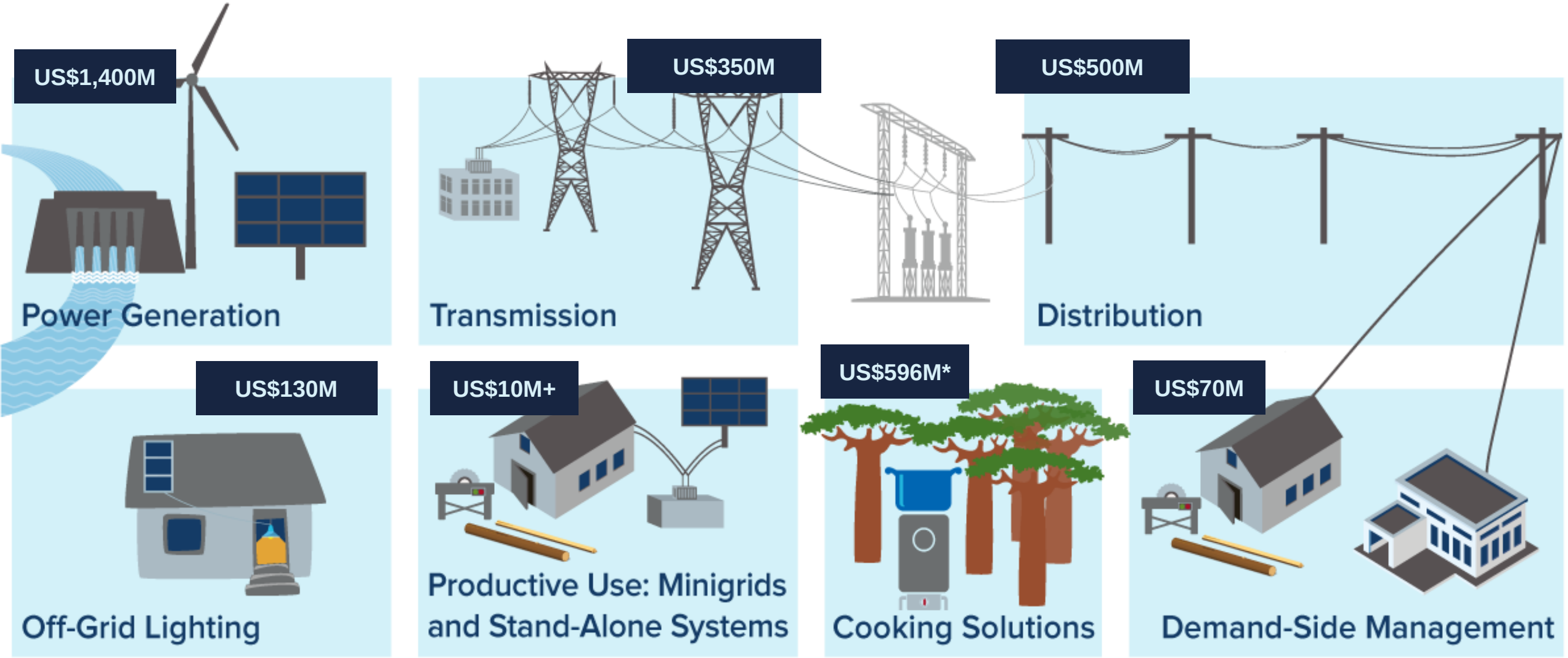




Scenario 3 provides a **least-cost, reliable, and diversified solution, saving ~$500 million (25%) and** with the potential to dynamically adjust investment based on demand forecasts

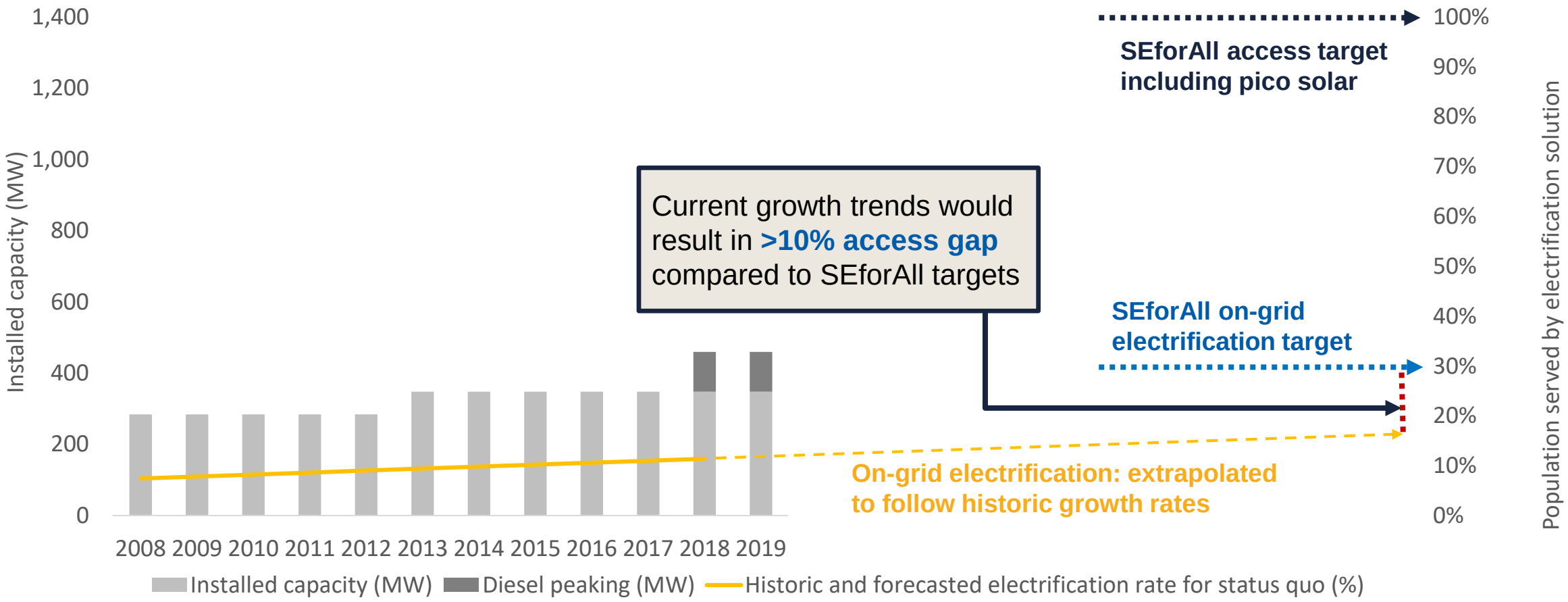
9% discount rate used, to represent the weighted average cost of capital for the sector

Capital must be provided to meet funding needs across all the major areas of Malawi's energy system, both on- and off-grid

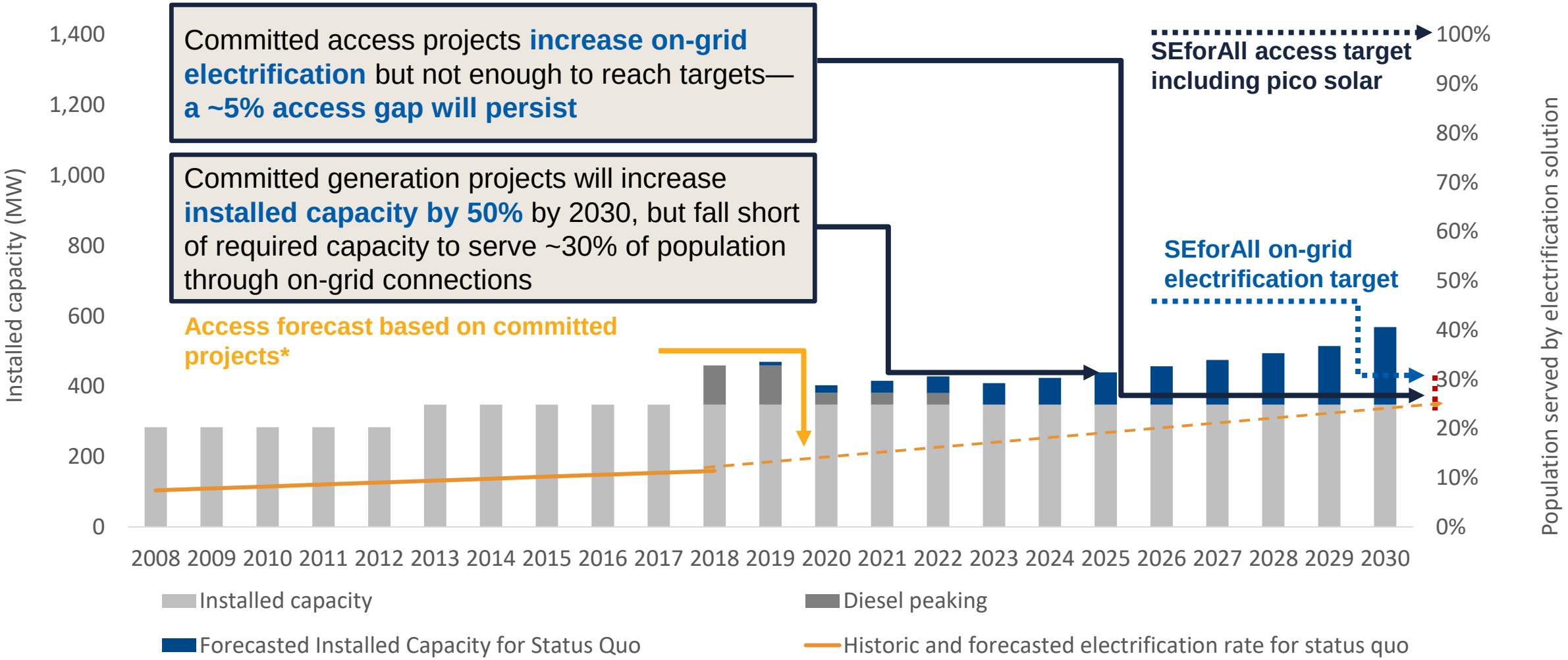


Capital investment requirements are discounted at 9% *Cooking investment needs are analyzed separately, as they will need to be refined with development of an updated national strategy for forestry and alternative cooking solutions.

On current trends, Malawi would only reach around 20% electrification in 2030 and fail to reach targets for serving the population

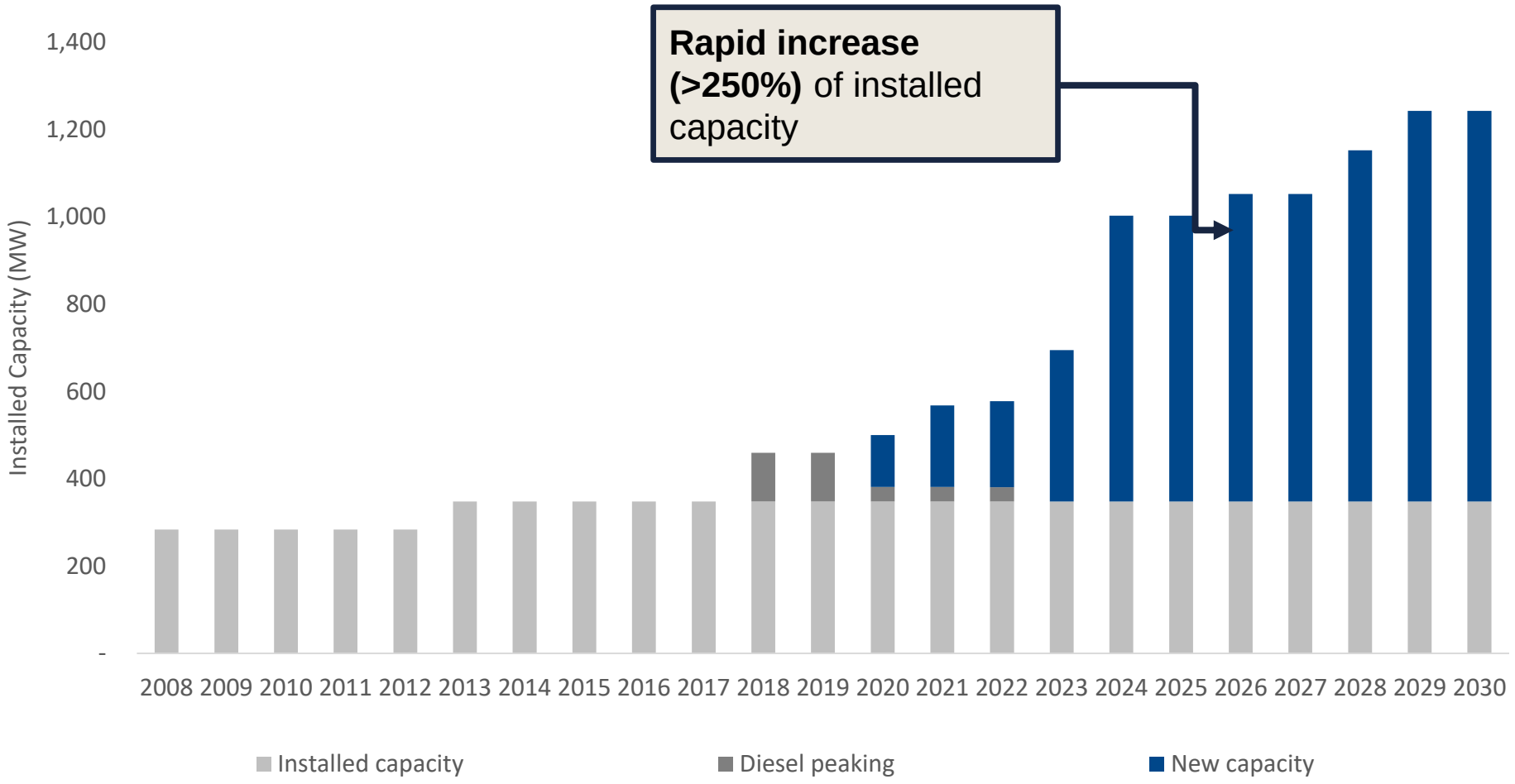


Ongoing programs and current proposals will improve this outcome, but still fall far short of Malawi's goals

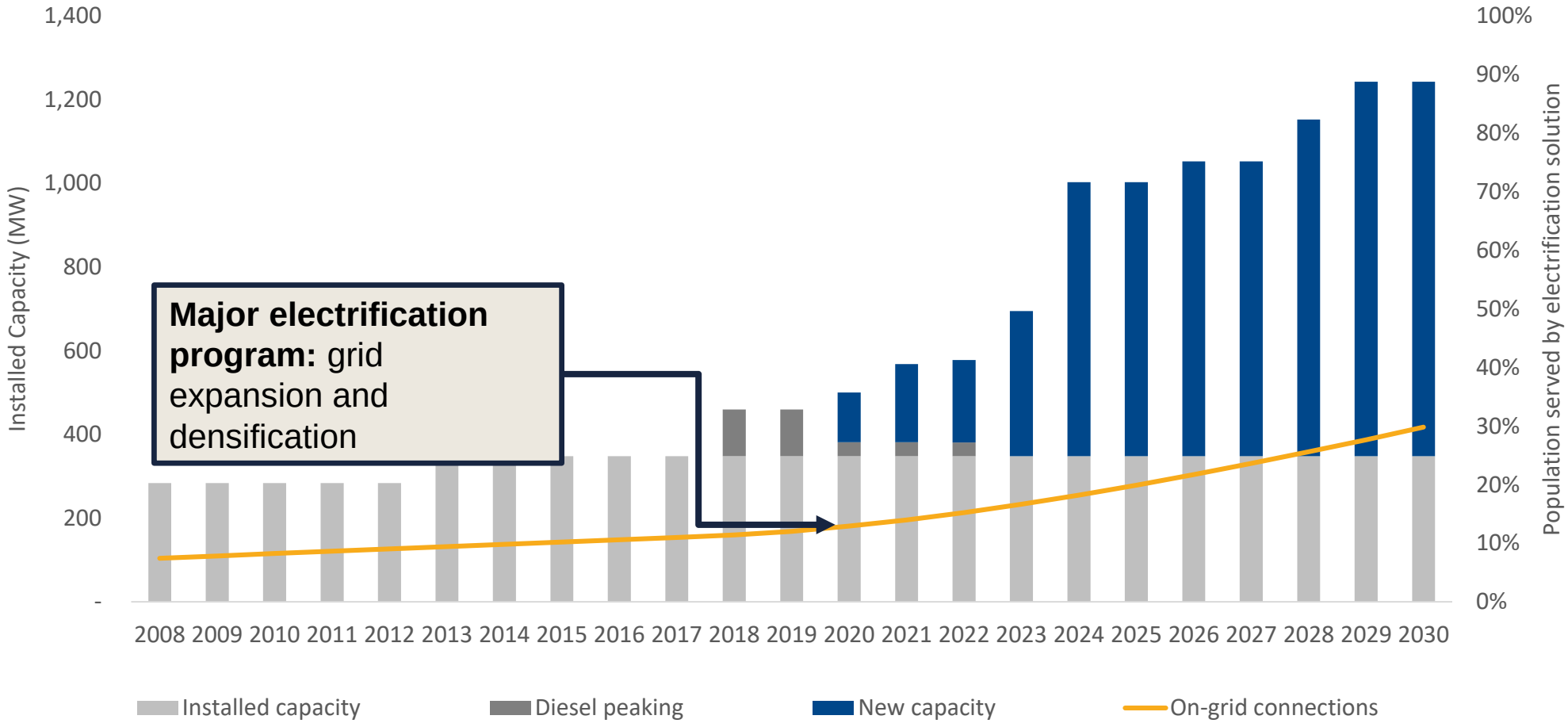


*World Bank Electricity Access Project and USAID's Southern Africa Energy Program (SAEP) together are estimated to provide around 450K connections, which when combined with forecasted electrification under the status quo would increase access to around 25% by 2030.

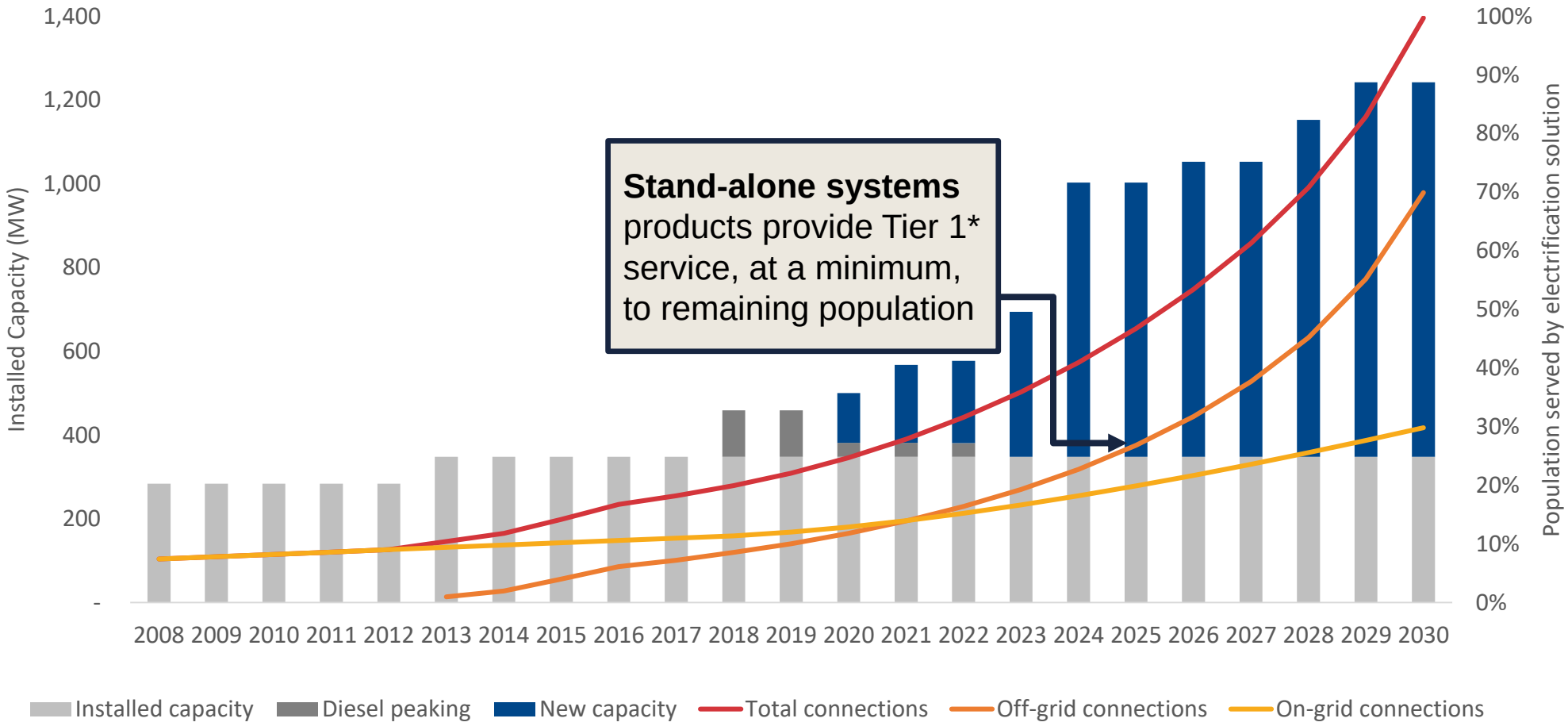
But by removing barriers and driving rapid growth in the sector, Malawi can scale up the power sector to provide generation capacity for expanding connections



Combining grid strengthening with an increased pace of rural electrification, Malawi can reach the goal of nearly 30% on-grid energy access by 2030



And by complementing on-grid access with a rollout of off-grid connections, Malawi can provide some level of electricity access to all by 2030



Meeting Malawi's energy needs requires a **step change** compared to historic progress.

Malawi must act quickly to:

- De-risk **immediate projects**
- Disseminate success to create **positive feedback loops** and **scale investment**

* The World Bank and SEforAll multi-tier framework is used for measuring levels of energy access - https://www.esmap.org/node/55526

This optimal investment pathway can only be achieved through a concerted effort from all key stakeholders

Government

- Support the **right projects**, in the **right order**, using an optimal mix of financial instruments to **de-risk and attract additional financing**
- Implement **supportive policies** to de-risk investment
- Ensure that a whole-system, **least-cost** solution is reached, to provide reliable and affordable electricity access

Investors

- Increase **awareness and knowledge** of approved frameworks and processes
- **Target investment** at priority project areas identified by government
- Use available **climate finance** to reduce overall financing costs

Development Partners

- **Simplify financing structures** and increase ease of access to climate finance
- **Support a least-cost pathway** through financial instruments for de-risking
- Provide technical assistance to identify facilities, package projects and structure finance, and complete applications to **obtain climate finance**

The full report builds out the project needs and the available finance for Malawi's energy sector

Section	Description
Project prioritization	Evaluates each key area of the energy system, to map: • **Challenges** and current status • **Opportunities** for improving economics and developing the market • **Priority activities**—criteria for project selection and programming • **Investment** needs for the sector
Finance for development	Maps project needs to appropriate types of finance, identifies funding sources, and provides recommendations to obtain financing
De-risking projects	Identifies key sector-wide risks and provides recommendations to reduce perceived and existing risks to attract appropriate, low-cost, private investment
Recommended actions	Provides key next steps for government, private sector, and development partners, to unlock finance and reach Malawi's goals

Malawi should capture near-term opportunities in EE programs while building long-term capacity, to ensure dynamic demand planning

~$70 million

investment required by 2030 to establish robust DSM throughout the system*

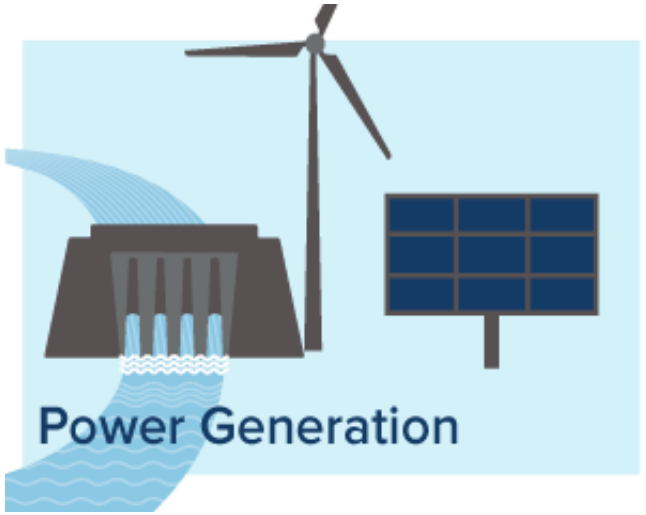
Top priorities for Malawi are:

- Improve demand planning and forecasting
- Develop a comprehensive EE program covering key sectors

To move forward, the next steps are:

- Update and calibrate existing **demand forecasts** for sector planning
- Accelerate progress with planned efficiency programs

*Capital investment requirements discounted using 9% discount rate



Malawi could pursue a least-cost, reliable, and diversified solution to save ~$500 million on investment and operating expenses by 2030 while meeting NDC emissions targets

~$1,400 million

investment required by 2030 to meet the growing demand*

Top priorities for Malawi are:

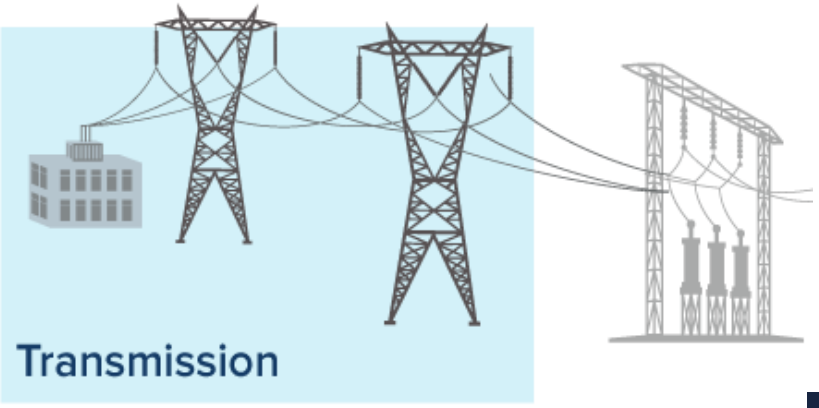
- Solar projects, including some with storage, to unlock the markets
- Modular renewable projects to diversify the portfolio and reduce whole-system costs
- Interconnection projects to secure reliability

To move forward, the next steps are:

- Implement a set of **quick win projects** (principally solar PV) to demonstrate market readiness
- Conduct comprehensive **integrated planning** on a regular basis to adjust investment based on demand forecasts**

*Capital investment requirement discounted with 9% discount rate

**Plexos modelling tools can be used for the integrated planning



Malawi should balance the near-term import and long-term capacity expansion through a coordinated transmission build-out plan

~$350 million

investment required by 2030 to provide adequate infrastructure support for capacity expansion*

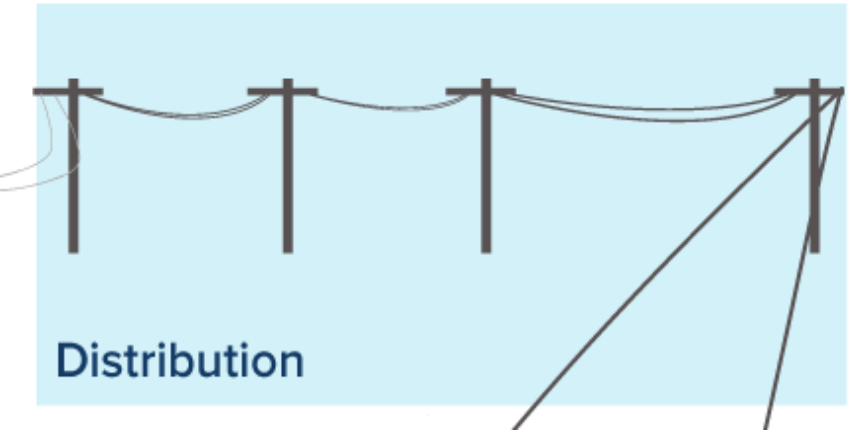
Top priorities for Malawi are:

- Key transmission lines and substations to support integration of renewables
- Transmission backbone and interconnection projects to meet both near-term and long-term needs strategically

To move forward, the next steps are:

- Complete interconnection with Mozambique
- Conduct comprehensive **integrated planning** regularly to ensure transmission investments coordinate with generation

*Capital investment requirement discounted with 9% discount factor



Malawi should coordinate the on-grid and off-grid planning to achieve a systematic, optimized solution that achieve access targets

~$500 million

investment required by 2030 to enable a robust grid densification*

Top priorities for Malawi are:

- Distribution upgrades to sustain economic growth
- Cost optimization for rolling out electrification programs

To move forward, the next steps are:

- Build crucial substations
- Conduct analysis to further prioritize among least-cost grid densification areas
- Conduct integrated, on-grid and off-grid planning on a regular basis to coordinate investment decisions

Capital investment requirement discounted with 9%

Malawi should identify and support productive use to enable sustainable business models in the minigrid sector

>$10 million

investment required by 2030 to develop the minigrid market*

Top priorities for Malawi are:

Couple minigrid development with agriculture-based productive use to **reduce electricity costs** and promote localized **economic growth**

To move forward, the next steps are:

- Assess value chains in **irrigation, horticulture,** and **dairy farming** to identify potential for minigrid growth

*Development and construction cost estimated based on policy targets for minigrid sector. With additional information on agricultural value chains, a more realistic market estimate can be produced. Capital investment requirements discounted with 9% discount rate.

Off-Grid Lighting

Malawi should enable private sector participation to grow the off-grid lighting market, while subsidizing the poorest to meet its access targets

~$130 million

investment required by 2030 to meet off-grid connection targets*

Top priorities for Malawi are:

- Understand **demand**
- Build **consumer awareness** on product quality
- **Subsidize** the poorest

To move forward, the next steps are:

- **Collect information** on performance of different service options to tailor **program design** to market needs

Capital investment requirements only include the portion of the market that cannot afford the full cost of pico solar products and require subsidies. Capital investment requirements discounted at 9%.

Malawi must develop a long-term clean cooking strategy to drive a sectoral transformation and avoid major deforestation in the coming years

~$596 million

Investment required in:

Supply side, to increase biomass availability

Demand side, to increase efficiency

New technologies and infrastructure to drive sectoral transformation

Top priorities for Malawi are:

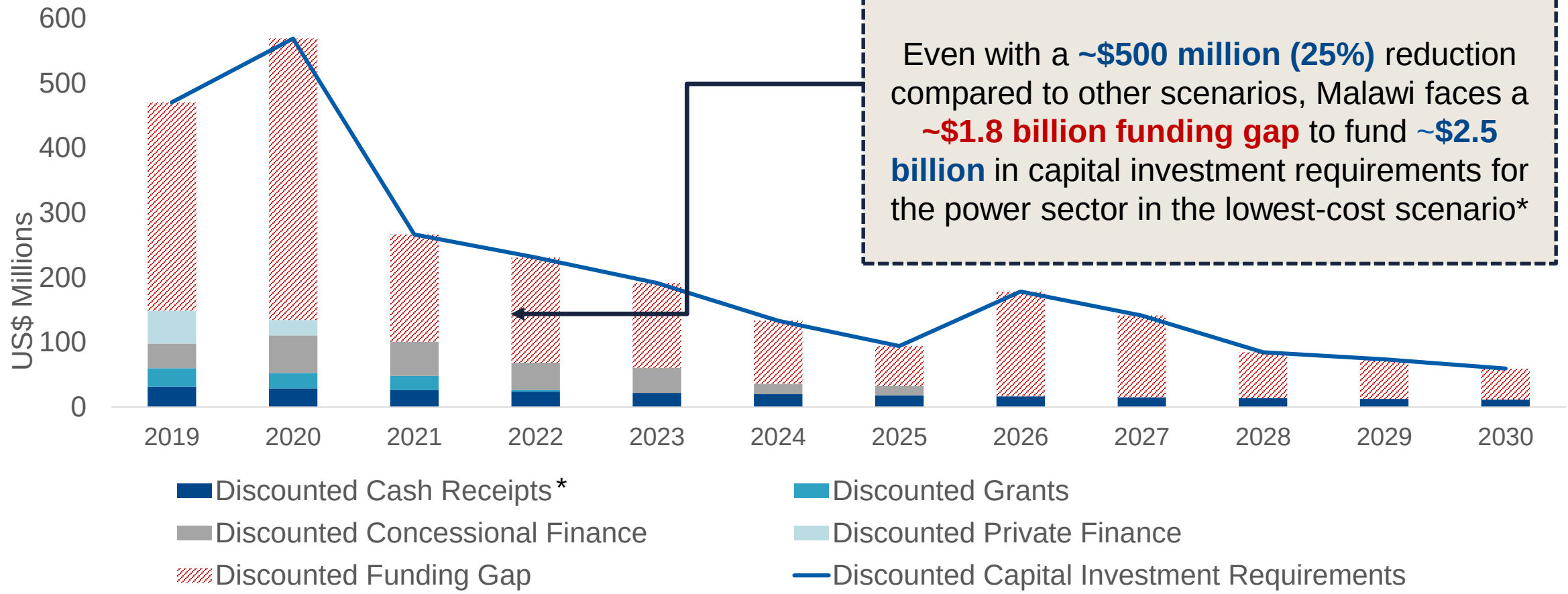
- Drive a sectoral transformation of the cooking sector to reduce biomass demand, increase health and provide sustainable cooking solutions

To move forward, the next steps are:

- **Conduct an inter-ministerial planning process** to augment improved cookstove strategy and set a long-term vision for clean cooking with non-biomass technologies
- Apply targets and mobilize investment with innovative business models

The level of investment required to meet these targets and cover the $1.8 billion funding gap for the power sector represents a rapid increase in activity

Capital Investment Requirements to Committed Funding



Even with a **~$500 million (25%)** reduction compared to other scenarios, Malawi faces a **~$1.8 billion funding gap** to fund **~$2.5 billion** in capital investment requirements for the power sector in the lowest-cost scenario*

*All costs are calculated at NPV, discounted at 9%. Investment requirements do not include cooking solutions.

**Cash receipts refers to budget allocations for the energy sector, based on historical trends. This includes budgets earmarked for ESCOM-led electrification efforts and MAREP-led electrification.

Investment to fill this gap will need to come from a range of private, public, and concessional sources, complemented by government support

Government role is to **de-risk** investment in segments that can be commercially viable by reducing perceived risks and supporting economically viable projects that lack commercial returns

No subsidy required	**Lower risk commercial activities** (no subsidy)	Stand-alone systems for productive use and pico solar for mid to high socio-economic brackets
Requires Subsidy	**Higher risk commercial activities** (in need of temporary subsidy or guarantees)	Generation
	Not fully commercially viable activities (in need of temporary subsidy)	Minigrids targeting productive use
	Not fully commercially viable activities (in need of long-term or permanent subsidy)	T&D, EE/demand-side management (DSM), cooking solutions, and pico solar for low socio-economic brackets

Guarantees, subordinate capital, first-loss capital

Donor capital (grants) and **some concessional financing**

Malawi's proposed financial strategy builds on this approach to leverage 3x in private financing

Use **first-loss** and **subordinate capital** early on to attract **commercial sources** of financing and demonstrate the viability of investing in generation in Malawi

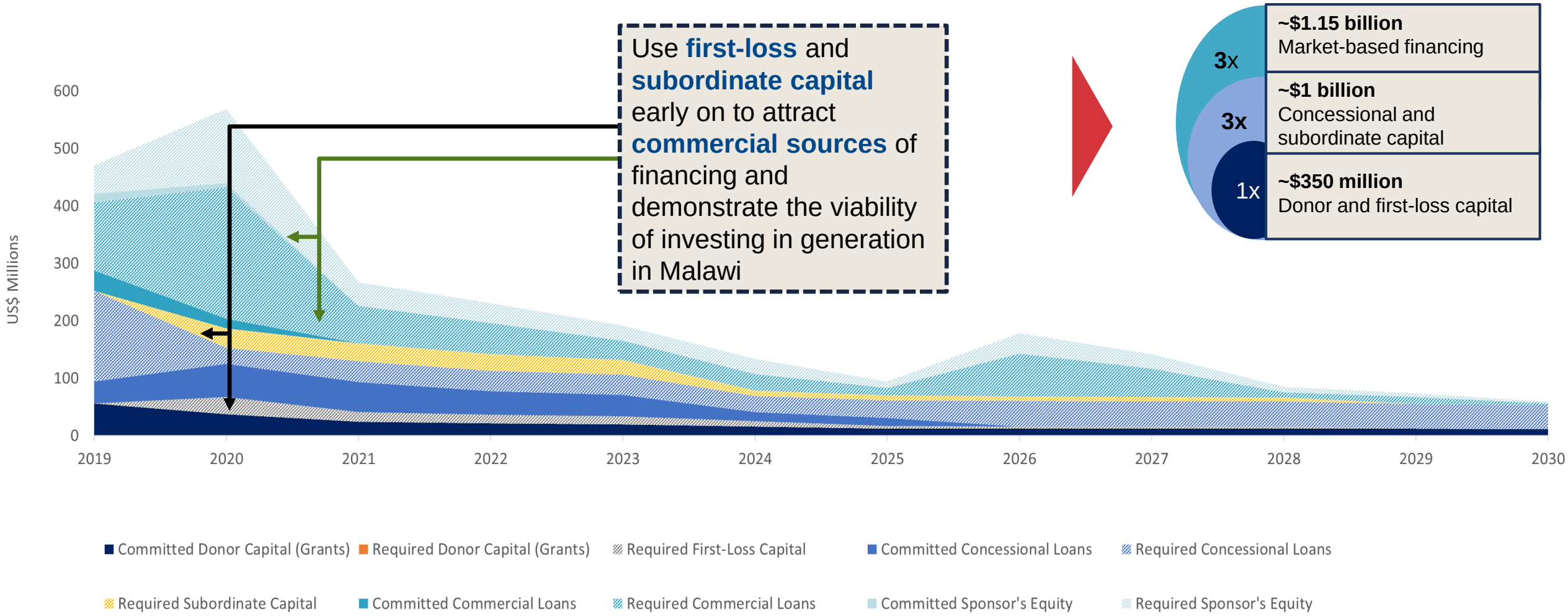
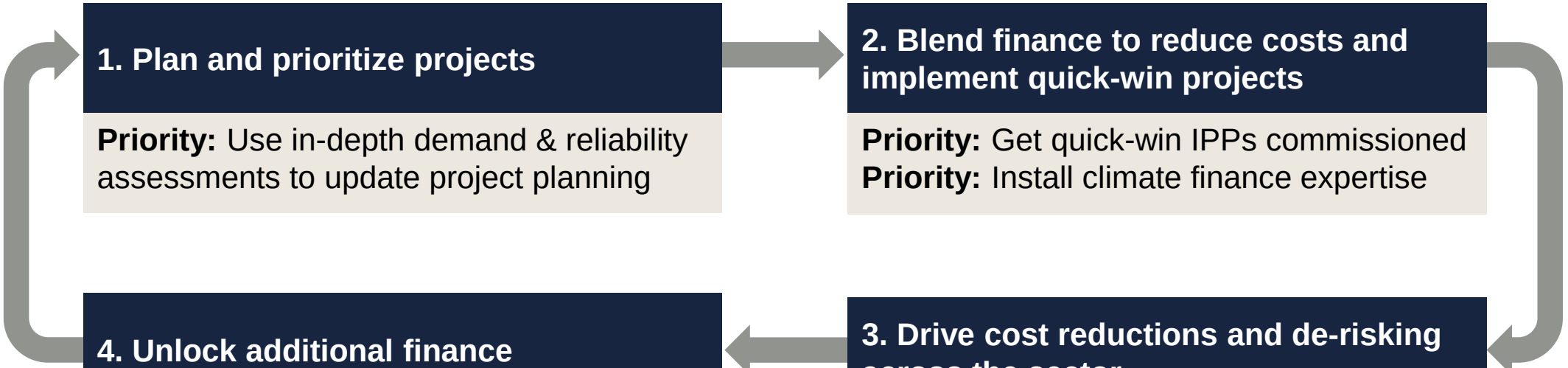


Chart does not include financing costs or cooking solutions investment requirements. Investment requirements includes development and construction costs, discounted using a 9% discount rate

A few key actions can unlock the funding Malawi needs in a positive feedback loop that can help the country develop rapidly, sustainably, and at the lowest cost



5. Strengthen institutional frameworks to develop the market and support implementation

Priorities:
- On-grid: Establish independent single buyer unit; improve off-taker financial health
- Off-grid: Improve implementation and awareness of product standards

Implementing these recommendations successfully will require government leadership, improved communications, and collaboration between stakeholders

Three agencies will be at the core of implementing these recommendations, working with **government**, **investors,** and **development partners**:

Department of Energy Affairs	Malawi Investment and Trade Centre	Development partners working group
Take the lead in national planning Set goals, define targets, and drive implementation of recommended actions Coordinate activities among government agencies and ministries	**Centralize contacts with the investment community** Provide a single point of contact, facilitating the flow of information to and from investors Communicate DoEA's activities and updates	**Coordinate support to the government** Ensure development partners are providing the right support to enable implementation of this report's recommendations Align within the DP group