

# Mapping Energy Efficiency:

A Global Dataset on Building Code Effectiveness and Compliance

COUNTRY PROFILES



**THE WORLD BANK**  
Development Economics • Global Indicators



**Knowledge FOR Change**

# Albania, Tirana



**2,777,689**

Population



**475,577**

City population



**Warm, Humid**

Climate Zone  
Classification



**141%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Law "On the Energy Performance in Buildings" (No. 116/2016 of 10.11.2016)

**Code adoption date**

2016

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.35

0.35

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.38

0.38

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.38

0.38

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

2.0

2.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.70

0.70

Heat Pump (Heating) COP (Wh/Wh)

3.0

3.0

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..

Financial Incentives

..



# Algeria, Algiers



**44,903,225**

Population



**2,693,542**

City population



**Warm, Humid**

Climate Zone  
Classification



**282%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulatory Technical Documents (DTR)

**Code adoption date**

1998

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

Residential

Commercial

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.90

0.90

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Argentina, Buenos Aires



**46,234,830**

Population



**14,966,530**

City population



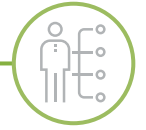
**Warm, Humid**

Climate Zone  
Classification



**117%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Building Code of the Autonomous City of Buenos Aires

**Code adoption date**

2010

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

Residential

Commercial

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

150



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Operator or maintenance  
guides or manuals

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Armenia, Yerevan



**2,780,469**

Population



**1,080,324**

City population



**Mixed, Humid**

Climate Zone  
Classification



**21%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<p><b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b></p>	Order of the Minister of Urban Construction of the Republic of Armenia (No. 120-N of June 16, 2016) approving the "Thermal Protection of Buildings" (24-01-2016 RACN)
	<p><b>Code adoption date</b></p>	2016
	<p><b>Type of code</b></p>	Combination (Prescriptive/Performance-based)
	<p><b>Coverage of Code</b></p>	New Buildings

	TYPE OF BUILDING	Residential	Commercial
<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.42	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.56	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<p><b>HVAC</b></p>	Natural Ventilation Coverage	..	..
	Space Heating Coverage	..	..
	Space Cooling Coverage	..	..
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
<p><b>Water Heating</b></p>	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	..
	Fossil Fuel Water Heater EF	..	..
<p><b>Lighting</b></p>	Electric Water Heater EF	..	..
	Maximum Wattage or Lighting Allowances (Outdoor)	..	..
	Maximum Wattage or Lighting Allowances (Indoor)	..	..
<p><b>Building Materials</b></p>	Luminary Efficacy (lm/W)	..	..
	Lab Testing	..	..
	Labelling	..	..
<p><b>Incentives and Resources</b></p>	Independent Certification	..	..
	Resources to Facilitate Compliance	Trainings for any of the stakeholders; Consumer guides or databases for energy efficient appliances	
	Financial Incentives	Grants; Loans	

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Australia, Melbourne



**26,005,540**

Population



**4,770,894**

City population



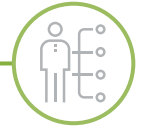
**Warm, Humid**

Climate Zone  
Classification



**155%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

The National Construction Code 2022 (NCC 2022)

**Code adoption date**

2022

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**



**HVAC**



**Water Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and Resources**

**TYPE OF BUILDING**

**Residential**

**Commercial**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

2.0

2.0

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

0.13

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

10.0

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.70

0.70

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.9

2.9

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for architects and engineers;  
Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders; Green Star (Responsible Products Framework); Certification schemes - GECA

Financial Incentives

Grants; Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Austria, Vienna



**9,041,851**

Population



**1,900,547**

City population



**Mixed, Humid**

Climate Zone  
Classification



**78%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Austrian Institute of Construction Engineering Guidelines (OIB  
Guidelines)

**Code adoption date**

2019

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.35

0.35

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

1.3

1.3

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

1.3

1.3

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

2.5

2.5

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



**HVAC**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Water Heating**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Lighting**

Lab Testing

..

Labelling

..

Independent Certification

..



**Building  
Materials**

Resources to Facilitate Compliance

..

Financial Incentives

..



**Incentives  
and Resources**

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Bahrain, Manama



**1,472,233**

Population



**564,631**

City population



**Extremely hot,  
Dry**

Climate Zone  
Classification



**334%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Green Building Manual (Law 212, 2019)

**Code adoption date**

2019

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.57

0.57

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

10.0

10.0

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

150

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Operator or maintenance  
guides or manuals

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Bangladesh, Dhaka



**171,186,372**

Population



**19,578,421**

City population



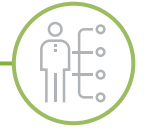
**Extremely hot,  
Humid**

Climate Zone  
Classification



**335%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Bangladesh National Building Code 2020 (BNBC 2020)

**Code adoption date**

2020

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.58

0.58

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

1.2

1.2

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.85

0.85

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Consumer guides or  
databases for energy  
efficient appliances

Financial Incentives

Tax Credits or deductions

# Belgium, Brussels



**11,685,814**

Population



**2,049,510**

City population



**Mixed, Humid**

Climate Zone  
Classification



**63%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulation on Buildings Energy Performance (PEB)

**Code adoption date**

2007

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.24

0.24

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.24

0.24

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.24

0.24

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.0

2.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

2.6

2.6

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Brunei Darussalam, Bandar Seri Begwan



**449,002**

Population



**40,781**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**160%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Building Guidelines and Requirements, 4th edition: 2017 (PBD  
12:2017)

**Code adoption date**

2017

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

..

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

..

# Bulgaria, Sofia



**6,465,097**

Population



**1,272,418**

City population



**Mixed, Humid**

Climate Zone  
Classification



**-18%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or Main Source of Mandatory Standards**

Energy Efficiency Act

**Code adoption date**

2015

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.25

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.25

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.35

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.5

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Trainings for any of the stakeholders

Financial Incentives

Financing from the Energy Efficiency and Renewable Sources Fund or from other financial intermediaries



# Canada, Toronto



**38,929,902**

Population



**6,082,425**

City population



**Cool, Humid**

Climate Zone  
Classification



**116%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Toronto Green Standard Version 4

**Code adoption date**

1997

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.16

0.16

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.18

0.18

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.0

1.9

Maximum Solar Heat Gain Coefficient

0.30

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.95

0.95

Heat Pump (Heating) COP (Wh/Wh)

..

3.2

Split AC System EER (Wh/Wh)

2.9

..

Fan Coverage

✓

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

100

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Fee Waivers;  
Rebates; Loans;  
Preferential utility rates

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Chile, Santiago



**19,603,733**

Population



**6,680,371**

City population



**Warm, Dry**

Climate Zone  
Classification



**115%**

Average urban growth  
(2010–2020)



**High**

Income group

BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK	Building Energy Efficiency Code or Main Source of Mandatory Standards	Energy Efficiency Law (No. 21305)
	Code adoption date	2021
	Type of code	Performance-based
	Coverage of Code	New Buildings

TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING	Residential	Commercial
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	0.87	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	20.4	..
	Natural Ventilation Coverage		..
HVAC	Space Heating Coverage		..
	Space Cooling Coverage		..
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
Water Heating	Fan Coverage		..
	Fossil Fuel Water Heater EF		..
Lighting	Electric Water Heater EF		..
	Maximum Wattage or Lighting Allowances (Outdoor)		..
	Maximum Wattage or Lighting Allowances (Indoor)		..
Building Materials	Luminary Efficacy (lm/W)		..
	Lab Testing		✓
	Labelling		✓
Incentives and Resources	Independent Certification		✓
	Resources to Facilitate Compliance	Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders	
	Financial Incentives		Grants

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# China, Beijing



1,412,175,000

Population



19,617,963

City population



Mixed, Humid

Climate Zone  
Classification



271%

Average urban growth  
(2010–2020)



Upper middle

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

General Specifications for Building Energy Conservation and Renewable Energy Utilization (GB 55015-2021)

### Code adoption date

2021

### Type of code

Prescriptive

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.25

0.55

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

1.5

1.0

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.45

0.60

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.0

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

0.80

0.80

Heat Pump (Heating) COP (Wh/Wh)

4.3

4.3

Split AC System EER (Wh/Wh)

2.95

2.95

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..



### Building Materials

Lab Testing

✓

Labelling

✓

Independent Certification

✓



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances

Financial Incentives

Grants

# Colombia, Bogota



**51,874,024**

Population



**10,574,409**

City population



**Warm, Humid**

Climate Zone  
Classification



**157%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Resolution of the Ministry of Housing, City, and Territory of  
Colombia (No. 0549 of 2015)

**Code adoption date**

2015

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.60

0.60

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.79

2.79

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Operator or maintenance  
guides or manuals

Financial Incentives

Tax Credits or deductions

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Costa Rica, San Jose



**5,180,829**

Population



**1,357,745**

City population



**Hot, Humid**

Climate Zone  
Classification



**226%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Directive of Ministry of Environment and Energy (No. 011-MINAE)

**Code adoption date**

2019

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Croatia, Zagreb



**3,855,600**

Population



**685,587**

City population



**Mixed, Humid**

Climate Zone  
Classification



**-40%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Law on Energy Efficiency

**Code adoption date**

2021

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.25

0.25

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.40

0.40

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.0

2.0

Maximum Solar Heat Gain Coefficient

0.87

0.87

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Incentives  
and Resources**

Resources to Facilitate Compliance

Trainings for any of the stakeholders; Consumer guides or databases for energy efficient appliances; Occupant guides for HVAC or lighting systems

Financial Incentives

Grants; Loans

# Cyprus, Nicosia



**1,251,488**

Population



**269,469**

City population



**Hot, Humid**

Climate Zone  
Classification



**74%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Performance of Buildings Law (L.142 (I)/2006)

**Code adoption date**

2006

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.40

0.40

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.40

0.40

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.40

0.40

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.3

2.3

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders

Financial Incentives

Grants

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Czechia, Prague



10,672,118

Population



1,291,552

City population



Cool, Humid

Climate Zone  
Classification



31%

Average urban growth  
(2010–2020)



High

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Energy Management Act (No. 406/2000 Coll.); Decree on the Energy Performance of Buildings (No. 264/2020 Coll.)

### Code adoption date

2000

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.60

0.60

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.60

0.60

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

3.5

3.5

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

3.0

3.0

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Trainings for any of the stakeholders; Consumer guides or databases for energy efficient appliances; Occupant guides for HVAC or lighting systems; Operator or maintenance guides

Financial Incentives

Grants; Loans



# Denmark, Copenhagen



**5,903,037**

Population



**1,320,826**

City population



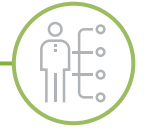
**Cool, Humid**

Climate Zone  
Classification



**64%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Executive Order on Building Regulations 2018 (BR18)

**Code adoption date**

2018

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.4

1.4

Maximum Solar Heat Gain Coefficient

0.50

0.50

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

3.5

3.5

Split AC System EER (Wh/Wh)

2.3\*

Fan Coverage

✓\*



**Water  
Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Occupant guides for HVAC or lighting systems; Operator or maintenance guides; Consumer guides or databases for energy efficient appliances

Financial Incentives

Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Ecuador, Quito



**18,001,000**

Population



**1,822,397**

City population



**Warm, Humid**

Climate Zone  
Classification



**1.8%\***

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Technical Rule on the Building Standard

**Code adoption date**

2013

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.27

0.27

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.50

0.50

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.59

0.59

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.8

2.8

Maximum Solar Heat Gain Coefficient

0.25

0.25

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

Fan Coverage

..

..



**Water Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

..

Financial Incentives

..

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# El Salvador, San Salvador



**6,336,392**

Population



**1,106,698**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**162%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

RTS 29.02.01-21

**Code adoption date**

2001

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

60



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders

Financial Incentives

..

# Estonia, Tallinn



**1,348,840**

Population



**437,027**

City population



**Cold, Humid**

Climate Zone  
Classification



**11%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Minimum Requirements for Energy Performance of Buildings

**Code adoption date**

2017

**Type of code**

Performance-based

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



**Water  
Heating**

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Grants; Loans

# Finland, Helsinki



**5,556,106**

Population



**1,279,096**

City population



**Cold, Humid**

Climate Zone  
Classification



**52%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Decree of the Ministry of the Environment on the Energy Efficiency  
of New Buildings

**Code adoption date**

2017

**Type of code**

Performance-based

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.09

0.09

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.09

0.09

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.09

0.09

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.0

1.0

Maximum Solar Heat Gain Coefficient

0.85

0.85

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

4.0

4.0

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

0.80

0.80

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



**Water  
Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Occupant guides for HVAC or  
lighting systems; Operator or  
maintenance guides; Designer  
guides for architects and  
engineers; Consumer guides or  
databases for energy efficient  
appliances; Trainings for any of  
the stakeholders

Financial Incentives

Grants



# France, Paris



**67,971,311**

Population



**10,900,952**

City population



**Mixed, Humid**

Climate Zone  
Classification



**68%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Environmental Regulation 2020 (RE 2020)

### Code adoption date

2020

### Type of code

Performance-based

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

..

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..



### Incentives and Resources

Financial Incentives

Tax Credits or deductions;  
Grants; Loans

# Georgia, Tbilisi



**3,712,502**

Population



**1,077,333**

City population



**Mixed, Humid**

Climate Zone  
Classification



**45%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Resolution "On Approval of Minimum Requirements for Energy Efficiency of Buildings, Parts of Buildings or Elements of Buildings" (No. 354 of July 13, 2021)

**Code adoption date**

2021

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.38

0.38

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.38

0.38

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.8

1.8

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

3.1

3.1

Split AC System EER (Wh/Wh)

3

3

Fan Coverage

✓



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Trainings for any of the  
stakeholders

Financial Incentives

Loans; Grants

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Germany, Berlin



**83,797,985**

Population



**3,552,123**

City population



**Cool, Humid**

Climate Zone  
Classification



**21%**

Average urban growth  
(2010–2020)



**High**

Income group

BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK	Building Energy Efficiency Code or Main Source of Mandatory Standards	Buildings Energy Act (GEG)
	Code adoption date	2022
	Type of code	Prescriptive
	Coverage of Code	New Buildings and Existing Buildings

TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING		Residential	Commercial
	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)		
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)			0.20	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)			0.35	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)			0.28	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)			..	..
Maximum Solar Heat Gain Coefficient			..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )			..	..
HVAC	Natural Ventilation Coverage			..
	Space Heating Coverage		✓*	
	Space Cooling Coverage		✓*	
	Fossil Fuel Furnace Energy Efficiency (%)		..	..
	Heat Pump (Heating) COP (Wh/Wh)		1.8*	1.8*
Water Heating	Split AC System EER (Wh/Wh)		2.3*	2.3*
	Fan Coverage			✓*
	Fossil Fuel Water Heater EF			✓*
Lighting	Electric Water Heater EF			✓*
	Maximum Wattage or Lighting Allowances (Outdoor)		..	
	Maximum Wattage or Lighting Allowances (Indoor)		..	
Building Materials	Luminary Efficacy (lm/W)		65*	
	Lab Testing		..	
	Labelling		..	
Incentives and Resources	Independent Certification		..	
	Resources to Facilitate Compliance		Designer guides for architects and engineers; Operator or maintenance guides or manuals; Consumer guides or databases for energy efficient appliances	
	Financial Incentives		Loans	

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Ghana, Accra



**33,475,870**

Population



**2,439,389**

City population



**Extremely hot,  
Dry**

Climate Zone  
Classification



**350%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Ghana Building Code (DGS 1207:2018)

**Code adoption date**

2018

**Type of code**

Prescriptive

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

..

# Greece, Athens



**10,426,919**

Population



**3,155,600**

City population



**Mixed, Humid**

Climate Zone  
Classification



**10%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulation of Energy Performance of Buildings (KENAK)

**Code adoption date**

2008

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.40

0.40

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.80

0.80

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.90

0.90

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.6

2.6

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

0.70

0.70

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

60



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders

Financial Incentives

Grants; Loans



# Hong Kong SAR, China, Hong Kong



**7,346,100**

Population



**7,428,887**

City population



**Hot, Humid**

Climate Zone  
Classification



**51%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Code of Practice for Energy Efficiency of Building Services  
Installation 2021

**Code adoption date**

2021

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

3.1

3.1

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..

Financial Incentives

Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Hungary, Budapest



**9,643,048**

Population



**1,759,497**

City population



**Cool, Humid**

Climate Zone  
Classification



**18%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Ministry without Portfolio Decree on the Determination of  
Buildings' Energy Performance (No. 7/2006. (V.24.))

**Code adoption date**

2006

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.17

0.17

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.24

0.24

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.4

1.4

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

0.23

0.23

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.5

2.5

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

✓

Labelling

✓

Independent Certification

✓



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Tax Credits or  
deductions; Loans

# Iceland, Reykjavík



**382,003**

Population



**216,364**

City population



**Cold, Humid**

Climate Zone  
Classification



**134%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Building Regulations (No. 441/1998)

**Code adoption date**

1998

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

3.0

3.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

3.0

6.0

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# India, Mumbai



1,417,173,173

Population



19,979,955

City population



Very hot, Dry

Climate Zone  
Classification



234%

Average urban growth  
(2010–2020)



Lower middle

Income group



BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK

Building Energy Efficiency Code or  
Main Source of Mandatory Standards

Energy Conservation Building Code

Code adoption date

2018

Type of code

Combination (Prescriptive/Performance-based)

Coverage of Code

New Buildings

TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS



Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

0.33

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

0.40

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

0.50

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..



HVAC

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

2.8

Fan Coverage

✓



Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..

..



Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



Building  
Materials

Lab Testing

✓

Labelling

✓

Independent Certification

✓



Incentives  
and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Fee Waivers; Tax  
Credits or deductions

# Indonesia, Jakarta



**275,501,339**

Population



**10,516,927**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**250%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulation of the Minister of Public Works and Public Housing concerning Performance Assessment of Green Buildings (PWPB Reg 21/2021)

**Code adoption date**

2021

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**



**HVAC**



**Water  
Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and  
Resources**

**TYPE OF BUILDING**

**Residential**

**Commercial**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

75

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Loans; Grants; Tax Credits or deductions

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Iran, Islamic Rep., Tehran



**88,550,570**

Population



**8,895,947**

City population



**Warm, Dry**

Climate Zone  
Classification



**200%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Code 19 of the Iranian Building Regulations

### Code adoption date

1991

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

1.2

1.2

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

1.8

1.8

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

2.1

2.1

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Loans; Grants; Tax Credits or deductions

# Ireland, Dublin



**5,127,170**

Population



**1,201,426**

City population



**Cool, Humid**

Climate Zone  
Classification



**120%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Technical Guidance Document of the Building Regulations

**Code adoption date**

2021

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.16

0.16

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.18

0.21

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.18

0.21

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.4

1.6

Maximum Solar Heat Gain Coefficient

..

0.68

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

5.0

5.0

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓\*

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Water  
Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Grants; Tax Credits or deductions

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Israel, Jerusalem



**9,557,500**

Population



**907,062**

City population



**Warm, Humid**

Climate Zone  
Classification



**195%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Standard SI 5281: Sustainable Building

**Code adoption date**

2005

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.52

0.52

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.84

0.84

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

1.4

1.4

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

0.50

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Italy, Rome



**58,940,425**

Population



**4,209,710**

City population



**Warm, Humid**

Climate Zone  
Classification



**37%**

Average urban growth  
(2010–2020)



**High**

Income group

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Ministerial Decree for Energy Efficiency Requirements in Buildings of June 26, 2015
	<b>Code adoption date</b>	2015
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	TYPE OF BUILDING	Residential	Commercial
<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.26	0.26
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.32	0.29
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.32	0.29
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.8	1.8
	Maximum Solar Heat Gain Coefficient	0.35	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage		..
<p><b>HVAC</b></p>	Space Heating Coverage		✓*
	Space Cooling Coverage		✓
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	1.8*	1.8*
	Split AC System EER (Wh/Wh)	2.3*	2.3*
	Fan Coverage		✓*
<p><b>Water Heating</b></p>	Fossil Fuel Water Heater EF		✓*
	Electric Water Heater EF		✓*
<p><b>Lighting</b></p>	Maximum Wattage or Lighting Allowances (Outdoor)		..
	Maximum Wattage or Lighting Allowances (Indoor)		..
	Luminary Efficacy (lm/W)		65*
<p><b>Building Materials</b></p>	Lab Testing		..
	Labelling		..
	Independent Certification		..
<p><b>Incentives and Resources</b></p>	Resources to Facilitate Compliance	Designer guides for architects and engineers; Occupant guides for HVAC or lighting systems	
	Financial Incentives	Tax Credits or deductions; Convertible Tax Credits; Grants	

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Japan, Tokyo



125,124,989

Population



37,468,302

City population



Warm, Humid

Climate Zone  
Classification



2%

Average urban growth  
(2010–2020)



High

Income group



BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK

Building Energy Efficiency Code or  
Main Source of Mandatory Standards

Act on Improvement of Energy Consumption Performance of  
Buildings (Building Energy Conservation Act) (No. 53 of 2015)

Code adoption date

2015

Type of code

Performance-based

Coverage of Code

TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS



Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.94

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.98

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.1

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.73

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..



HVAC

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

0.88

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..

..



Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



Building  
Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



Incentives  
and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Operator or maintenance  
guides or manuals;  
Occupant guides for HVAC  
or lighting systems

Financial Incentives

..

..



# Kazakhstan, Almaty



**19,621,972**

Population



**1,829,005**

City population



**Cool, Humid**

Climate Zone  
Classification



**154%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

SNiP RK 2.04-05-2002 "Natural and artificial lighting

**Code adoption date**

2002

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.36

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.36

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.48

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

3.3

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

55



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Trainings for any of the  
stakeholders; Occupant  
guides for HVAC or lighting  
systems

Financial Incentives

Loans; Grants

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Kenya, Nairobi



**54,027,487**

Population



**4,385,853**

City population



**Warm, Marine**

Climate Zone  
Classification



**418%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

The Energy Act

**Code adoption date**

2019

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.61

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

3.1

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

..

Financial Incentives

..

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Korea, Rep., Seoul



51,628,117

Population



9,963,497

City population



Mixed, Humid

Climate Zone  
Classification



36%

Average urban growth  
(2010–2020)



High

Income group



BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK

Building Energy Efficiency Code or  
Main Source of Mandatory Standards

Building Energy Conservation Design Guide

Code adoption date

1980

Type of code

Combination (Prescriptive/Performance-based)

Coverage of Code

New Buildings

TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS



Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



Building  
Materials

Lab Testing

..

Labelling

..

Independent Certification

..



Incentives  
and Resources

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Kuwait, Kuwait



**4,268,873**

Population



**2,989,270**

City population



**Extremely hot,  
Dry**

Climate Zone  
Classification



**357%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Conservation Code for Buildings (MEW/R-6/2018)

**Code adoption date**

2018

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.26

0.26

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.26

0.26

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.48

0.45

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

3.6

1.1

Maximum Solar Heat Gain Coefficient

0.40

0.22

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



**HVAC**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Water Heating**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

..

..

Financial Incentives

..

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Kyrgyz Republic, Bishkek



**6,974,900**

Population



**996,319**

City population



**Mixed, Humid**

Climate Zone  
Classification



**224%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Law of the Kyrgyz Republic "On the Energy Efficiency of Buildings"  
(No. 137 of July 26, 2011)

**Code adoption date**

2011

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.32

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

4.0

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..

Lab Testing

✓

Labelling

✓

Independent Certification

✓

Resources to Facilitate Compliance

Designer guides for architects  
and engineers; Operator or  
maintenance guides or manuals;  
Occupant guides for HVAC or  
lighting systems; Consumer  
guides or databases for energy  
efficient appliances; Trainings for  
any of the stakeholders

Financial Incentives

Grants



# Latvia, Riga



**1,879,383**

Population



**637,089**

City population



**Cold, Humid**

Climate Zone  
Classification



**-100%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Efficiency Law

**Code adoption date**

2020

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

0.23

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.30

0.35

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.20

0.25

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.8

2.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

3.0

3.0

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



### HVAC

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Water Heating

Maximum Wattage or Lighting Allowances (Outdoor)

✓



### Lighting

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Mandatory labeling;  
Mandatory laboratory  
testing; Energy efficiency  
ratings

Financial Incentives

Designer guides for  
architects and engineers

# Lithuania, Vilnius



**2,831,639**

Population



**536,055**

City population



**Cold, Humid**

Climate Zone  
Classification



**-86%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Building Technical Regulation "Design and certification of energy performance of buildings" (STR 2.01.02:2016)

### Code adoption date

2016

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.14

0.19

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.16

0.25

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.15

0.22

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

1.4

1.9

Maximum Solar Heat Gain Coefficient

0.80

0.80

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

0.50

0.50

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

150



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

None. Only program is to  
compensate 30 % of solar  
panels.

# Luxembourg, Luxembourg



**653,103**

Population



**119,752**

City population



**Cool, Humid**

Climate Zone  
Classification



**241%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Grand Ducal Regulation of 9 June 2021 on the Energy  
Performance of Buildings

**Code adoption date**

2021

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**



**HVAC**



**Water  
Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and  
Resources**

**TYPE OF BUILDING**

**Residential**

**Commercial**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.11

0.22

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.13

0.28

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.13

0.28

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.0

1.6

Maximum Solar Heat Gain Coefficient

0.87

0.64

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓\*

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for architects  
and engineers; Consumer guides  
or databases for energy efficient  
appliances; Occupant guides  
for HVAC or lighting systems;  
Operator or maintenance guides

Financial Incentives

Grants; Tax Credits or deductions

# Malaysia, Kuala Lumpur



**33,938,221**  
Population



**7,563,912**  
City population



**Extremely hot,  
Humid**  
Climate Zone  
Classification



**225%**  
Average urban growth  
(2010–2020)



**Upper middle**  
Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Efficiency and Use of Renewable Energy for Non-Residential Buildings - Code of Practice

**Code adoption date**

2017

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)



Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

0.60

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..



**HVAC**

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



**Water  
Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing



Labelling



Independent Certification



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Trainings for any of the stakeholders

Financial Incentives

Tax Credits or deductions; Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Malta, Valletta



**531,113**

Population



**212,768**

City population



**Warm, Humid**

Climate Zone  
Classification



**195%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Performance of Buildings Regulations (Subsidiary  
Legislation 623.01)

**Code adoption date**

2018

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.59

0.59

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

1.6

1.6

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.6

1.6

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

4.0

4.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

2.5

2.5

Split AC System EER (Wh/Wh)

2.6

2.6

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Trainings for any of the  
stakeholders

Financial Incentives

Loans;

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Mexico, Mexico City



**127,504,125**

Population



**21,580,827**

City population



**Warm, Humid**

Climate Zone  
Classification



**159%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Mexican Official Standards in Energy Efficiency - Buildings (NOM Edificaciones)

**Code adoption date**

2001

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.91

0.39

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.91

2.2

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Tax Credits or deductions

# Moldova, Chişinău



**2,538,894**

Population



**509,707**

City population



**Cool, Humid**

Climate Zone  
Classification



**-82%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

NCM M.01.01-2016 Energy performance of buildings

**Code adoption date**

2016

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.24

0.24

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.8

1.8

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..

Lab Testing

✓

Labelling

✓

Independent Certification

✓

Resources to Facilitate Compliance

Trainings for any of the stakeholders; Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances

Financial Incentives

Loans

# Montenegro, Podgorica



**617,213**

Population



**177,177**

City population



**Warm, Humid**

Climate Zone  
Classification



**53%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Rulebook on Minimal Energy Efficiency Requirements in Buildings

### Code adoption date

2013

### Type of code

Performance-based

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

1.4

1.4

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.4

1.4

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.9

2.9

Maximum Solar Heat Gain Coefficient

0.50

0.50

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

✓

Space Cooling Coverage

..

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

0.60

0.60

Heat Pump (Heating) COP (Wh/Wh)

3.8

3.8

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances

Financial Incentives

Grants; Loans

# Morocco, Rabat



**37,457,971**

Population



**1,846,661**

City population



**Warm, Humid**

Climate Zone  
Classification



**221%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Thermal Regulation of Construction in Morocco (RTCM)

**Code adoption date**

2014

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.75

0.65

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

5.8

5.8

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Trainings for any of the  
stakeholders; Designer  
guides for architects and  
engineers

Financial Incentives

0

# Myanmar, Naipyidó



**54,179,306**

Population



**500,218**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**149%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Myanmar National Building Code 2020

**Code adoption date**

2020

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.23

0.27

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

2.0

2.0

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

2.8

8.2

Maximum Solar Heat Gain Coefficient

0.35

0.35

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders

Financial Incentives

Tax Credits or deductions;  
Loans; Grants; Fee  
Waivers; Preferential utility  
rates



# Netherlands, Amsterdam



**17,700,982**

Population



**1,131,690**

City population



**Mixed, Humid**

Climate Zone  
Classification



**108%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or Main Source of Mandatory Standards**

Building Decree 2012

**Code adoption date**

2012

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.27

0.27

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.27

0.27

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.27

0.27

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

3.4

3.4

Maximum Solar Heat Gain Coefficient

0.85

0.85

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

0.75

0.75

Heat Pump (Heating) COP (Wh/Wh)

4.4

4.4

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



**Building Materials**

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Incentives and Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders; Occupant guides for HVAC or lighting systems

Financial Incentives

Grants; Tax Credits or deductions; Loans

# New Zealand, Wellington



**5,124,100**

Population



**411,346**

City population



**Warm, Humid**

Climate Zone  
Classification



**151%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

New Zealand Building Code

**Code adoption date**

1992

**Type of code**

Performance-based

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.15

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.34

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.33

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.84

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



**HVAC**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Water Heating**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



**Lighting**

Lab Testing

..

..

Labelling

..

..



**Building  
Materials**

Independent Certification

..

..

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Consumer guides or  
databases for energy  
efficient appliances;  
Trainings for any of the  
stakeholders



**Incentives  
and Resources**

Financial Incentives

Rebates; Loans

# Nigeria, Lagos



**218,541,212**

Population



**13,463,421**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**441%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Building Energy Efficiency Code

**Code adoption date**

2017

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.80

0.80

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



**Water  
Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



**Incentives  
and  
Resources**

Resources to Facilitate Compliance

Designer guides for architects  
and engineers; Occupant guides  
for HVAC or lighting systems;  
Operator or maintenance guides

Financial Incentives

..

..

# Norway, Oslo



**5,457,127**

Population



**1,012,225**

City population



**Cold, Humid**

Climate Zone  
Classification



**141%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Regulations on Technical Requirements for Construction Works

### Code adoption date

2017

### Type of code

Prescriptive

### Coverage of Code

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.18

0.18

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.18

0.18

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.2

1.2

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.2

1.2

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Loans; Grants

# Pakistan, Islamabad



**235,824,862**

Population



**1,061,412**

City population



**Hot, Humid**

Climate Zone  
Classification



**269%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Conservation Building Code 2023 (ECDC-2023)

**Code adoption date**

2023

**Type of code**

Performance-based

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.44

0.44

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.57

0.57

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

5.0

5.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.78

0.78

Heat Pump (Heating) COP (Wh/Wh)

2.0

2.0

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems

Financial Incentives

Solar panels are not subject to sales tax; excess energy produced can be sold back to the grid



# Panama, Panama City



**4,408,581**

Population



**1,783,490**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**218%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Resolution adopting the Guide on Sustainable Construction for Energy Saving in Buildings and Measures for the Rational and Efficient Use of Energy (No. 3142 of Thursday, 17 November 2016)

### Code adoption date

2016

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

Residential

Commercial

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

..

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Loans; Preferential utility  
rates

# Paraguay, Asunción



**6,780,744**

Population



**3,222,199**

City population



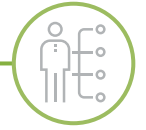
**Hot, Humid**

Climate Zone  
Classification



**181%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Municipal Ordinance "Incentives for Sustainable Construction"  
(No. 128/17)

**Code adoption date**

2016

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.83

0.83

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.0

1.0

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Peru, Lima



**34,049,588**

Population



**10,390,607**

City population



**Hot, Dry**

Climate Zone  
Classification



**147%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

National Building Regulations (RNE)

**Code adoption date**

2017

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

2.2

2.2

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

2.6

3.3

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

2.4

3.6

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

100



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Philippines, Manila



**115,559,009**

Population



**13,482,468**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**194%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

The Philippine Green Building Code

**Code adoption date**

2015

**Type of code**

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

..

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓



**HVAC**

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy ( $lm/W$ )

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Tax Credits or deductions;  
Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Poland, Warsaw



**36,821,749**

Population



**1,767,798**

City population



**Cool, Humid**

Climate Zone  
Classification



**-21%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulation of the Minister of Infrastructure on the Technical Conditions to be met by Buildings and their Location (Journal of Laws 2022 No. 1225)

**Code adoption date**

2022

**Type of code**

Performance-based

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.15

0.15

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.3

1.3

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems

Financial Incentives

..



# Portugal, Lisboa



**10,409,704**

Population



**2,927,316**

City population



**Warm, Humid**

Climate Zone  
Classification



**69%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Decree-Law establishing the Requirements applicable to Buildings to Improve their Energy Performance (No. 101-D/2020)

### Code adoption date

2020

### Type of code

Prescriptive

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.40

0.50

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.40

0.50

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.50

0.70

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

0.50

0.70

Maximum Solar Heat Gain Coefficient

0.56

0.56

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

3.0

3.0

Split AC System EER (Wh/Wh)

2.9

2.9

Fan Coverage

✓\*

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Consumer guides or  
databases for energy  
efficient appliances;  
Designer guides for  
architects and engineers

Financial Incentives

..

# Qatar, Doha



**2,695,122**

Population



**633,401**

City population



**Extremely hot,  
Dry**

Climate Zone  
Classification



**484%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Energy and Water Conservation Code 2023

### Code adoption date

2023

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.44

0.44

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.57

0.57

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.30

0.30

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.42

2.42

Fan Coverage

..

..



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

✓

Labelling

✓

Independent Certification

✓



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Grants

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Romania, Bucharest



**19,047,009**

Population



**1,821,380**

City population



**Mixed, Humid**

Climate Zone  
Classification



**-43%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Law on Energy Performance of Buildings (No. 372/2005)

### Code adoption date

2005

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.22

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.56

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.3

..

Maximum Solar Heat Gain Coefficient

0.75

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓



### HVAC

Space Heating Coverage

✓\*

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Operator or maintenance  
guides or manuals;  
Consumer guides or  
databases for energy  
efficient appliances

Financial Incentives

Grants; Fee Waivers; Tax  
Credits or deductions;  
Loans

# Rwanda, Kigali



**13,776,698**

Population



**1,057,836**

City population



**Hot, Humid**

Climate Zone  
Classification



**285%**

Average urban growth  
(2010–2020)



**Low**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Ministerial Order determining Urban Planning and Building  
Regulations (No. 03/CAB.M/019 of 15/04/2019)

**Code adoption date**

2019

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

1.0

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

2.0

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

..

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Saudi Arabia, Riyadh



**36,408,820**

Population



**6,906,595**

City population



**Very hot, Dry**

Climate Zone  
Classification



**262%**

Average urban growth  
(2010–2020)



**High**

Income group

BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK	Building Energy Efficiency Code or Main Source of Mandatory Standards	Saudi Energy Conservation Code (SBC 601)
	Code adoption date	2007
	Type of code	Performance-based
	Coverage of Code	New Buildings

TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING	Residential	Commercial
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.37	0.37
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.41	0.41
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.31	1.3
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	5.9	5.9
	Maximum Solar Heat Gain Coefficient	0.25	0.25
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
HVAC	Natural Ventilation Coverage		..
	Space Heating Coverage		..
	Space Cooling Coverage		✓
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
Water Heating	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage		✓
Lighting	Fossil Fuel Water Heater EF		..
	Electric Water Heater EF		..
	Maximum Wattage or Lighting Allowances (Outdoor)		..
Building Materials	Maximum Wattage or Lighting Allowances (Indoor)		..
	Luminary Efficacy (lm/W)		..
	Lab Testing		..
Incentives and Resources	Labelling		..
	Independent Certification		..
	Resources to Facilitate Compliance	Designer guides for architects and engineers; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Operator or maintenance guides or manuals	
	Financial Incentives		..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Serbia, Belgrade



**6,664,449**

Population



**1,389,351**

City population



**Mixed, Humid**

Climate Zone  
Classification



**-28%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Rulebook on Energy Efficiency of Buildings ("RS Official Gazette"  
No. 61/2011)

### Code adoption date

2011

### Type of code

Performance-based

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.15

0.15

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.6

1.6

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.5

2.5

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Loans

# Singapore, Singapore



**5,637,022**

Population



**5,791,901**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**74%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

The Code for Environmental Sustainability of Buildings  
(Edition 4.0)

**Code adoption date**

2008

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.50

1.2

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy ( $lm/W$ )

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Tax Credits or  
deductions; Fee Waivers

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Slovak Republic, Bratislava



**5,431,752**

Population



**429,920**

City population



**Mixed, Humid**

Climate Zone  
Classification



**-8%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Act on the Energy Performance of Buildings (No. 555/2005)

### Code adoption date

2005

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.15

..

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.20

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.22

..

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

0.85

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓



### HVAC

Space Heating Coverage

✓

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

4.0

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Slovenia, Ljubljana



**2,111,986**

Population



**286,491**

City population



**Mixed, Humid**

Climate Zone  
Classification



**73%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Rules on the Efficient Use of Energy in Buildings (No. 70/22 and 161/22)

**Code adoption date**

2022

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.15

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.35

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.18

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..



**HVAC**

Space Heating Coverage

✓\*

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

65\*



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

Grants; Loans

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# South Africa, Pretoria



**59,893,885**

Population



**2,378,350**

City population



**Warm, Humid**

Climate Zone  
Classification



**224%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

South African National Standard. The Application of the National Building Regulations. Part X: Environmental Sustainability. Part XA: Energy Usage in Buildings (SANS 10400 XA)

**Code adoption date**

2011

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.81

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..



**HVAC**

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Consumer guides or  
databases for energy  
efficient appliances;  
Trainings for any of the  
stakeholders; Designer  
guides for architects and  
engineers

Financial Incentives

..



# Spain, Madrid



**47,778,340**

Population



**6,497,124**

City population



**Mixed, Dry**

Climate Zone  
Classification



**47%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Technical Code of Building (CTE)

**Code adoption date**

1999

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.40

0.40

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.49

0.49

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.49

0.49

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

5.7

5.7

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

9.0

9.0

Natural Ventilation Coverage

..

..



### HVAC

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.92

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓\*

Electric Water Heater EF

✓\*



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy ( $lm/W$ )

65\*



### Building Materials

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers

Financial Incentives

..

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Sri Lanka, Colombo



**22,181,000**  
Population



**599,821**  
City population



**Extremely hot,  
Humid**  
Climate Zone  
Classification



**108%**  
Average urban growth  
(2010–2020)



**Lower middle**  
Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Energy Efficiency Building Code of Sri Lanka

**Code adoption date**

2021

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**

**TYPE OF BUILDING**

**Residential**

**Commercial**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

1.3

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

2.5

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

..



**HVAC**

Space Heating Coverage

..

..

Space Cooling Coverage

..

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..



**Building  
Materials**

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Trainings for any of the  
stakeholders; Designer  
guides for architects and  
engineers

Financial Incentives

..

# Sweden, Stockholm



**10,486,941**

Population



**1,582,968**

City population



**Cold, Humid**

Climate Zone  
Classification



**127%**

Average urban growth  
(2010–2020)



**High**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

### Building Energy Efficiency Code or Main Source of Mandatory Standards

Planning and Building Act (SFS 2010:900)

### Code adoption date

2010

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.40

0.33

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.40

0.33

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.40

0.33

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓



### HVAC

Space Heating Coverage

✓

Space Cooling Coverage

✓\*

Fossil Fuel Furnace Energy Efficiency (%)

0.65

..

Heat Pump (Heating) COP (Wh/Wh)

1.8\*

1.8\*

Split AC System EER (Wh/Wh)

2.3\*

2.3\*

Fan Coverage

✓\*



### Water Heating

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

65\*



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Tax Credits or deductions

# Thailand, Bangkok



**71,697,030**

Population



**10,156,316**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**207%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group

BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK	Building Energy Efficiency Code or Main Source of Mandatory Standards	Thai Building Energy Code (BEC)
	Code adoption date	2021
	Type of code	Combination (Prescriptive/Performance-based)
	Coverage of Code	New Buildings and Existing Buildings

TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING	Residential	Commercial
	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	..
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)		..	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)		..	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)		..	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)		..	..
Maximum Solar Heat Gain Coefficient		..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )		..	..
Natural Ventilation Coverage		..	..
HVAC	Space Heating Coverage	..	..
	Space Cooling Coverage	..	✓
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
Water Heating	Fan Coverage	..	..
	Fossil Fuel Water Heater EF	..	✓
Lighting	Electric Water Heater EF	..	..
	Maximum Wattage or Lighting Allowances (Outdoor)	..	✓
	Maximum Wattage or Lighting Allowances (Indoor)	..	✓
Building Materials	Luminary Efficacy (lm/W)	..	..
	Lab Testing	..	..
	Labelling	..	..
Incentives and Resources	Independent Certification	..	..
	Resources to Facilitate Compliance	Designer guides for architects and engineers; Operator or maintenance guides; Trainings for any of the stakeholders	
	Financial Incentives	Loans	

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Tunisia, Tunis



**12,356,117**

Population



**2,290,777**

City population



**Hot, Humid**

Climate Zone  
Classification



**148%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Joint Order of the Minister of Minister of Public Works, Habitat and Land Use and the Minister of Industry, Energy and Small and Medium Enterprises of 1 June 2009, fixing Minimum Technical Specifications aimed at Saving Energy Consumption in Construction and Extension Projects for Residential Buildings (No. 2009-739)

**Code adoption date**

2009

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**



**HVAC**



**Water Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and Resources**

**TYPE OF BUILDING**

**Residential**

**Commercial**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.75

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

1.1

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.95

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..

Financial Incentives

..



# Türkiye, Istanbul



**84,979,913**

Population



**4,919,074**

City population



**Warm, Humid**

Climate Zone  
Classification



**219%**

Average urban growth  
(2010–2020)



**Upper middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or Main Source of Mandatory Standards**

Building Energy Performance Regulation (BEP)

**Code adoption date**

2008

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.40

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.60

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.60

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



**HVAC**

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



**Building Materials**

Lab Testing

✓

Labelling

✓

Independent Certification

✓



**Incentives and Resources**

Resources to Facilitate Compliance

Designer guides for architects and engineers; Operator or maintenance guides or manuals; Occupant guides for HVAC or lighting systems; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders

Financial Incentives

Loans

# Ukraine, Kyiv



**38,000,000**

Population



**2,956,706**

City population



**Cool, Humid**

Climate Zone  
Classification



**-26%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Main Requirements to Buildings and Structures. Energy Saving  
(DBN V.1.2-11-2008)

**Code adoption date**

2008

**Type of code**

**Coverage of Code**

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.20

0.20

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.27

0.27

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.7

1.7

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..



### HVAC

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.91

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.16

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

✓



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

75



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Trainings for any of the  
stakeholders; Consumer  
guides or databases for  
energy efficient appliances

Financial Incentives

..

# United Arab Emirates, Dubai



**9,441,129**

Population



**1,419,699**

City population



**Extremely hot,  
Dry**

Climate Zone  
Classification



**229%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Green Building Regulations and Specifications

**Code adoption date**

2020

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.30

0.30

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.57

0.57

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

0.57

0.57

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

5.0

5.0

Natural Ventilation Coverage

..

..

Space Heating Coverage

..

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

..



**HVAC**

Fossil Fuel Water Heater EF

..

..

Electric Water Heater EF

..

..



**Water Heating**

Maximum Wattage or Lighting Allowances (Outdoor)

✓

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

..



**Lighting**

Lab Testing

..

..



**Building  
Materials**

Labelling

..

..

Independent Certification

..

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Designer guides for  
architects and engineers;  
Consumer guides or  
databases for energy  
efficient appliances

Financial Incentives

Loans

# United Kingdom, London



66,971,395

Population



9,046,485

City population



Mixed, Humid

Climate Zone  
Classification



96%

Average urban growth  
(2010–2020)



High

Income group



BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Building Act 1984; Building Regulations 2010 (SI 2010/2214);  
Building Regulations etc. (Amendment) (England) Regulations  
2021 (SI 2021/1391)

**Code adoption date**

2021

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS



Passive  
Design



HVAC



Water  
Heating



Lighting



Building  
Materials



Incentives  
and  
Resources

TYPE OF BUILDING

Residential

Commercial

Thermal Transmittance (W/m<sup>2</sup>.K)

✓

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

0.16

0.16

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

0.18

0.18

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

1.6

1.6

Maximum Solar Heat Gain Coefficient

0.48

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

8.0

8.0

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

0.91

0.91

Heat Pump (Heating) COP (Wh/Wh)

2.5

2.5

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

75

Lab Testing

✓

Labelling

✓

Independent Certification

✓

Resources to Facilitate Compliance

Designer guides for architects  
and engineers; Operator or  
maintenance guides or manuals;  
Consumer guides or databases  
for energy efficient appliances

Financial Incentives

Grants; Loans; Rebates; Fee  
Waivers; Levy

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# United States, Los Angeles



**333,287,557**

Population



**12,457,765**

City population



**Warm, Marine**

Climate Zone  
Classification



**89%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

The California Green Building Standards Code (CALGreen)

**Code adoption date**

2023

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.04

0.04

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

0.04

0.11

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.07

0.69

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

0.20

1.5

Maximum Solar Heat Gain Coefficient

0.23

0.22

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

✓

Space Heating Coverage

✓

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

0.81

0.80

Heat Pump (Heating) COP (Wh/Wh)

..

2.1

Split AC System EER (Wh/Wh)

3.28

..

Fan Coverage

..



**Water Heating**

Fossil Fuel Water Heater EF

✓

Electric Water Heater EF

✓



**Lighting**

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

45



**Building  
Materials**

Lab Testing

..

Labelling

..

Independent Certification

..



**Incentives  
and Resources**

Resources to Facilitate Compliance

Consumer guides or  
databases for energy  
efficient appliances

Financial Incentives

Rebates

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Uruguay, Montevideo



**3,422,794**

Population



**1,736,989**

City population



**Warm, Humid**

Climate Zone  
Classification



**45%**

Average urban growth  
(2010–2020)



**High**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Regulation on Thermal Insulation of Buildings (No. 2928/09)

**Code adoption date**

2009

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance ( $W/m^2.K$ )

✓

Thermal Transmittance: Roof U-value ( $W/m^2.K$ )

0.85

0.85

Thermal Transmittance: Floors U-value ( $W/m^2.K$ )

..

..

Thermal Transmittance: External Walls U-value ( $W/m^2.K$ )

0.85

0.85

Thermal Transmittance: Doors U-value ( $W/m^2.K$ )

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ( $m^3/hr.m^2$ )

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy ( $lm/W$ )

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.



# Uzbekistan, Tashkent



**35,648,100**

Population



**2,463,969**

City population



**Mixed, Humid**

Climate Zone  
Classification



**190%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Minimum energy performance requirements (MEPRs)

**Code adoption date**

2011

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential

Commercial



### Passive Design

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..



### HVAC

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

..



### Water Heating

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..



### Lighting

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

..



### Building Materials

Lab Testing

..

Labelling

..

Independent Certification

..



### Incentives and Resources

Resources to Facilitate Compliance

..

Financial Incentives

Loans; Preferential utility  
rates; Tax Credits or  
deductions; Fee Waivers

# Venezuela, RB, Caracas



**28,301,696**

Population



**2,934,560**

City population



**Very hot,  
Humid**

Climate Zone  
Classification



**22%**

Average urban growth  
(2010–2020)



..

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

Ordinance on thermal quality of buildings in the Maracaibo municipality

**Code adoption date**

2005

**Type of code**

**Coverage of Code**

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive Design**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

✓

Fossil Fuel Furnace Energy Efficiency (%)

..

..

Heat Pump (Heating) COP (Wh/Wh)

..

..

Split AC System EER (Wh/Wh)

2.78

2.78

Fan Coverage

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

..

Luminary Efficacy (lm/W)

45

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

..

Financial Incentives

..

Some European countries that are members of the European Union are mandated to follow the European Ecodesign Directive requirements. Unless a country expresses specific requirements in its code, the dataset provides the European required value. An asterisk (\*) indicates that the datapoint corresponds to a European requirement.

# Vietnam, Hanoi



**98,186,856**

Population



**4,282,738**

City population



**Extremely hot,  
Humid**

Climate Zone  
Classification



**305%**

Average urban growth  
(2010–2020)



**Lower middle**

Income group



**BUILDING  
ENERGY  
EFFICIENCY  
REGULATORY  
FRAMEWORK**

**Building Energy Efficiency Code or  
Main Source of Mandatory Standards**

National Technical Regulation on Energy Efficiency Buildings 2017  
(QCVN 09:2017/ BXD)

**Code adoption date**

2017

**Type of code**

Prescriptive

**Coverage of Code**

New Buildings and Existing Buildings

**TECHNICAL  
COMPONENTS  
COVERED BY  
BUILDING  
REGULATIONS**



**Passive  
Design**



**HVAC**



**Water  
Heating**



**Lighting**



**Building  
Materials**



**Incentives  
and  
Resources**

**TYPE OF BUILDING**

**Residential**

**Commercial**

Thermal Transmittance (W/m<sup>2</sup>.K)

..

Thermal Transmittance: Roof U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Floors U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: External Walls U-value (W/m<sup>2</sup>.K)

..

..

Thermal Transmittance: Doors U-value (W/m<sup>2</sup>.K)

..

..

Maximum Solar Heat Gain Coefficient

0.90

0.90

Maximum Air Leakage (m<sup>3</sup>/hr.m<sup>2</sup>)

..

..

Natural Ventilation Coverage

✓

..

Space Heating Coverage

✓

..

Space Cooling Coverage

✓

..

Fossil Fuel Furnace Energy Efficiency (%)

0.78

..

Heat Pump (Heating) COP (Wh/Wh)

3.0

3.0

Split AC System EER (Wh/Wh)

..

..

Fan Coverage

✓

..

Fossil Fuel Water Heater EF

✓

..

Electric Water Heater EF

✓

..

Maximum Wattage or Lighting Allowances (Outdoor)

..

..

Maximum Wattage or Lighting Allowances (Indoor)

..

..

Luminary Efficacy (lm/W)

..

..

Lab Testing

..

..

Labelling

..

..

Independent Certification

..

..

Resources to Facilitate Compliance

Designer guides for architects and engineers; Trainings for any of the stakeholders; Consumer guides or databases for energy efficient appliances

Financial Incentives

Grants; Tax Credits or deductions; Loans