"We realised that the cooling need is highly reduced by cost effective and energy efficient measures like correct orientation and shading. We will definitely integrate the BEEC requirements in our building designs." (Mr. Okolo, GDC)

Figure 2: Cross section of a BEEC training workshop

BEEC APPLIED:
Federal Ministry of Power, Works and Housing (Housing Sector) Building

With the application of BEEC measures, 32% saving would have been achieved on overall energy use.

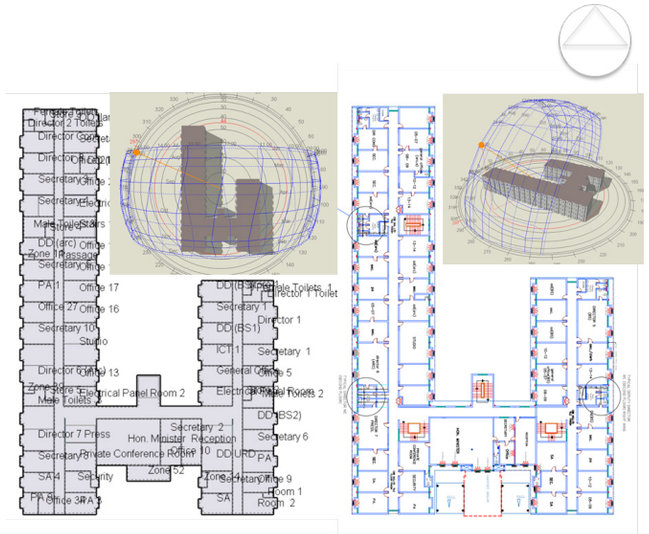

Figure 3: Case study: Ministry Building Orientation

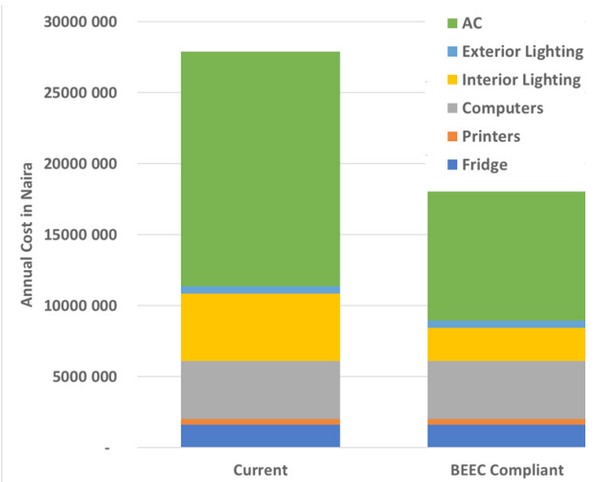

Figure 4: BEEC Potential Capital Cost Savings in Ministry Building

More information: **www.pwh.gov.ng; www.energyplatformnigeria.com**

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DEUTSCHE ZUSAMMENARBEIT

The National Building Energy Efficiency Code

(BEEC)

BENEFIT 01 It is easy to understand.

BENEFIT 02 It is cost-efficient.

BENEFIT 03 It will bring you at least 40% energy savings compared with usual building practice

BEEC MINIMUM ENERGY EFFICIENCY REQUIREMENTS

These apply to new residential buildings above 85 m2 gross floor area; and new office buildings in all climatic zones in Nigeria:

- Reduction of overall Window to Wall Ratio (WWR) to 20% or implementation of shading;
- Reduction of installed lighting power density (not to exceed 8 W/m² for offices and 6 W/m² for residential buildings);
- Minimum requirements for roof insulation (thermal resistance not less than 1.25 m²K/W);
- Minimum performance of air conditioning equipment specified (EER/COP 2.8) and only inverter units allowed.

The requirements begin with zero-cost energy efficiency measures, like WWR. For more architectural freedom, you can opt for an energy efficient glazing and follow the performance route to compliance.

DEMONSTRATING COMPLIANCE

Demonstrating compliance with the BEEC is the precondition for building approval control and enforcement. Both are essential for achieving energy efficiency in reality.

There are two ways of demonstrating compliance:

COMPLIANCE METHOD 1

Prescriptive approach - For this option, building projects must adhere to all the minimum energy requirements as a checklist.

COMPLIANCE METHOD 2

Performance approach - Project teams may deviate from the prescriptive requirements, provided that the theoretical energy use of the building is less than or equal to that of the same building with all the prescriptive requirements included.

For each route to compliance, verification documents are specified.

CHECKING COMPLIANCE

Initially, the BEEC will be voluntary. Voluntary systems precede mandatory systems to give stakeholders the chance to learn and adapt.

The BEEC Calculator and the BEEC Energy Modelling Protocol assist

- The building design team to achieve compliance;
- The authorities to check compliance.

BEEC APPLIED:
Group Development Company Ltd. (GDC) Building Design

Figure 1: Modelled GDC building showing passive design measures

The Nigerian Energy Support Programme (NESP) and the design team of GDC, revised existing building designs in order to make them more energy efficient.

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