POWER FOR ALL FACT SHEET:
Making Energy Access Affordable

POWER FOR ALL

$22,000
COST OF RURAL GRID EXTENSION PER KM

$300-400
GRID CONNECTION COST IN TANZANIA

50¢
DAILY COST OF A SOLAR HOME SYSTEM

Join the conversation:
powerforall.org
twitter.com/power4all2025
facebook.com/pwr4all

While the central grid is a cost-effective solution for powering highly populated regions, 85% of those currently unelectrified live in rural areas[1] with low population density and low energy demand. The cost of grid extension to these areas is too high. Decentralized renewable energy (DRE) is enabling millions of families and businesses to access energy at a price they can afford, and providing the flexibility to grow with demand.

DRE provides the most affordable way to power rural areas

» Rural centralized-grid extension in Africa and Asia can cost up to $22,000 per kilometer.[2] For example, reaching remote rural areas in Tanzania costs around US$2,300 per household[3]

» In contrast, 500,000 people in Mongolia were connected to solar home systems for a approximately $24 million; $240 per household[4]

» Analysis by the International Energy Agency (IEA) finds that 70 percent of those in rural areas are more affordably reached by mini-grids and other decentralized solutions[5]

» Recent research estimates that even greater use of DRE can reduce the global cost of basic energy access even further; from $700 billion (IEA estimate)[6] to $70 billion[7]

Access via the centralized grid is expensive for utilities, governments and consumers

» The high cost of grid extension creates a challenge for overstretched utilities in Asia and Africa, leaving many in a "chronically weak financial position"[8]

» To operate, many utilities rely on subsidies from government. For example, in India, government expenditure on electricity subsidy is $2.8 billion a year[9], while in Africa subsidies for utilities and kerosene are $21 billion a year[10]

» Even so, tariffs are often too high for consumers to connect. In Tanzania—where 70 percent of the population lives on less than $2 per day[11]—connection charges range from US$300-400, and a new service line can cost over $1000, even before the cost of electricity[12]

POWER FOR ALL FACT SHEET:
Making Energy Access Affordable

By the Numbers:

$22,000
COST OF RURAL GRID EXTENSION PER KM

$300-400
GRID CONNECTION COST IN TANZANIA

50¢
DAILY COST OF A SOLAR HOME SYSTEM

Join the conversation:
powerforall.org
twitter.com/power4all2025
facebook.com/pwr4all

DRE is critical for ending energy poverty

» The affordability of Tier 1-2 basic energy access[13] is allowing millions of homes and businesses to access clean, reliable power for the first time[14]

» Quality solar lanterns cost as little as $5,[15] while solar home systems can be paid for in installments of 50 US cents a day[16]

» Larger DRE solutions, which provide higher levels of energy services, are also more affordable. For example, the global average cost of connecting a household to a mini-grid is estimated at $500,[17] while the average micro-hydro power investment cost per connected household in Nepal is US$325[18]

Share the Message

The cost of grid extension is too high. The IEA's estimate of investment needed for total global energy access are between 300-500 percent higher than current investments in energy access, and would constitute 30 percent of all current international aid.[19] More affordable solutions are critical to accelerate the pace of energy access.

Share these key messages to #endenergypovertyfaster:

» The cost of grid extension to rural areas—where 85 percent of those in energy poverty currently live—is simply unaffordable

» A greater focus on less expensive alternatives—such as solar home systems and mini-grids—is vital to meet energy access targets, and lift hundreds of millions from energy poverty

Sources:

1. UN Department of Economic and Social Affairs (2014) Improving Sustainable Energy Access for Rural Areas
2. Power for All (2014) The Energy Access Imperative
3. Africa Progress Panel (2015) Power, People, Profit: Seizing Africa's Energy and Climate Opportunities
4. World Bank Group (2012) Solar Power Lights up Future for Mongolian Herders
5. International Energy Agency (2011) Energy for All: Financing Access for the Poor
6. International Energy Agency, United Nations Development Programme, United Nations Industrial Development Organization (2010). Energy Poverty: How to Make Modern Energy Access Universal? (Minimum levels of electricity consumption for access for rural households is assumed to be at least 250kWh per year and urban households 500kWh in the IEA et al. assessment. 250kWh per year represents Tier 2 electricity consumption and 500kWh represents Tier 3 level of electricity consumption in the 2015 Global Tracking Framework)
7. Power for All (2014) The Energy Access Imperative; Persistent Energy Capital (2015) Financing the DESCO S-Curve
8. World Bank Group (2013) Connection Charges and Electricity Access in Sub-Saharan Africa
9. International Institute for Sustainable Development (2012) A Citizen's Guide to Energy Subsidies in India
10. Africa Progress Panel (2015) Power, People, Profit: Seizing Africa's Energy and Climate Opportunities
11. World Bank Group (2015) Tanzania Mainland Poverty Assessment
12. Power, People, Profit: Seizing Africa's Energy and Climate Opportunities (2015), Africa Progress Panel
13. Access to low energy products such as lighting, television, fans, and computers as measured by Sustainable Energy for All,and noted in the Progress Toward Sustainable Energy 2015: Global Tracking Framework Report (2015)
14. Bloomberg New Energy Finance, International Finance Corporation & World Bank Group (2016) Off-Grid Solar Market Trends Report 2016
15. d.light design (2016)
16. M-Kopa (2016)
17. Power for All (2016) Decentralized Renewables: The Fast Track to Energy Access (Illustrative case studies based on real-world data from decentralized renewable energy companies operating today)
18. Vaidya. Cost and Revenue Structures for Micro-Hydro Projects in Nepal. Microhydropower.net: Retrieved 12 September 2016
19. Crane, Mills & Guay (2014) Clean Energy Services for All