

Mapping Energy Efficiency:

A Global Dataset on Building Code Effectiveness and Compliance

COUNTRY PROFILES



THE WORLD BANK
Development Economics • Global Indicators



KnowledgeFOR**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

..



HVAC

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

..



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.

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 ($W/m^2.K$)

..

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

0.90

0.90

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;
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 ($W/m^2.K$)

..

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)

..

..

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

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

Financial Incentives

..

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



**BUILDING
ENERGY
EFFICIENCY
REGULATORY
FRAMEWORK**

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

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)

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 ($W/m^2.K$)

✓

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

..

..

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

0.42

..

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

0.56

..

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

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**

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

..

..

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

2.0

2.0

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

0.13

Maximum Air Leakage (m³/hr.m²)

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

✓*

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*



Water Heating



Lighting



**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.

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 ($W/m^2.K$)

✓

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

0.30

0.30

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

..

..

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

0.57

0.57

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

..

..

Maximum Solar Heat Gain Coefficient

..

..

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

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

..



HVAC



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

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 ($\text{W/m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W/m}^2\cdot\text{K}$)

0.58

0.58

Thermal Transmittance: Floors U-value ($\text{W/m}^2\cdot\text{K}$)

1.2

1.2

Thermal Transmittance: External Walls U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: Doors U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

0.85

0.85

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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

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**



Passive Design

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.24

0.24

Thermal Transmittance: Floors U-value (W/m².K)

0.24

0.24

Thermal Transmittance: External Walls U-value (W/m².K)

0.24

0.24

Thermal Transmittance: Doors U-value (W/m².K)

2.0

2.0

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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*



Lighting



**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 ($\text{W/m}^2\cdot\text{K}$)

..

Thermal Transmittance: Roof U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: Floors U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: External Walls U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: Doors U-value ($\text{W/m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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



Passive Design

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

✓

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

0.25

..

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

0.25

..

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

0.35

..

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

2.5

..

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)

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

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.

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/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.16

0.16

Thermal Transmittance: Floors U-value (W/m².K)

0.18

0.18

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

2.0

1.9

Maximum Solar Heat Gain Coefficient

0.30

..

Maximum Air Leakage (m³/hr.m²)

..

..

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**



**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

0.87

..

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

20.4

..

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

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



HVAC



Water
Heating



Lighting



Building
Materials



Incentives
and
Resources

TYPE OF BUILDING

Residential

Commercial

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

✓

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

0.25

0.55

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

1.5

1.0

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

0.45

0.60

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

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 (%)

0.80

0.80

Heat Pump (Heating) COP (Wh/Wh)

4.3

4.3

Split AC System EER (Wh/Wh)

2.95

2.95

Fan Coverage

..

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

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 ($W/m^2.K$)

..

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

0.60

0.60

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)

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 ($W/m^2.K$)

..

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)

..

..

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

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 ($W/m^2.K$)

✓

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

0.25

0.25

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

0.40

0.40

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

0.30

0.30

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

2.0

2.0

Maximum Solar Heat Gain Coefficient

0.87

0.87

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

✓



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 ($W/m^2.K$)

✓

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

0.40

0.40

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

0.40

0.40

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

0.40

0.40

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

2.3

2.3

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*

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 ($W/m^2.K$)

✓

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

0.30

0.30

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

0.60

0.60

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

0.60

0.60

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

3.5

3.5

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)

3.0

3.0

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;
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**



**Passive
Design**

Thermal Transmittance ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.20

0.20

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.20

0.20

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.20

0.20

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

1.4

1.4

Maximum Solar Heat Gain Coefficient

0.50

0.50

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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**



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 ($W/m^2.K$)

0.50

0.50

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

0.59

0.59

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

2.8

2.8

Maximum Solar Heat Gain Coefficient

0.25

0.25

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.

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/m².K)

..

Thermal Transmittance: Roof U-value (W/m².K)

..

..

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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)

60

Lab Testing

..

Labelling

..

Independent Certification

..

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/m².K)

..

Thermal Transmittance: Roof U-value (W/m².K)

..

..

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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

✓



**Building
Materials**



**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/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.09

0.09

Thermal Transmittance: Floors U-value (W/m².K)

0.09

0.09

Thermal Transmittance: External Walls U-value (W/m².K)

0.09

0.09

Thermal Transmittance: Doors U-value (W/m².K)

1.0

1.0

Maximum Solar Heat Gain Coefficient

0.85

0.85

Maximum Air Leakage (m³/hr.m²)

4.0

4.0

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

✓

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

✓

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

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

✓



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

..

Financial Incentives

Tax Credits or deductions;
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.

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 ($W/m^2.K$)

✓

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

0.30

0.30

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 ($W/m^2.K$)

1.8

1.8

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)

3.1

3.1

Split AC System EER (Wh/Wh)

3

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)

..

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Trainings for any of the
stakeholders

Financial Incentives

Loans; Grants

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**



Passive Design

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.20

..

Thermal Transmittance: Floors U-value (W/m².K)

0.35

..

Thermal Transmittance: External Walls U-value (W/m².K)

0.28

..

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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

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/m².K)

..

Thermal Transmittance: Roof U-value (W/m².K)

..

..

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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

..

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 ($W/m^2.K$)

✓

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

0.40

0.40

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

0.80

0.80

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

0.90

0.90

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

2.6

2.6

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)

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)

60

Lab Testing

..

Labelling

..

Independent Certification

..

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 ($W/m^2.K$)

..

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)

3.1

3.1

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

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**



Passive Design

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

✓

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

0.17

0.17

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

0.30

0.30

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

0.24

0.24

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

1.4

1.4

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 (%)

0.23

0.23

Heat Pump (Heating) COP (Wh/Wh)

1.8*

1.8*

Split AC System EER (Wh/Wh)

2.5

2.5

Fan Coverage

✓

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

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**

Passive Design

 Thermal Transmittance ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

 Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.20

0.20

 Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.30

0.30

 Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.30

0.30

 Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

3.0

3.0

Maximum Solar Heat Gain Coefficient

..

..

 Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

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 ($W/m^2.K$)

✓

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

..

0.33

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

..

..

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

..

0.40

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

..



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 ($W/m^2.K$)

..

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)

..

..

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

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 ($W/m^2.K$)

✓

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

1.2

1.2

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

1.8

1.8

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

2.1

2.1

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; 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 ($W/m^2.K$)

✓

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

0.16

0.16

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

0.18

0.21

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

0.18

0.21

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

1.4

1.6

Maximum Solar Heat Gain Coefficient

..

0.68

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

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

✓

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



**BUILDING
ENERGY
EFFICIENCY
REGULATORY
FRAMEWORK**

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

Ministerial Decree for Energy Efficiency Requirements in Buildings
of June 26, 2015

Code adoption date

2015

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 ($W/m^2.K$)

0.26

0.26

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

0.32

0.29

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

0.32

0.29

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

1.8

1.8

Maximum Solar Heat Gain Coefficient

0.35

..

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*

Lab Testing

..

Labelling

..

Independent Certification

..

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

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 ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.94

..

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.98

..

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

1.1

..

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

0.73

..

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

Natural Ventilation Coverage

..

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

..

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

..

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 ($W/m^2.K$)

✓

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

0.36

..

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

0.36

..

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

0.48

..

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

3.3

..

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)

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 ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.61

..

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

3.1

..

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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.

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 ($W/m^2.K$)

..

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)

..

..

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

..

**Building
Materials**

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.

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 ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.26

0.26

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.26

0.26

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.48

0.45

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

3.6

1.1

Maximum Solar Heat Gain Coefficient

0.40

0.22

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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.

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/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.32

..

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

4.0

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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**



Passive Design

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

✓

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

0.20

0.23

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

0.30

0.35

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

0.20

0.25

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

1.8

2.0

Maximum Solar Heat Gain Coefficient

..

..

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

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

✓

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

Mandatory labeling;
Mandatory laboratory
testing; Energy efficiency
ratings

Financial Incentives

Designer guides for
architects and engineers

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.

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

✓

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

✓*

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

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**

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

✓

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

0.11

0.22

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

0.13

0.28

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

0.13

0.28

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

1.0

1.6

Maximum Solar Heat Gain Coefficient

0.87

0.64

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)

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; 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

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.

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**



HVAC



**Water
Heating**



Lighting



**Building
Materials**



**Incentives
and
Resources**

TYPE OF BUILDING

Residential

Commercial

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

..

0.60

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

..

..

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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; 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 ($W/m^2.K$)

✓

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

0.59

0.59

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

1.6

1.6

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

1.6

1.6

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

4.0

4.0

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)

2.5

2.5

Split AC System EER (Wh/Wh)

2.6

2.6

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

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/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.91

0.39

Thermal Transmittance: Floors U-value (W/m².K)

..

..

Thermal Transmittance: External Walls U-value (W/m².K)

0.91

2.2

Thermal Transmittance: Doors U-value (W/m².K)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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

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.

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 ($W/m^2.K$)

✓

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

0.20

0.20

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

0.30

0.30

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

0.24

0.24

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

1.8

1.8

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

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 ($W/m^2.K$)

✓

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

0.30

0.30

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

1.4

1.4

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

1.4

1.4

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

2.9

2.9

Maximum Solar Heat Gain Coefficient

0.50

0.50

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

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

✓

Space Cooling Coverage

..

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

✓

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; Occupant guides for HVAC or lighting systems; 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.

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**



Passive Design

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

✓

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

0.75

0.65

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

..

..

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

5.8

5.8

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

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 ($W/m^2.K$)

✓

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

0.23

0.27

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

2.0

2.0

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

..

..

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

2.8

8.2

Maximum Solar Heat Gain Coefficient

0.35

0.35

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;
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

✓

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; 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 ($W/m^2.K$)

✓

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

0.15

..

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

0.34

..

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

0.33

..

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

..

..

Maximum Solar Heat Gain Coefficient

0.84

..

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

..



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

Rebates; 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.

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 ($W/m^2.K$)

✓

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

0.80

0.80

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

..



**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**



**Passive
Design**



HVAC



**Water
Heating**



Lighting



**Building
Materials**



**Incentives
and
Resources**

TYPE OF BUILDING

Residential

Commercial

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.18

0.18

Thermal Transmittance: Floors U-value (W/m².K)

0.18

0.18

Thermal Transmittance: External Walls U-value (W/m².K)

1.2

1.2

Thermal Transmittance: Doors U-value (W/m².K)

1.2

1.2

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage (m³/hr.m²)

..

..

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; 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 ($W/m^2.K$)

✓

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

0.44

0.44

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

..

..

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

0.57

0.57

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

5.0

5.0

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 (%)

0.78

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 ($\text{W}/\text{m}^2\cdot\text{K}$)

..

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

..

..

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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

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**



Passive Design

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

✓

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

0.83

0.83

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

..

..

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

1.0

1.0

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.

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 ($W/m^2.K$)

✓

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

2.2

2.2

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

2.6

3.3

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

2.4

3.6

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)

100

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.

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**



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)

..

..

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

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 ($W/m^2.K$)

✓

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

0.15

0.15

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

0.30

0.30

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

0.20

0.20

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

1.3

1.3

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)

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; 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*

Lab Testing

..

Labelling

..

Independent Certification

..

Resources to Facilitate Compliance

Consumer guides or
databases for energy
efficient appliances;
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.

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 ($W/m^2.K$)

✓

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

0.44

0.44

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

..

..

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

0.57

0.57

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

..

..

Maximum Solar Heat Gain Coefficient

0.30

0.30

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)

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 ($W/m^2.K$)

✓

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

0.20

..

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

0.22

..

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

0.56

..

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

1.3

..

Maximum Solar Heat Gain Coefficient

0.75

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*

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; 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**



Passive Design

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

✓

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

..

1.0

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

..

..

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

..

2.0

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

..

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**



**Passive
Design**



HVAC



**Water
Heating**



Lighting



**Building
Materials**



**Incentives
and
Resources**

TYPE OF BUILDING

Residential

Commercial

Thermal Transmittance (W/m².K)

✓

Thermal Transmittance: Roof U-value (W/m².K)

0.37

0.37

Thermal Transmittance: Floors U-value (W/m².K)

0.41

0.41

Thermal Transmittance: External Walls U-value (W/m².K)

0.31

1.3

Thermal Transmittance: Doors U-value (W/m².K)

5.9

5.9

Maximum Solar Heat Gain Coefficient

0.25

0.25

Maximum Air Leakage (m³/hr.m²)

..

..

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

Financial Incentives

..

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 ($W/m^2.K$)

✓

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

0.15

0.15

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

..

..

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

0.30

0.30

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

1.6

1.6

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)

2.5

2.5

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; 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

✓

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

✓*

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

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 ($W/m^2.K$)

✓

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

0.15

..

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

0.35

..

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

0.18

..

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)

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 ($W/m^2.K$)

✓

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

0.81

..

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

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**



Passive Design

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

✓

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

..

1.3

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

..

..

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

..

2.5

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

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 ($W/m^2.K$)

✓

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

0.40

0.33

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

0.40

0.33

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

0.40

0.33

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 (%)

0.65

..

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 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

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.

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**



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;
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

Thermal Transmittance ($\text{W}/\text{m}^2\cdot\text{K}$)

✓

Thermal Transmittance: Roof U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

0.75

..

Thermal Transmittance: Floors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Thermal Transmittance: External Walls U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

1.1

..

Thermal Transmittance: Doors U-value ($\text{W}/\text{m}^2\cdot\text{K}$)

..

..

Maximum Solar Heat Gain Coefficient

0.95

..

Maximum Air Leakage ($\text{m}^3/\text{hr}\cdot\text{m}^2$)

..

..

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.

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 ($W/m^2.K$)

✓

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

0.40

..

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

0.60

..

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

0.60

..

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; 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 ($W/m^2.K$)

✓

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

0.20

0.20

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

0.27

0.27

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

0.30

0.30

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

1.7

1.7

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 (%)

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 ($W/m^2.K$)

✓

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

0.30

0.30

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

0.57

0.57

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

0.57

0.57

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

..

..

Maximum Solar Heat Gain Coefficient

..

..

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

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

..

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

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.

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**

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

✓

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

0.16

0.16

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

0.18

0.18

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

..

..

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

1.6

1.6

Maximum Solar Heat Gain Coefficient

0.48

..

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

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

..



**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; Operator or
maintenance guides or manuals;
Consumer guides or databases
for energy efficient appliances

Financial Incentives

Grants; Loans; Rebates; Fee
Waivers; Levy

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

..

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

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**



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)

..

..

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; 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 ($W/m^2.K$)

..

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)

..

..

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 ($W/m^2.K$)

..

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

0.90

0.90

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

..

..

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