

# Overview of standardized Baselines

LAC DNA training on Standardized Baselines, RCC St. George's & Panama, 10<sup>th</sup>  
November 2020



## Outline: Overview of standardized baselines (SB)

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- SB status (statistics and timelines)
- SB application in CDM PA/PoAs
- SB application outside of CDM
- SB potential: case study building EE



## Introduction to Standardized Baselines (SBs - cont)

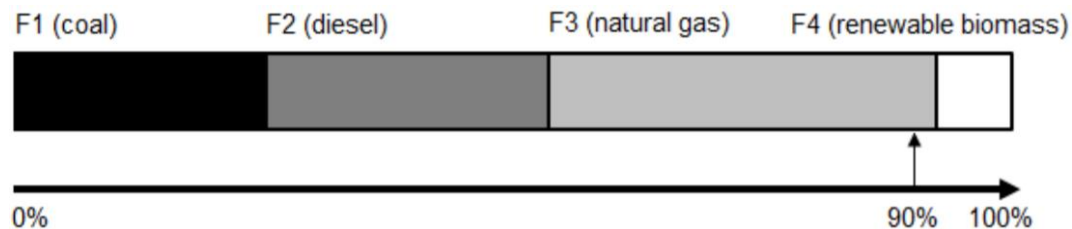
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- Historical context:
  - 2010: CMP enabled Standardized Baselines
    - Baseline emission factors or methods;
    - Additionality;
  - Benefits under the CDM framework:
    - Reduction transaction costs;
    - Enhanced transparency, objectivity and predictability;
  - CDM Executive Board adopted procedures to develop standardized baselines



## Introduction to Standardized Baselines (SBs – cont)

- Procedure to develop SBs
  - Guidelines for sector-specific standardize baseline
    - Sectoral approach;
    - Based on the top-10% or top-20% less GHG intensive technology.



- Approved CDM standard (methodology or tool)
  - Grid emission factor;
  - Fraction of non-renewable biomass;
  - Specific energy consumption per m<sup>2</sup> of building area;
  - Specific fuel consumption for different vehicle categories;



## Key CDM regulatory documents for SBs

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- Key regulatory documents approved by the Board
  - Procedures for development, revision, clarification and update of standardized baselines (**SB procedures**);
  - Standard for establishment of sector-specific SBs (**SB standard**);
  - Standard for establishment of SBs for afforestation and reforestation project activities under the CDM (**AR-SB standard**);
  - Guidelines for quality assurance and quality control of data used in the establishment of SBs (**QA/QC guidelines**);
  - Standard for determining coverage of data and validity of SBs (**SB Data Standard**)
  - Recently, **two new tools** to determine SBs i.e.
    - TOOL29: Determination of standardized baselines for **energy-efficient refrigerators and air-conditioners**;
    - TOOL31: Determination of standardized baselines for energy efficiency measures in **residential, commercial and institutional buildings**



## Recent CDM regulatory documents

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- Recent measures from CDM-EB:
  - Guidelines on **Urban CDM**;
  - Revision of **AMS-II.E** to include provisions to apply the TOOL31 (determine standardized baselines for buildings);



# SB Statistics

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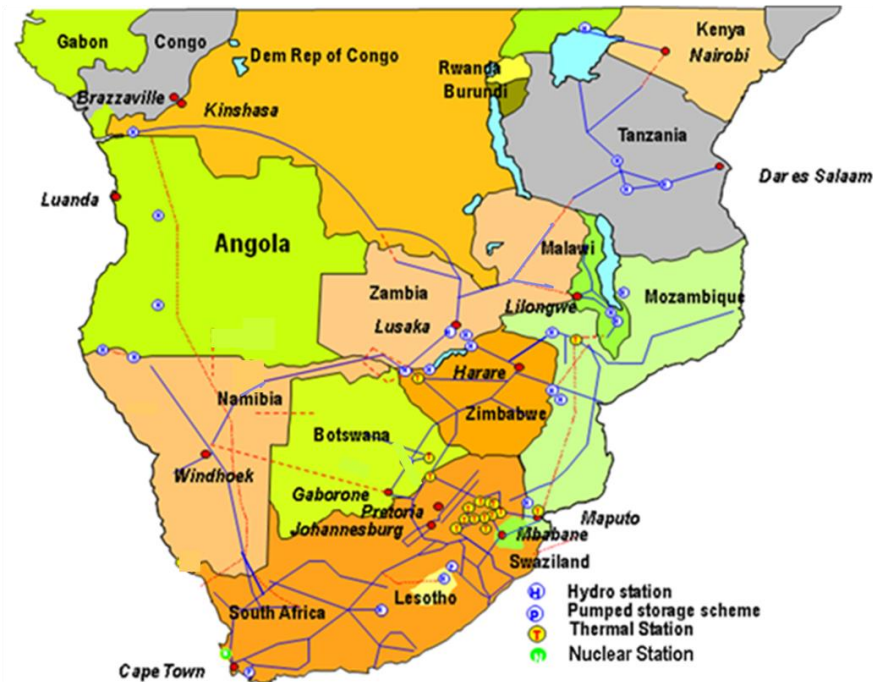
- 69 Standardised Baselines (SB) submitted/developed, 48 SBs approved
  - Out of 48 **approved SBs**
    - ✓ 16 SBs remain **valid** (including 1 A/R SB)
    - ✓ 32 SBs **expired**
  - Sectors covered:
    - Power (grid emission factor)
    - Cookstoves (baseline biomass consumption and  $f_{NRB}$ )
    - Charcoal production
    - Waste & Wastewater
    - Rice cultivation
    - Rice mill power generation
    - A/R
    - Transport
    - Buildings

(as of 15 June 2020)



# Regional SBs

## SAPP: 9 countries



## WAPP: 9 countries





## Yearly trends of submitted/developed SBs

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	2012	2013	2014	2015	2016	2017	2018	2019
Bottom-up SBs	4	6	17	9	5	2	4	5
Top-down SBs			6		5	1	1	2
Update of SBs					1	3		
Clarification of SBs								1
<b>Total</b>	<b>4</b>	<b>6</b>	<b>23</b>	<b>9</b>	<b>11</b>	<b>6</b>	<b>5</b>	<b>8</b>

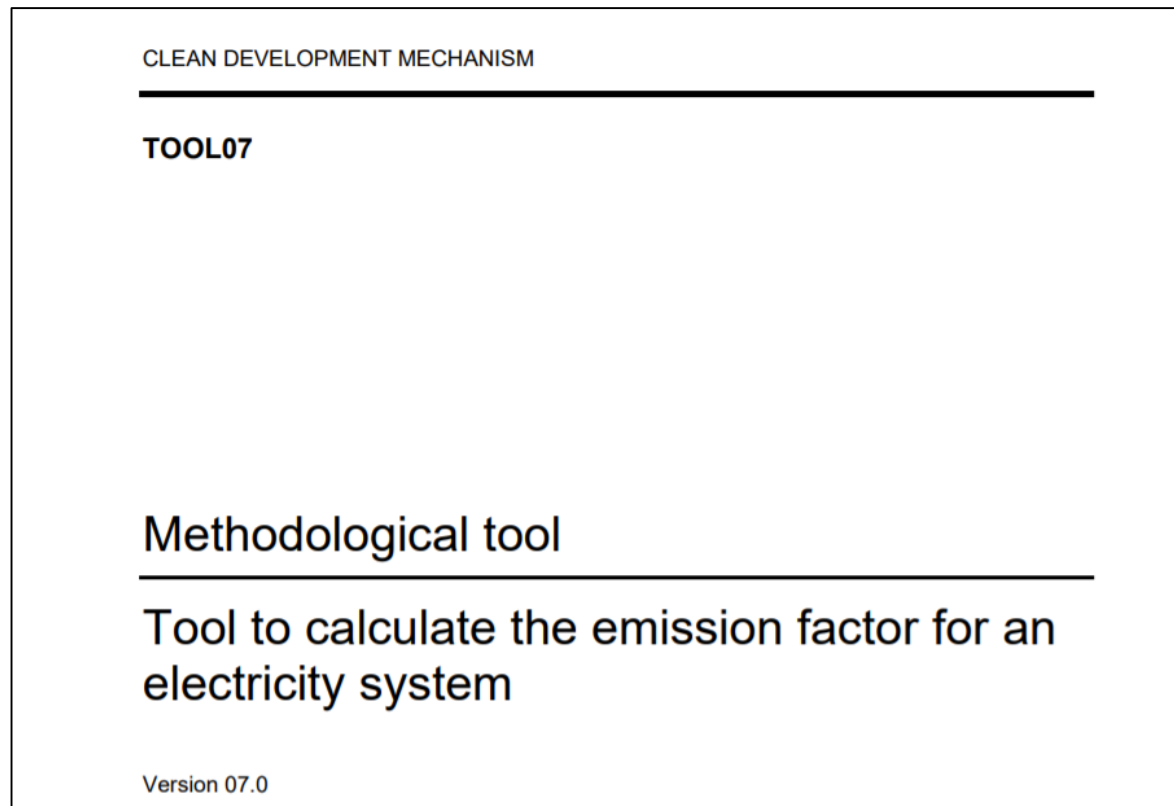
(as of 11 Nov. 2019)



## SB for Grid emission factor

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- Baseline for a project that:
  - Supplies electricity to a grid (renewable energy); or
  - Results in savings of grid electricity (energy efficiency).



- Emission factor determined as the **combined margin** of an electric grid;



• **Operating Margin:** group of existing power plants whose current electricity generation would be affected by the project;

• **Build Margin:** the group of prospective power plants whose construction and future operation would be affected by the project.

- **Operating Margin**

- Average emission factor of the plants that are in the margin of the system based on the dispatch order;
- Average emission factor of all fossil-fuel fired power plants connected to the grid;
- Average emission factor of all fossil-fuel fired power plants that are connected to the grid, adjusted to the percentage of time power plants with low marginal generation costs (e.g. renewable power plants) are in the margin;
- Average emissions of all power plants connected to the grid;

- **Build Margin**

- Average emission factor of the 5 most recently built power plants;
- Average emission factor of the plants that represent 20% of the total generation capacity;



- **Combined Margin**

- Weighted average between OM and BM

$$EF_{CM} = (EF_{OM} \times w_{OM}) + (EF_{BM} \times w_{BM})$$

- Higher  $w_{OM}$ , more intermittent and non-dispatchable is the nature of the power plant.
  - Wind and Solar:  $w_{OM} = 0.75$
  - Other projects:  $w_{OM} = 0.5$  or  $0.25$



- **SBs in the power sector**

- Honduras
  - CM = 0.611 tCO<sub>2</sub>/MWh (wind and solar)
  - CM = 0.610 tCO<sub>2</sub>/MWh (other technologies)
- Dominican Republic
  - CM = 0.622 tCO<sub>2</sub>/MWh (wind and solar)
  - CM = 0.613 tCO<sub>2</sub>/MWh (other technologies)
- Jamaica
  - CM = 0.658 tCO<sub>2</sub>/MWh (wind and solar)
  - CM = 0.610 tCO<sub>2</sub>/MWh (other technologies)
- **Belize (due for update)**
  - CM = 0.228 tCO<sub>2</sub>/MWh (wind and solar)
  - CM = 0.152 tCO<sub>2</sub>/MWh (other technologies)

# Use of approved SBs for CDM projects/PoAs

- **For CDM projects**
  - Direct use of approved SBs

	No. of CDM projects/CPAs	No. of CDM projects/CPAs whose CERs were issued
ASB0001: GEF for SAPP	15	6 (> 1 million CERs)
ASB0002: Charcoal in Uganda	1	0
ASB0015: GEF for the Dominican Republic	1	0
ASB0019: GEF for Mauritius	3	1 (9,000 CERs)
ASB0040: GEF for SAPP	10	0

(as of 15 June 2020)

- In addition,  $f_{NRB}$  values for hundreds of PAs/PoAs/CPAs for clean cookstoves (validity expired now)
- Official from South Africa highlighted the importance of SAPP SB for decarbonisation in the region (at EB side event in April, 2018)





## Use of approved SBs for CDM projects/PoAs (cont)

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- **Indirect use of approved SBs as a benchmark**
  - E.g. in PoA10474, “ASB0018: Baseline woody biomass consumption for household cookstoves in Burundi” CME compared their value with ASB0018 to demonstrate conservativeness



# Use of approved SBs in climate funds/mechanisms

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- **For GCF projects**

- FP105 “BOAD climate finance facility to scale up solar energy investments in Francophone West Africa LDCs” uses “ASB0034: Grid emission factor for West African Power Pool”
- FP104 “Nigeria solar IPP support program” uses “ASB0034: Grid emission factor for West African Power Pool”
- FP103 “Promotion of climate-friendly cooking: Kenya and Senegal” uses “ASB0035: Baseline woody biomass consumption for household cookstoves in Kenya” and “ASB0025: Cookstoves in Senegal”
- FP080 “Zambia Renewable Energy Financing Framework” uses “ASB0040-2018: Grid emission factor for Southern African Power Pool”



# Use of approved SBs in climate funds/mechanisms (cont)

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- **For NAMAs**

- e.g. Philippines Rice NAMA developed by UNDP uses “ASB0008: Methane Emissions from Rice Cultivation in the Republic of the Philippines”

- **For IFI projects**

- e.g. Renewable energy projects financed by IDB use “ASB0042-2019: Honduran Grid Emission Factor”



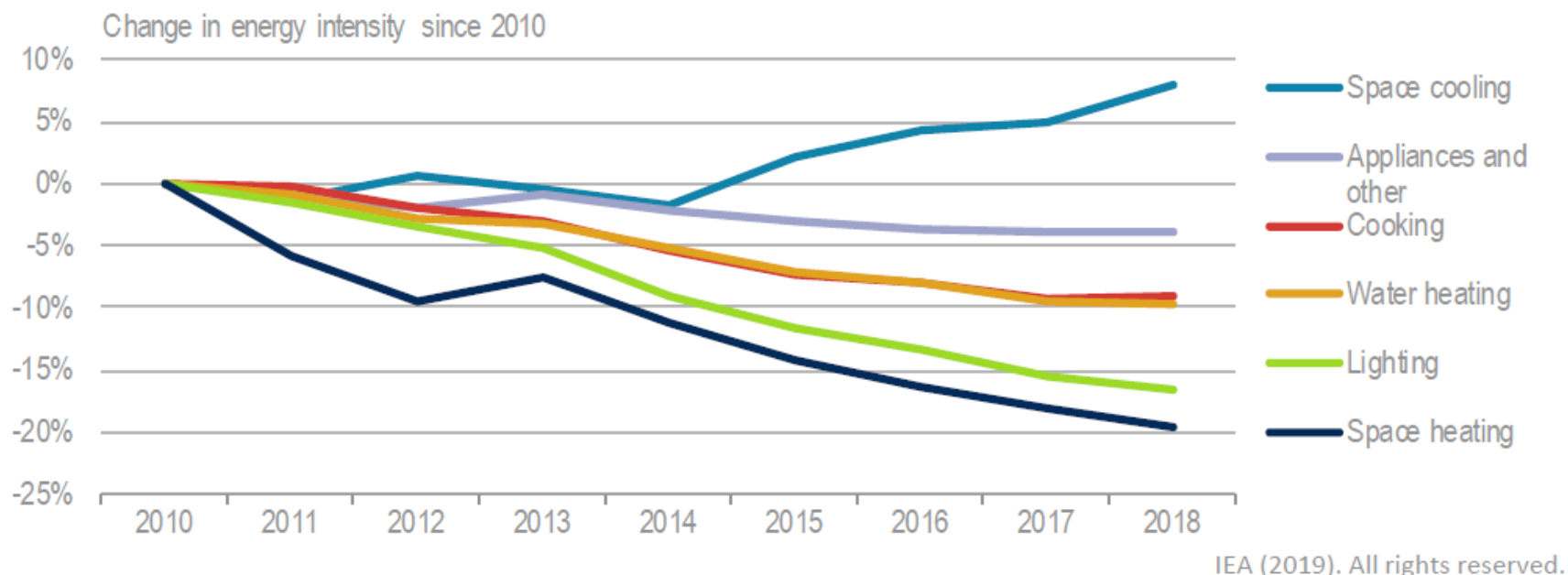
## Case Study: SBs for energy efficiency in buildings

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- Building and construction account for 40% of global CO<sub>2</sub> emissions
  - operational emissions (energy for heating/cooling and lighting) is 2/3rd, 1/3rd embodied emissions in materials
- High ER potential recognized (e.g. 40% less embodied emissions by 2030, 100% net zero emissions by 2050-World Green Building Council, 2019)
  - Building sector: **15** approved methodologies, **2** methodological tools, **> 200** registered projects/CPAs
  - Yet **only 4.5 million** CERs issued
  - Many reasons (some not related to CDM)
  - High efforts to quantify but low revenue



# Case Study: SBs for energy efficiency in buildings

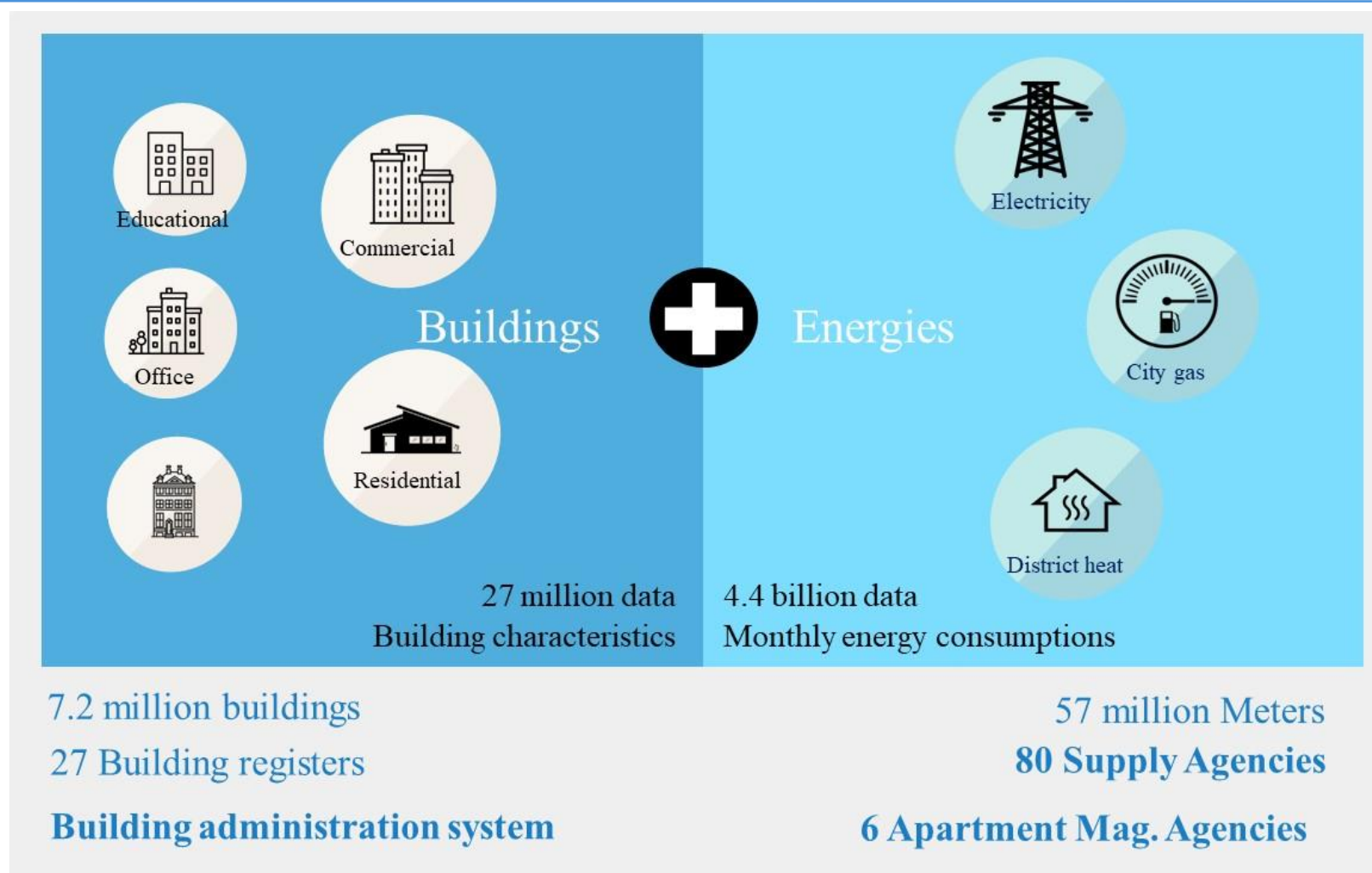


Notes: *Energy intensity* is final energy used per unit of floor area. *Appliances and other* includes household appliances (e.g. refrigerators, washers and televisions), smaller plug loads (e.g. laptops, phones and other electronic devices) and other service equipment.

**Source:** GlobalABC 2019 Global Status Report for Buildings and Construction based on IEA World Energy Balances and Statistics



# Case Study: SBs for energy efficiency in buildings



Source: Korea appraisal Board and Ecoeye, Building EE workshop, Bonn 2019



Overview of Standardized Baselines

**LAC DNA training on Standardized Baselines**

# Case Study: SBs for Building energy efficiency

## #1 : Categorization factor

Main Factor (10)	
Heating System	Gas/District heat
Region	Climatic region
Size of household	Area of Use space
Size of complex	Size of Total Area
No. of stories	No. of Household
Building age	Group of Stories
Economic condition	Building age
Economic condition	Rented housing
Economic condition	Declared value
New/Existing	New/Existing

## #2 : Pre-analysis

- **Data Analysis**
  - Data visualization
  - Statistical analysis
- **Experts Review**
  - Advisory meeting

## Final Factor (4)

Heating System	Gas/ District heat
Region	Climatic region
Region	Administrative district
Size of household	Area of use space

New/Existing	New/Existing
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3 x 2 Categories

**Source:** Korea appraisal Board and Ecoeye, Building EE workshop, Bonn 2019



Overview of Standardized Baselines

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# Stringency of thresholds :EE in Buildings

Level	Residential buildings	Non-residential buildings
	Required primary energy per unit area per year (kWh/m <sup>2</sup> , year)	Required primary energy per unit area per year (kWh/m <sup>2</sup> , year)
1+++	Less than 60	Less than 80
1++	60 ~ 90	80 ~ 140
1+	90 ~ 120	140 ~ 200
1	120 ~ 150	200 ~ 260
2	150 ~ 190	260 ~ 320
3	190 ~ 230	320 ~ 380
4	230 ~ 270	380 ~ 450
5	270 ~ 320	450 ~ 520
6	320 ~ 370	520 ~ 610
7	370 ~ 420	610 ~ 700

Red box: level of Top 20% SBLs,

Blue box: Domestic mandatory standard





Thank you!

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