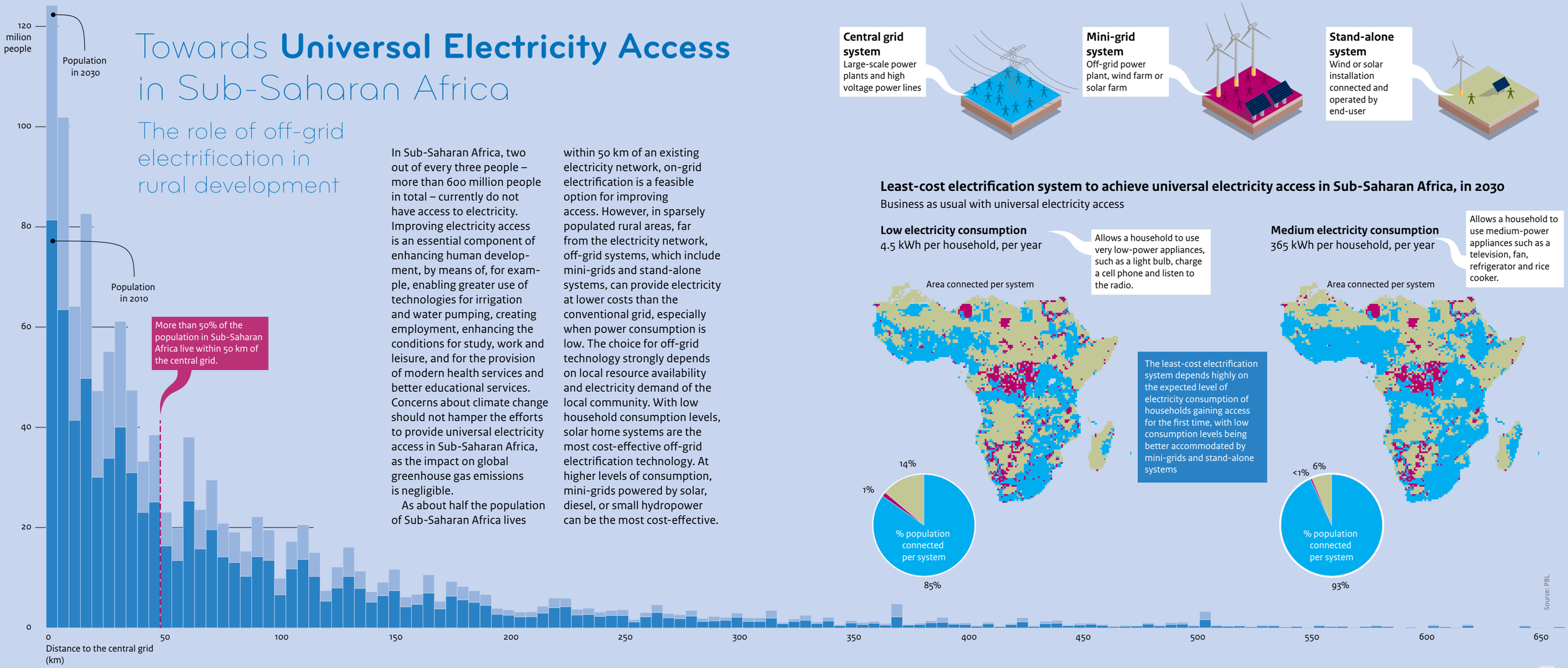
Towards **Universal Electricity Access** in Sub-Saharan Africa

The role of off-grid electrification in rural development

In Sub-Saharan Africa, two out of every three people – more than 600 million people in total – currently do not have access to electricity. Improving electricity access is an essential component of enhancing human development, by means of, for example, enabling greater use of technologies for irrigation and water pumping, creating employment, enhancing the conditions for study, work and leisure, and for the provision of modern health services and better educational services. Concerns about climate change should not hamper the efforts to provide universal electricity access in Sub-Saharan Africa, as the impact on global greenhouse gas emissions is negligible.

As about half the population of Sub-Saharan Africa lives within 50 km of an existing electricity network, on-grid electrification is a feasible option for improving access. However, in sparsely populated rural areas, far from the electricity network, off-grid systems, which include mini-grids and stand-alone systems, can provide electricity at lower costs than the conventional grid, especially when power consumption is low. The choice for off-grid technology strongly depends on local resource availability and electricity demand of the local community. With low household consumption levels, solar home systems are the most cost-effective off-grid electrification technology. At higher levels of consumption, mini-grids powered by solar, diesel, or small hydropower can be the most cost-effective.



Least-cost electrification system to achieve universal electricity access in Sub-Saharan Africa, in 2030

Business as usual with universal electricity access

Low electricity consumption
4.5 kWh per household, per year

Allows a household to use very low-power appliances, such as a light bulb, charge a cell phone and listen to the radio.

The least-cost electrification system depends highly on the expected level of electricity consumption of households gaining access for the first time, with low consumption levels being better accommodated by mini-grids and stand-alone systems

Medium electricity consumption
365 kWh per household, per year

Allows a household to use medium-power appliances such as a television, fan, refrigerator and rice cooker.

Source: PBL