Buildings: Lighting and Appliances

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side. Units of 'Index' are relative to 2015.

Kenya common lighting is made of CFL and LED for domestic lighting and fluorescent, CFL and LED lighting for non-domestic indoor lighting. Vapor discharge lamps such as high-pressure sodium and mercury vapor lamps, halogen and LED lamps are used for outdoor flood lights for non-domestic buildings. Several incandescent lights are still in use in homes. Average domestic demand for electricity was 191.49kWh/person. Out of this 53.61kWh/person was attributed to lighting and 72.77kWh/person to appliances. Non-Residential Buildings demand was 184kWh/m2/yr. out of which 49.68kWh/m2/yr. was for lighting and 58.88kWh/m2/yr for appliances. In terms of efficiency of the lighting technologies, LEDs (Light Emitting Diodes) are the most efficient in energy consumption to light output. LEDs save up to 85% and 80% of energy respectively when compared to the regular incandescent lamps.

Key Interaction:

Higher transition to Efficient LED lighting Kenya's Minimum Energy Performance Standards (MEPS) and labels for electrical appliances aim to promote the use of energy-efficient equipment. The KNEECS targets and annual efficiency increase of 3% to 15% efficiency saving year 2025 through adoption of efficient technology. Develop minimum energy performance standards for new buildings. 10% of share of newly built floor area compliant with energy efficiency requirements in the total building stock and ensure 25% of buildings under affordable housing are green buildings by 2025. Green buildings will reduce lighting demand through added use of natural lighting and use more passive cooling reducing AC demand.

Kenya has an urbanization rate of 4.3% and electrification rate of 69.8% (50.4% grid and 19.3% solar). The KNEECS project an annual increase in electrification by 6% every year. A higher electrification access will increase demand. Lighting demand could be reduced by change of user behavior to switch off unnecessary lighting.

Level 1

A lack of ambition and strategy to fast-track the adoption of LEDs for lighting and MEP for appliances by the public as more households are connected to the grid. No ambition to build green buildings and unnecessary lighting is used. With high electrification rate of 6% and 4.3% urbanization rate demand for lighting and appliances increases by 30% by 2050. Lighting and appliances for NRB rises by 20%.

Level 2

A lack of ambition and strategy to fast-track the adoption of LEDs for lighting and efficient appliances by the public as more households are connected to the grid. No ambition to build green buildings and unnecessary lighting is used. Consumers however become more conscious and adopt lean and efficient light fixtures and appliances. Demand for lighting and appliances increases by 20% in residential homes and 10% in NRB.

Level 3

There is significant campaign to educate consumers on MEP and high efficiency LED lighting. There is campaign to change behaviors on lighting usage. Demand for lighting and appliances reduces by 15% and NRB have maintained baseline levels.

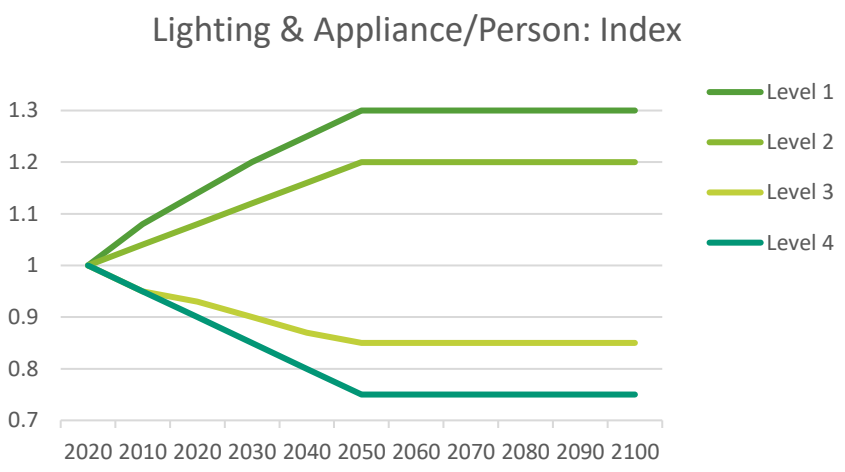
Level 4

All lighting needs are met by more efficient LED lamps due to technological advances over time. Adoption of green buildings MEP enhances reduced lighting in buildings and encourages behavioral shift to no usage of unnecessary lights. Buildings adopt autonomous lighting systems that turn on when needed and turn off when not needed. Consumers a knowledgeable on advantages of high MEP standards and choices are applied fully. Demand for lighting and appliances reduces to by 25% in homes and 10% in NRB.

Default Timing

Start year: 2016, End year: 2050

	Units	Base	Level 1	Level 2	Level 3	Level 4
Demand						
Lighting/person-Residential	Index	1	1.3	1.2	0.85	0.75
Appliances/person-Residential	Index	1	1.3	1.2	0.85	0.75
Lighting/m2-NRB	Index	1	1.2	1.1	1	0.9
Appliances/m2-NRB	Index	1	1.2	1.1	1	0.9
Energy Intensity						
Lighting Efficiency	Index	1	1	0.9	0.8	0.75
Appliances Efficiency	Index	1	1	0.9	0.8	0.75
AC Efficiency	Index	1.00	1.00	0.87	0.80	0.67



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