ELECTRIFYING ECONOMIES

INVESTMENTS IN DISTRIBUTED AND RENEWABLE ENERGY NEED TO SCALE

Distributed energy can expand access to an additional 450 million people by 2030. Regions with poor grid reliability can rely heavily on distributed energy to improve service, but for distributed energy to deliver on its promise, investment needs to scale up quickly.

Annual minigrid investment **today** (2015-2019)

US$380
MILLION

Annual distributed energy investment **needed** (2020–2030)

US$120
BILLION

FURTHER READING

→ SEFORALL

Energizing Finance series

→ IEA

Sustainable Development Scenario of the World Energy Outlook 2019 (2019)

The IEA estimates that sub-Saharan Africa alone will need an annual US$15 billion investment in minigrids, alongside $50 billion in grid-connected renewables and $42 billion in transmission & distribution systems.

INVESTING IN DISTRIBUTED ENERGY MULTIPLIES IMPACT

GDP

Spending

$1

on distributed energy resources can unlock

$20

in GDP growth.

For example, reaching **per capita consumption of 200kWh** per year in rural Ethiopia would make national **GDP 14% larger in 2030**, compared to business as usual.

REFERENCES

→ These calculations are based on increasing annual power consumption per capita in rural populations, as countries move to meet their goals of 100% electrification in 2030. Baseline scenarios (or "business as usual") use 50 kWh per capita per year as the rural electrification threshold, following the current IEA definition. Target scenarios achieve 200 kWh per capita per year in rural areas, to meet residential, social, commercial, and productive use needs in rural areas. Non-rural electricity consumption is identical in both scenarios.

→ The Global Electrification Platform is used to estimate the total investment needed for building the electrification infrastructure to meet this level of demand in each scenario. Detailed calculations based on GIS data for Nigeria and Ethiopia are used in the analysis.

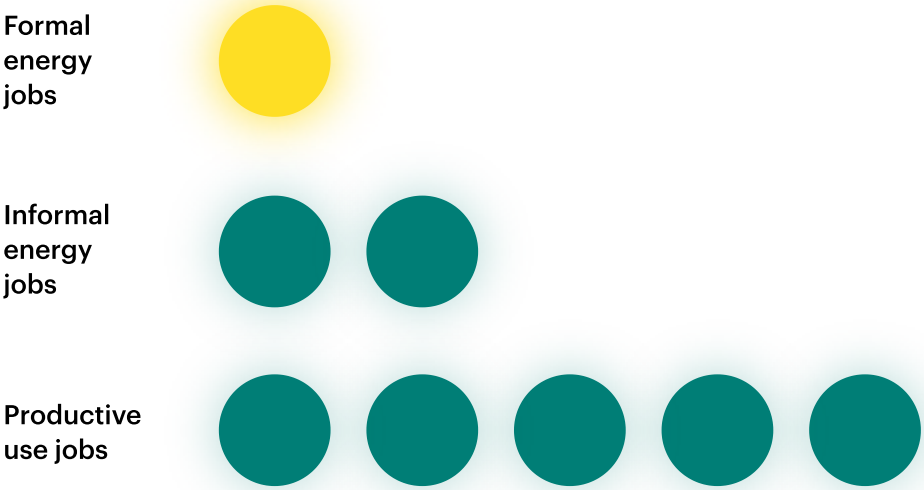
Many studies identify correlations between GDP and power consumption. For the purposes of this calculation, a correlation coefficient of 0.63 between power consumption growth rate and GDP growth rate is adopted, as calculated by S. Fried and D. Lakagos, in "The Role of Energy Capital in Accounting for Africa's Recent Growth Resurgence", IGC 2017.

The return on investment is estimated by comparing the annual investment need and potential GDP growth in the baseline and target scenarios, through 2030. Minigrids play a major role in the least-cost energy infrastructure development scenario, alongside stand-alone systems and grid extension.

→ According to this calculation, a single dollar spent on energy access infrastructure drives US$19.82 in increased wealth (gross GDP) in Ethiopia, and US$21.22 in Nigeria. In Ethiopia, moving from the baseline (50 kWh) to the target (200 kWh) scenario represents a 14% increase in national GDP over a 10-year period.

JOBS

Each direct energy job unlocks two more informal jobs and five productive use jobs.



REFERENCES

→ POWER FOR ALL

Powering Jobs Census 2019: The Energy Access Workforce (2019)

A METAL WORKER IN KENYA. MINIGRID DEVELOPMENT REQUIRES ADDITIONAL LABOR BEYOND DIRECT ENERGY JOBS, SUCH AS METAL FABRICATION OF PARTS AND EQUIPMENT. PHOTO BY ISAIAH LYONS-GALANTE

THE ROLE OF DISTRIBUTED ENERGY IN RESPONDING TO CLIMATE CHANGE

Climate change impacts are accelerating. A hotter world is a poorer world. It means deeper, longer droughts decimating farmers' crops, and more deaths in vulnerable populations from excessive heat. Investment decisions made now will be central to meeting climate goals. Adaptation and resilience must increasingly be at the heart of infrastructure design.

Investment in renewables and distributed energy resources will unlock development pathways that are:

→ Resilient to climate change

→ Low-carbon

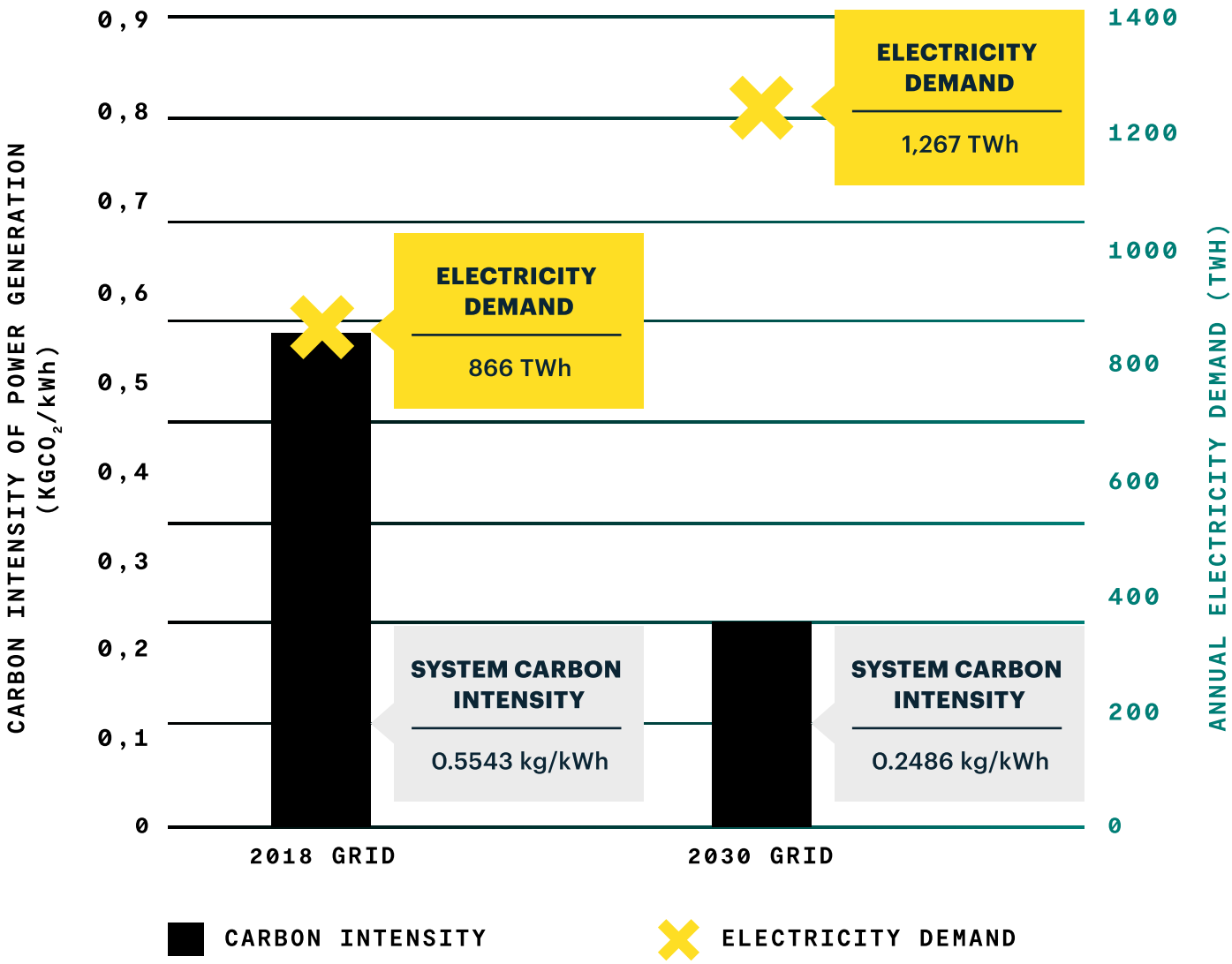
→ Cheaper than traditional supply

REFERENCES

→ IEA

Sustainable Development Scenario of the World Energy Outlook 2019 (2019)

Carbon intensity and electricity demand on Africa's grid, 2018 and 2030



EXAMPLE: MALAWI

An integrated electrification approach can provide a least-cost, reliable, and diversified solution for Malawi, saving the country US$500 million by 2030 and avoiding 19 million tons of CO2 emissions.

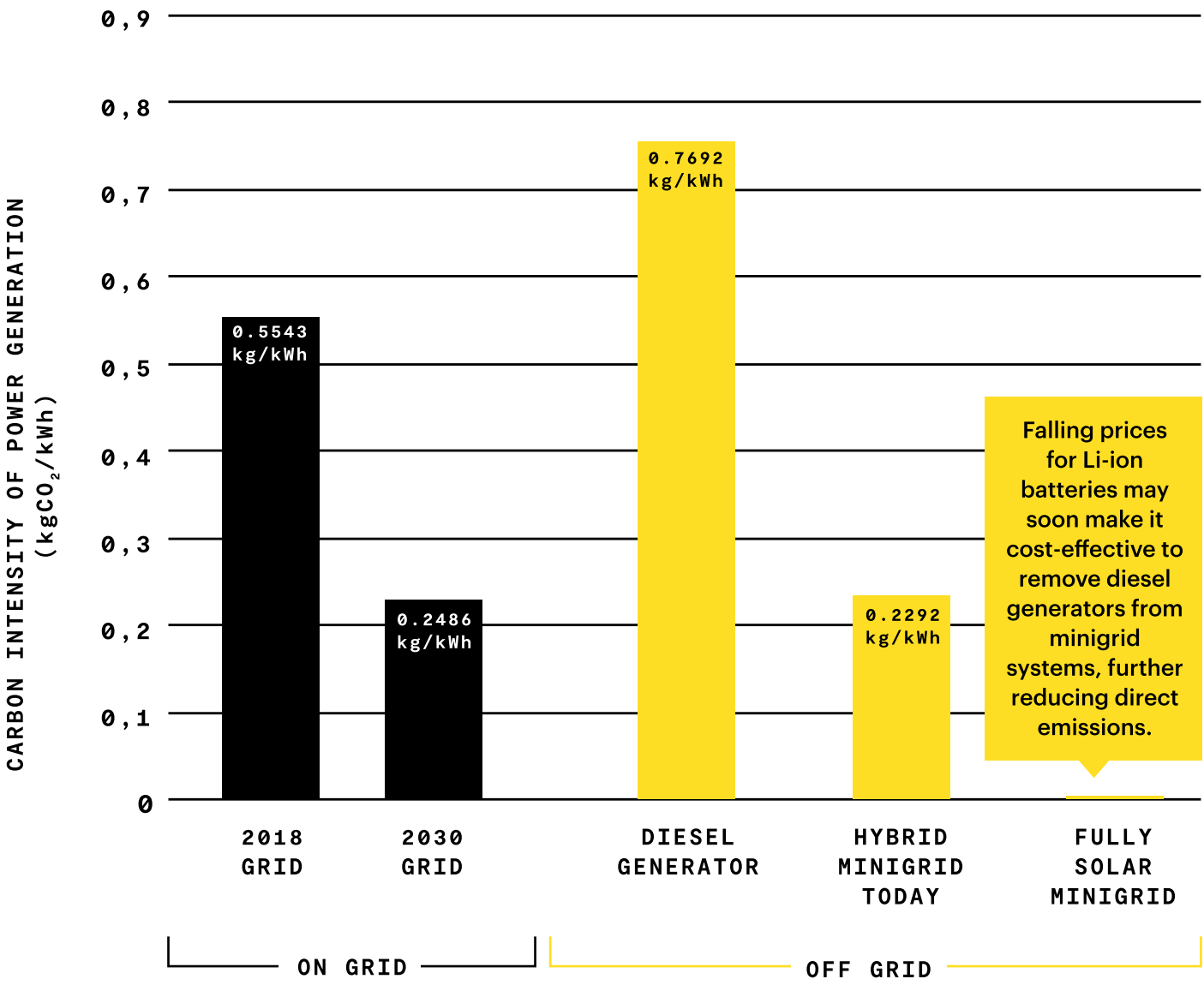
→ READ THE FULL STUDY HERE

THE 80 KW SITOLO MINIGRID IN MCHINJI DISTRICT, MALAWI, SHOWN WHILE STILL UNDER CONSTRUCTION. PHOTO COURTESY OF RMI

EXAMPLE:
DIESEL GENERATORS

Today, 20–30 million backup generators run on fossil fuels at a cost of $50 billion per year. Distributed energy and reliable, integrated electrification can make these obsolete, saving over 60 million tons of CO2 per year.

Carbon intensity and electricity demand on Africa's grid in IEA Sustainable Development Scenarios



ELECTRIFYING ECONOMIES

The Electrifying Economies project demonstrates the role distributed energy will play in ending energy poverty and catalyzing a green and equitable recovery from the Covid-19 crisis. It draws on the latest data and research from around the world to show how distributed renewables can provide sustainable, affordable, and reliable power for all. The project provides information to support policy makers and investors in taking action today, to realize this potential.

#ElectrifyingEconomies
ElectrifyingEconomies.org