

»» Electrification: from pure access to productive use

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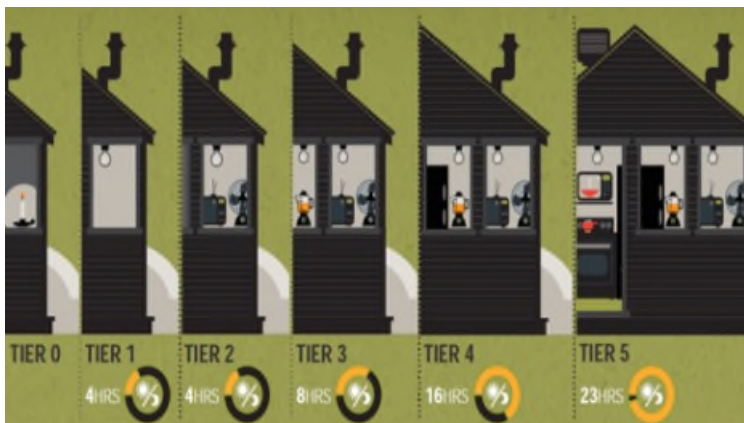
Access to modern energy services is one of the key factors driving the development and improvement of living conditions in developing countries. On the basis of the UN initiative “Sustainable Energy for All” (SE4All), a separate development goal was declared, stipulating that access to affordable, reliable, sustainable and modern energy services is to be ensured for all by 2030 (SDG 7).

However, if current population trends and policy measures continue, 674 million people will still not have access to energy in 2030. This will affect 600 million people in Sub-Saharan Africa and 80 % in rural areas. To achieve universal access, it is therefore important to be able to measure progress and assess how effective measures are.

Dimensions of energy access

The Global Tracking Framework (GTF) was developed to measure energy access under the SE4All initiative. The GTF defines energy access at multiple tiers, capturing both quantity and quality in the measurement.

The five levels (TIERS 1-5) vary according to the following criteria:



Graphic 1: Global Tracking Framework, World Bank

- Electricity supply (how many watts are available for how many hours per day);
- Electricity use (how many devices can be operated);
- Electricity consumption (how many watt hours are consumed per household per year).

Every household that is upgraded to tier 1 counts as new access. However, qualitative access is only achieved at higher tiers, which also enable productive use by creating new or improved income opportunities (e.g. electric water pumps to increase agricultural yields).

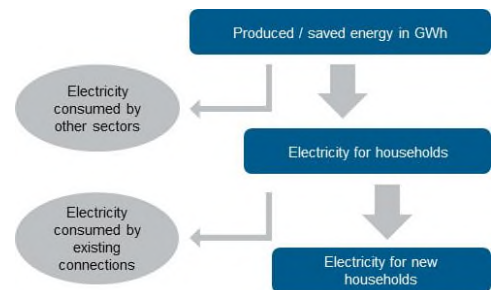
Direct and indirect access

In addition to direct energy access projects to create new access (TIER 1 or higher), energy projects can also result in improved energy access which upgrades households to higher access tiers (e.g. from TIER 1 to TIER 4). This involves indirect access, which is not a binary metric (yes / no) but is part of a multi-tier process.

Measuring indirect access

The starting point for measuring indirect energy access is first the calculation of the additional amount of electricity available as a result of energy production or energy savings. In the next step, the share of electricity consumed by the commercial sector is deducted.

The amount of electricity available for private households is then distributed among the existing connections and the potential new household connections using an allocation factor.



Graphic 2: Measuring indirect access

How much electricity is available for new connections depends on two factors: the rate of electrification and the per capita electricity consumption in the respective country. The basic idea here is that until a certain level of electrification is achieved and everyone consumes a satisfactory amount of electricity, the new amount of electricity is distributed among both new and existing consumers. However, the share of electricity for new consumers increases if the connected consumers already consume high amounts of electricity. Assumptions on the per capita electricity consumption of the new connections can then be used to determine how many people can obtain new or improved access to the modern energy supply with the additional amount of electricity.

Conclusion

The measurement of energy access must be multi-dimensional if sufficient availability and productive use of energy are to be factored in. In addition to creating direct access, many energy projects also result in indirect energy access by upgrading households to a higher tier of access. ■