

# Mapping Energy Efficiency:

## A Global Dataset on Building Code Effectiveness and Compliance

**COUNTRY PROFILES**



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



**Knowledge *FOR* Change**

# Albania, Tirana



**2,777,689**  
Population



**475,577**  
City population



**Warm, Humid**  
Climate Zone  
Classification



**141%**  
Average urban growth  
(2010–2020)



**Upper middle**  
Income group



## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

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

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

**Code adoption date**

2016

**Type of code**

Performance-based

**Coverage of Code**

New Buildings

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.35
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.38
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.38
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.0
		Maximum Solar Heat Gain Coefficient	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
HVAC		Natural Ventilation Coverage	..
		Space Heating Coverage	✓
		Space Cooling Coverage	✓
		Fossil Fuel Furnace Energy Efficiency (%)	0.70
		Heat Pump (Heating) COP (Wh/Wh)	3.0
		Split AC System EER (Wh/Wh)	..
		Fan Coverage	..
Water Heating		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	..
Building Materials		Independent Certification	..
		Resources to Facilitate Compliance	..
		Financial Incentives	..
Incentives and Resources			

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

# 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

Regulatory Technical Documents (DTR)

### Code adoption date

1998

### Type of code

Combination (Prescriptive/Performance-based)

### Coverage of Code



## Type of Building

Residential      Commercial

### Passive Design

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

..

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

..

..

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

..

..

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

..

..

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

..

..

Maximum Solar Heat Gain Coefficient

0.90      0.90

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

..

..

Natural Ventilation Coverage

..

Space Heating Coverage

..

Space Cooling Coverage

..

Fossil Fuel Furnace Energy Efficiency (%)

..      ..

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

..

# 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

	<b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>
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**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**

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..
		Maximum Solar Heat Gain Coefficient	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
		Natural Ventilation Coverage	✓
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	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..
Lighting		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	150
		Lab Testing	..
Building Materials		Labelling	..
		Independent Certification	..
		Resources to Facilitate Compliance	Designer guides for architects and engineers; Operator or maintenance guides or manuals
Incentives and Resources		Financial Incentives	..

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# 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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
Passive Design		
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.42	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.56	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	..	
HVAC		
Space Heating Coverage	..	
Space Cooling Coverage	..	
Fossil Fuel Furnace Energy Efficiency (%)	..	..
Heat Pump (Heating) COP (Wh/Wh)	..	..
Split AC System EER (Wh/Wh)	..	..
Water Heating		
Fan Coverage	..	
Fossil Fuel Water Heater EF	..	
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	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	The National Construction Code 2022 (NCC 2022)
	<b>Code adoption date</b>	2022
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	2.0	2.0
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	0.13
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	10.0	..
		Natural Ventilation Coverage	✓	
	<b>HVAC</b>	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	..	
	<b>Water Heating</b>	Fossil Fuel Water Heater EF	..	
		Electric Water Heater EF	..	
		Maximum Wattage or Lighting Allowances (Outdoor)	✓	
	<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	✓	
		Luminary Efficacy (lm/W)	..	
		Lab Testing	..	
	<b>Building Materials</b>	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	
	<b>Incentives and Resources</b>	Financial Incentives	Grants; Loans	

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# 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

TYPE OF BUILDING	Residential		Commercial			
	Passive Design	HVAC	Water Heating	Lighting	Building Materials	Incentives and Resources
Thermal Transmittance (W/m <sup>2</sup> .K)						✓
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.35	0.35				
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.3	1.3				
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.3	1.3				
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.5	2.5				
Maximum Solar Heat Gain Coefficient	..	..				
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..				
Natural Ventilation Coverage						✓
Space Heating Coverage						✓*
Space Cooling Coverage						✓*
Fossil Fuel Furnace Energy Efficiency (%)	..	..				
Heat Pump (Heating) COP (Wh/Wh)	1.8*	1.8*				
Split AC System EER (Wh/Wh)	2.3*	2.3*				
Fan Coverage						✓*
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						..
Financial Incentives						..

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Green Building Manual (Law 212, 2019)
	<b>Code adoption date</b>	2019
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	Residential	Commercial
	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.30	0.30
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.57	0.57
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	10.0	10.0
	Natural Ventilation Coverage	✓	
	Space Heating Coverage	..	
	Space Cooling Coverage	✓	
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	
	Fossil Fuel Water Heater EF	..	
	Electric Water Heater EF	..	
	Maximum Wattage or Lighting Allowances (Outdoor)	✓	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	150	
	Lab Testing	..	
	Labelling	..	
	Independent Certification	..	
	Resources to Facilitate Compliance	Operator or maintenance guides or manuals	
	Financial Incentives	..	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Bangladesh National Building Code 2020 (BNBC 2020)	
	<b>Code adoption date</b>	2020	
	<b>Type of code</b>	Prescriptive	
	<b>Coverage of Code</b>	New Buildings	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>					
			Passive Design	HVAC	Water Heating	Lighting	Building Materials	Incentives and Resources	
		Thermal Transmittance (W/m <sup>2</sup> .K)							✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.58	0.58					
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.2	1.2					
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..					
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..					
		Maximum Solar Heat Gain Coefficient	0.85	0.85					
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..					
		Natural Ventilation Coverage							✓
		Space Heating Coverage							..
		Space Cooling Coverage							..
		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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Regulation on Buildings Energy Performance (PEB)
	<b>Code adoption date</b>	2007
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>		Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.24	0.24
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.24	0.24
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.24	0.24
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.0	2.0
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage	..	
 <b>HVAC</b>		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	✓*	
 <b>Water Heating</b>		Fossil Fuel Water Heater EF	✓*	
		Electric Water Heater EF	✓*	
		Maximum Wattage or Lighting Allowances (Outdoor)	..	
 <b>Lighting</b>		Maximum Wattage or Lighting Allowances (Indoor)	..	
		Luminary Efficacy (lm/W)	65*	
		Lab Testing	..	
 <b>Building Materials</b>		Labelling	..	
		Independent Certification	..	
		Resources to Facilitate Compliance	..	
 <b>Incentives and Resources</b>		Financial Incentives	..	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Building Guidelines and Requirements, 4th edition: 2017 (PBD 12:2017)
	<b>Code adoption date</b>	2017
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K) Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K) Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K) Maximum Solar Heat Gain Coefficient Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> ) Natural Ventilation Coverage		..	..
			..	..
			..	..
			..	..
			..	..
			..	..
			..	..
			✓	
 <b>HVAC</b>	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		..	..
			..	..
			..	..
			..	..
			..	..
			..	
 <b>Water Heating</b>	Fossil Fuel Water Heater EF Electric Water Heater EF		..	
			..	
			..	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor) Maximum Wattage or Lighting Allowances (Indoor) Luminary Efficacy (lm/W)		..	
			..	
			..	
 <b>Building Materials</b>	Lab Testing Labelling Independent Certification		..	
			..	
			..	
 <b>Incentives and Resources</b>	Resources to Facilitate Compliance Financial Incentives		Designer guides for architects and engineers	
				..

# 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	
		Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.25 ..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.25 ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.35 ..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.5 ..
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
Passive Design	Passive Design	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*
HVAC	HVAC	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	Water Heating	Lab Testing	..
		Labelling	..
		Independent Certification	..
		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

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Toronto Green Standard Version 4
	<b>Code adoption date</b>	1997
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.16
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.18
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.0
		Maximum Solar Heat Gain Coefficient	0.30
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
		Natural Ventilation Coverage	✓
 <b>HVAC</b>		Space Heating Coverage	✓
		Space Cooling Coverage	✓
		Fossil Fuel Furnace Energy Efficiency (%)	0.95
		Heat Pump (Heating) COP (Wh/Wh)	..
		Split AC System EER (Wh/Wh)	2.9
		Fan Coverage	✓
 <b>Water Heating</b>		Fossil Fuel Water Heater EF	✓
		Electric Water Heater EF	..
		Maximum Wattage or Lighting Allowances (Outdoor)	✓
 <b>Lighting</b>		Maximum Wattage or Lighting Allowances (Indoor)	✓
		Luminary Efficacy (lm/W)	100
		Lab Testing	..
 <b>Building Materials</b>		Labelling	..
		Independent Certification	..
		Resources to Facilitate Compliance	Designer guides for architects and engineers
 <b>Incentives and Resources</b>		Financial Incentives	Grants; Fee Waivers; Rebates; Loans; Preferential utility rates

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# 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 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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	..
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	0.87	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	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	

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# 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

	<b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>
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<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	General Specifications for Building Energy Conservation and Renewable Energy Utilization (GB 55015-2021)
<b>Code adoption date</b>	2021
<b>Type of code</b>	Prescriptive
<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>
	<b>Passive Design</b>
	<b>HVAC</b>
	<b>Water Heating</b>
	<b>Lighting</b>
	<b>Building Materials</b>
	<b>Incentives and Resources</b>

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.25	0.55
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.5	1.0
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.45	0.60
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.0	..
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	✓	
Space Heating Coverage	✓	
Space Cooling Coverage	✓	
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

	<b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>
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**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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
Passive Design		
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	0.60	0.60
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	..	
HVAC		
Space Heating Coverage	..	
Space Cooling Coverage		✓
Fossil Fuel Furnace Energy Efficiency (%)	..	..
Heat Pump (Heating) COP (Wh/Wh)	..	..
Split AC System EER (Wh/Wh)	2.79	2.79
Fan Coverage	..	
Water Heating		
Fossil Fuel Water Heater EF	..	
Electric Water Heater EF	..	
Lighting		
Maximum Wattage or Lighting Allowances (Outdoor)	..	
Maximum Wattage or Lighting Allowances (Indoor)	..	
Luminary Efficacy (lm/W)	..	
Building Materials		
Lab Testing	..	
Labelling	..	
Independent Certification	..	
Incentives and Resources		
Resources to Facilitate Compliance	Designer guides for architects and engineers; Operator or maintenance guides or manuals	
Financial Incentives	Tax Credits or deductions	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Directive of Ministry of Environment and Energy (No. 011-MINAE)
	<b>Code adoption date</b>	2019
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K) Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K) Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K) Maximum Solar Heat Gain Coefficient Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> ) Natural Ventilation Coverage		..	..
			..	..
			..	..
			..	..
			..	..
			..	..
			..	..
			..	..
 <b>HVAC</b>	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		..	..
			..	..
			..	..
			..	..
			..	..
			..	..
 <b>Water Heating</b>	Fossil Fuel Water Heater EF Electric Water Heater EF		..	..
			..	..
			..	..
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor) Maximum Wattage or Lighting Allowances (Indoor) Luminary Efficacy (lm/W)		..	..
			..	..
			..	..
 <b>Building Materials</b>	Lab Testing Labelling Independent Certification		..	..
			..	..
			..	..
 <b>Incentives and Resources</b>	Resources to Facilitate Compliance Financial Incentives		Designer guides for architects and engineers	
			Loans	

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# Croatia, Zagreb



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

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.25	0.25
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.40	0.40
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.30	0.30
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.0	2.0
	Maximum Solar Heat Gain Coefficient	0.87	0.87
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>HVAC</b>	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		✓
 <b>Water Heating</b>	Fossil Fuel Water Heater EF		✓
	Electric Water Heater EF		✓
	Maximum Wattage or Lighting Allowances (Outdoor)		✓
	Maximum Wattage or Lighting Allowances (Indoor)		✓
 <b>Lighting</b>	Luminary Efficacy (lm/W)	65*	
	Lab Testing		✓
	Labelling		✓
	Independent Certification		✓
 <b>Building Materials</b>	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	
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# Cyprus, Nicosia



 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	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	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	Residential	Commercial
		..	..
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40	0.40
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.40	0.40
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.40	0.40
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.3	2.3
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>HVAC</b>	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	✓*	
 <b>Water Heating</b>	Fossil Fuel Water Heater EF	✓*	
	Electric Water Heater EF	✓*	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	65*	
	Lab Testing	..	
 <b>Building Materials</b>	Labelling	..	
	Independent Certification	..	
	Resources to Facilitate Compliance	Designer guides for architects and engineers; Trainings for any of the stakeholders	
 <b>Incentives and Resources</b>	Financial Incentives	Grants	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Energy Management Act (No. 406/2000 Coll.); Decree on the Energy Performance of Buildings (No. 264/2020 Coll.)
	<b>Code adoption date</b>	2000
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

<p>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</p>	<b>TYPE OF BUILDING</b>	Residential	Commercial
<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.30	0.30
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.60	0.60
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.60	0.60
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	3.5	3.5
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<p><b>HVAC</b></p>	Natural Ventilation Coverage	✓	
	Space Heating Coverage	✓	
	Space Cooling Coverage	✓	
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	3.0	3.0
<p><b>Water Heating</b></p>	Split AC System EER (Wh/Wh)	2.3*	2.3*
	Fan Coverage	✓	
	Fossil Fuel Water Heater EF	✓	
	Electric Water Heater EF	✓	
<p><b>Lighting</b></p>	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	✓	
	Luminary Efficacy (lm/W)	65*	
<p><b>Building Materials</b></p>	Lab Testing	..	
	Labelling	..	
	Independent Certification	..	
<p><b>Incentives and Resources</b></p>	Resources to Facilitate Compliance	Designer guides for architects and engineers; 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	

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# 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 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

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.20
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.20
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.4
		Maximum Solar Heat Gain Coefficient	0.50
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
		Natural Ventilation Coverage	✓
		Space Heating Coverage	✓*
		Space Cooling Coverage	✓
 <b>HVAC</b>		Fossil Fuel Furnace Energy Efficiency (%)	..
		Heat Pump (Heating) COP (Wh/Wh)	3.5
		Split AC System EER (Wh/Wh)	2.3*
		Fan Coverage	✓*
		Fossil Fuel Water Heater EF	✓
 <b>Water Heating</b>		Electric Water Heater EF	✓
		Maximum Wattage or Lighting Allowances (Outdoor)	✓
		Maximum Wattage or Lighting Allowances (Indoor)	✓
		Luminary Efficacy (lm/W)	65*
 <b>Lighting</b>		Lab Testing	..
		Labelling	..
		Independent Certification	..
 <b>Building Materials</b>		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	
		Resources to Facilitate Compliance	..
 <b>Incentives and Resources</b>		Financial Incentives	Loans

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# Ecuador, Quito



**18,001,000**  
Population



**1,822,397**  
City population



**Warm, Humid**  
Climate Zone  
Classification



**1.8%\***  
Average urban growth  
(2010–2020)



**Upper middle**  
Income group

## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

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

Technical Rule on the Building Standard

**Code adoption date**

2013

**Type of code**

Combination (Prescriptive/Performance-based)

**Coverage of Code**

New Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS

### TYPE OF BUILDING

Residential      Commercial

#### Passive Design

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

✓

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

0.27

0.27

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

0.50

0.50

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

0.59

0.59

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

2.8

2.8

Maximum Solar Heat Gain Coefficient

0.25

0.25

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

..

..

Natural Ventilation Coverage

✓

#### 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

..

Fossil Fuel Water Heater EF

..

Electric Water Heater EF

..

#### Water Heating

Maximum Wattage or Lighting Allowances (Outdoor)

..

Maximum Wattage or Lighting Allowances (Indoor)

✓

Luminary Efficacy (lm/W)

..

#### Lighting

Lab Testing

..

Labelling

..

Independent Certification

..

#### Building Materials

Resources to Facilitate Compliance

..

Financial Incentives

..

# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	RTS 29.02.01-21
	<b>Code adoption date</b>	2001
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage	..	
	<b>HVAC</b>	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	..	
	<b>Water Heating</b>	Fossil Fuel Water Heater EF	..	
		Electric Water Heater EF	..	
	<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor)	..	
		Maximum Wattage or Lighting Allowances (Indoor)	..	
		Luminary Efficacy (lm/W)	60	
	<b>Building Materials</b>	Lab Testing	..	
		Labelling	..	
		Independent Certification	..	
	<b>Incentives and Resources</b>	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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Minimum Requirements for Energy Performance of Buildings
	<b>Code adoption date</b>	2017
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
		..	..
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	..
	Space Heating Coverage	✓*	✓*
	Space Cooling Coverage	✓*	✓*
 <b>HVAC</b>	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	✓*	✓*
 <b>Water Heating</b>	Electric Water Heater EF	✓*	✓*
	Maximum Wattage or Lighting Allowances (Outdoor)	..	..
	Maximum Wattage or Lighting Allowances (Indoor)	..	..
	Luminary Efficacy (lm/W)	65*	..
 <b>Lighting</b>	Lab Testing	✓	..
	Labelling	✓	..
	Independent Certification	✓	..
 <b>Building Materials</b>	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



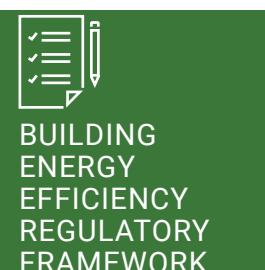
**Cold, Humid**  
Climate Zone  
Classification



**52%**  
Average urban growth  
(2010–2020)



**High**  
Income group



**Building Energy Efficiency 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	TYPE OF BUILDING	Residential	Commercial
		..	..
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.09	0.09
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.09	0.09
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.09	0.09
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.0	1.0
	Maximum Solar Heat Gain Coefficient	0.85	0.85
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	4.0	4.0
 <b>HVAC</b>	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*
 <b>Water Heating</b>	Split AC System EER (Wh/Wh)	2.3*	2.3*
	Fan Coverage	✓	
	Fossil Fuel Water Heater EF	✓	
	Electric Water Heater EF	✓	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	✓	
	Luminary Efficacy (lm/W)	65*	
	Lab Testing	..	
 <b>Building Materials</b>	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	
 <b>Incentives and Resources</b>			

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# 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
<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>
<b>Code adoption date</b>
<b>Type of code</b>
<b>Coverage of Code</b>

Environmental Regulation 2020 (RE 2020)
2020
Performance-based
New Buildings and Existing Buildings

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

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Resolution "On Approval of Minimum Requirements for Energy Efficiency of Buildings, Parts of Buildings or Elements of Buildings" (No. 354 of July 13, 2021)
	<b>Code adoption date</b>	2021
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	 <b>HVAC</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.30	0.30
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.38	0.38
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.38	0.38
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.8	1.8
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>Water Heating</b>	 <b>Lighting</b>	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	✓	
 <b>Building Materials</b>	 <b>Incentives and Resources</b>	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	..	
 <b>Incentives and Resources</b>	 <b>Building Materials</b>	Independent Certification	..	
		Resources to Facilitate Compliance	Trainings for any of the stakeholders	
		Financial Incentives	Loans; Grants	

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# 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

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

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
		..	..
  <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20 ..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.35 ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.28 ..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	.. ..
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
	<b>HVAC</b>	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	✓*
	<b>Water Heating</b>	Fossil Fuel Water Heater EF	✓*
		Electric Water Heater EF	✓*
		Maximum Wattage or Lighting Allowances (Outdoor)	..
	<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	65*
		Lab Testing	..
	<b>Building Materials</b>	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
	<b>Incentives and Resources</b>	Financial Incentives	Loans

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# 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 Code or Main Source of Mandatory Standards**

Ghana Building Code (DGS 1207:2018)

**Code adoption date**

2018

**Type of code**

Prescriptive

**Coverage of Code**

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
Passive Design		
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	..	
HVAC		
Space Heating Coverage	..	
Space Cooling Coverage	..	
Fossil Fuel Furnace Energy Efficiency (%)	..	..
Heat Pump (Heating) COP (Wh/Wh)	..	..
Split AC System EER (Wh/Wh)	..	..
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	..	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Regulation of Energy Performance of Buildings (KENAK)
	<b>Code adoption date</b>	2008
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40 0.40
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.80 0.80
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.90 0.90
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.6 2.6
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
<p><b>HVAC</b></p>	<p><b>Water Heating</b></p>	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	✓
<p><b>Lighting</b></p>	<p><b>Building Materials</b></p>	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	..
<p><b>Incentives and Resources</b></p>	<p><b>Resources to Facilitate Compliance</b></p>	Independent Certification	..
		Financial Incentives	Designer guides for architects and engineers; Trainings for any of the stakeholders
			Grants; Loans

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Code of Practice for Energy Efficiency of Building Services Installation 2021
	<b>Code adoption date</b>	2021
	<b>Type of code</b>	Prescriptive
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
			..	..
<p><b>Passive Design</b></p>		Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<p><b>HVAC</b></p>		Natural Ventilation Coverage	..	..
		Space Heating Coverage	✓	✓
		Space Cooling Coverage	✓	✓
		Fossil Fuel Furnace Energy Efficiency (%)	..	..
		Heat Pump (Heating) COP (Wh/Wh)	3.1	3.1
		Split AC System EER (Wh/Wh)	..	..
		Fan Coverage	✓	✓
<p><b>Water Heating</b></p>		Fossil Fuel Water Heater EF	..	..
		Electric Water Heater EF	..	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..	..
<p><b>Lighting</b></p>		Maximum Wattage or Lighting Allowances (Indoor)	..	..
		Luminary Efficacy (lm/W)	..	..
		Lab Testing	..	..
<p><b>Building Materials</b></p>		Labelling	..	..
		Independent Certification	..	..
		Resources to Facilitate Compliance	..	..
<p><b>Incentives and Resources</b></p>		Financial Incentives	Loans	..

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# 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 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

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.17
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.30
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.24
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.4
		Maximum Solar Heat Gain Coefficient	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
HVAC		Natural Ventilation Coverage	✓
		Space Heating Coverage	✓*
		Space Cooling Coverage	✓*
		Fossil Fuel Furnace Energy Efficiency (%)	0.23
		Heat Pump (Heating) COP (Wh/Wh)	1.8*
		Split AC System EER (Wh/Wh)	2.5
		Fan Coverage	✓
Water Heating		Fossil Fuel Water Heater EF	✓*
		Electric Water Heater EF	✓*
		Maximum Wattage or Lighting Allowances (Outdoor)	..
Lighting		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	65*
		Lab Testing	✓
Building Materials		Labelling	✓
		Independent Certification	✓
		Resources to Facilitate Compliance	Designer guides for architects and engineers
Incentives and Resources		Financial Incentives	Grants; Tax Credits or deductions; Loans

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# 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 Code or Main Source of Mandatory Standards**

Building Regulations (No. 441/1998)

**Code adoption date**

1998

**Type of code**

**Coverage of Code**

	TYPE OF BUILDING	Residential	Commercial	
<b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20	0.20
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.30	0.30
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.30	0.30
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	3.0	3.0
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	3.0	6.0
		Natural Ventilation Coverage	..	..
		Space Heating Coverage	..	..
		Space Cooling Coverage	..	..
<b>HVAC</b>	<b>HVAC</b>	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	..	..
<b>Building Materials</b>	<b>Building Materials</b>	Labelling	..	
		Independent Certification	..	..
		Resources to Facilitate Compliance	..	..
		Financial Incentives	..	..
<b>Incentives and Resources</b>	<b>Incentives and Resources</b>			

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# India, Mumbai



1,417,173,173

Population



19,979,955

City population



Very hot, Dry

Climate Zone Classification



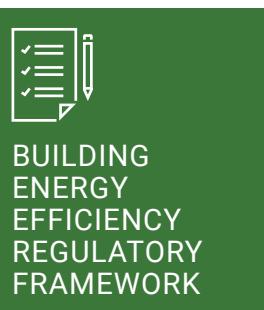
234%

Average urban growth (2010–2020)



Lower middle

Income group



**Building Energy Efficiency 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

	TYPE OF BUILDING		
		Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	.. 0.33
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	.. ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	.. 0.40
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	.. ..
		Maximum Solar Heat Gain Coefficient	.. 0.50
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
HVAC		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)	.. 2.8
		Fan Coverage	✓
Water Heating		Fossil Fuel Water Heater EF	✓
		Electric Water Heater EF	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..
Lighting		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	..
		Lab Testing	✓
Building Materials		Labelling	✓
		Independent Certification	✓
		Resources to Facilitate Compliance	Designer guides for architects and engineers
Incentives and Resources		Financial Incentives	Grants; Fee Waivers; Tax Credits or deductions

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Regulation of the Minister of Public Works and Public Housing concerning Performance Assessment of Green Buildings (PWPH Reg 21/2021)
	<b>Code adoption date</b>	2021
	<b>Type of code</b>	Prescriptive
	<b>Coverage of Code</b>	New Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	Residential	Commercial
		..	..
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	✓	..
 <b>HVAC</b>	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	✓	..
 <b>Water Heating</b>	Fossil Fuel Water Heater EF	..	..
	Electric Water Heater EF	..	..
	Maximum Wattage or Lighting Allowances (Outdoor)	..	..
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	✓	..
	Luminary Efficacy (lm/W)	75	..
	Lab Testing	..	..
	Labelling	..	..
 <b>Building Materials</b>	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	
 <b>Incentives and Resources</b>			

# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Code 19 of the Iranian Building Regulations
	<b>Code adoption date</b>	1991
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	1.2	1.2
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.8	1.8
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	2.1	2.1
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage	..	
	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	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Technical Guidance Document of the Building Regulations	
	<b>Code adoption date</b>	2021	
	<b>Type of code</b>	Prescriptive	
	<b>Coverage of Code</b>	New Buildings and Existing Buildings	

<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.16	0.16
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.18	0.21
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.18	0.21
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.4	1.6
	Maximum Solar Heat Gain Coefficient	..	0.68
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	5.0	5.0
	Natural Ventilation Coverage	✓	
	Space Heating Coverage	✓*	
	Space Cooling Coverage	✓*	
<p><b>HVAC</b></p>	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	✓	
<p><b>Water Heating</b></p>	Electric Water Heater EF	✓*	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	65*	
<p><b>Lighting</b></p>	Lab Testing	✓	
	Labelling	✓	
	Independent Certification	✓	
<p><b>Building Materials</b></p>			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
	Resources to Facilitate Compliance		
<p><b>Incentives and Resources</b></p>	Financial Incentives	Grants; Tax Credits or deductions	

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# Israel, Jerusalem



**9,557,500**  
Population



**907,062**  
City population



**Warm, Humid**  
Climate Zone Classification



**195%**  
Average urban growth (2010–2020)



**High**  
Income group

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Standard SI 5281: Sustainable Building
	<b>Code adoption date</b>	2005
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	Residential	Commercial
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.52	0.52
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.84	0.84
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.4	1.4
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	0.50	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage	..	
 <b>HVAC</b>	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	
	Fossil Fuel Water Heater EF	..	
 <b>Water Heating</b>	Electric Water Heater EF	..	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
 <b>Lighting</b>	Luminary Efficacy (lm/W)	..	
	Lab Testing	..	
	Labelling	..	
 <b>Building Materials</b>	Independent Certification	..	
	Resources to Facilitate Compliance	..	
 <b>Incentives and Resources</b>	Financial Incentives	..	
		..	

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# 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

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

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>		Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.26	0.26
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.32	0.29
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.32	0.29
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.8	1.8
		Maximum Solar Heat Gain Coefficient	0.35	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>HVAC</b>		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	✓*	
 <b>Water Heating</b>		Fossil Fuel Water Heater EF	✓*	
		Electric Water Heater EF	✓*	
		Maximum Wattage or Lighting Allowances (Outdoor)	..	
		Maximum Wattage or Lighting Allowances (Indoor)	..	
 <b>Lighting</b>		Luminary Efficacy (lm/W)	65*	
		Lab Testing	..	
		Labelling	..	
		Independent Certification	..	
 <b>Building Materials</b>		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	

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# 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 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**

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	 <b>Passive Design</b>  <b>HVAC</b>  <b>Water Heating</b>  <b>Lighting</b>  <b>Building Materials</b>  <b>Incentives and Resources</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.94 ..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.98 ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.1 ..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	.. ..
		Maximum Solar Heat Gain Coefficient	0.73 ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
		Natural Ventilation Coverage	.. ..
		Space Heating Coverage	.. ..
		Space Cooling Coverage	.. ..
	 <b>Water Heating</b>	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	.. ..
	 <b>Building Materials</b>	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	.. ..

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# 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

	TYPE OF BUILDING		
		Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.36 ..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.36 ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.48 ..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	3.3 ..
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
		Natural Ventilation Coverage	..
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	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..
Lighting		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	55
		Lab Testing	..
Building Materials		Labelling	..
		Independent Certification	..
		Resources to Facilitate Compliance	Trainings for any of the stakeholders; Occupant guides for HVAC or lighting systems
Incentives and Resources		Financial Incentives	Loans; Grants

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# 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 Code or Main Source of Mandatory Standards**

The Energy Act

**Code adoption date**

2019

**Type of code**

**Coverage of Code**

TYPE OF BUILDING	Residential	Commercial
	..	..
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.61
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	3.1
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..
	Maximum Solar Heat Gain Coefficient	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
	Natural Ventilation Coverage	..
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	..
	Maximum Wattage or Lighting Allowances (Outdoor)	..
	Maximum Wattage or Lighting Allowances (Indoor)	..
Lighting	Luminary Efficacy (lm/W)	..
	Lab Testing	..
	Labelling	..
	Independent Certification	..
Building Materials	Resources to Facilitate Compliance	..
	Financial Incentives	..
Incentives and Resources		

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# 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

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	 <b>Passive Design</b>  <b>HVAC</b>  <b>Water Heating</b>  <b>Lighting</b>  <b>Building Materials</b>  <b>Incentives and Resources</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..
		Maximum Solar Heat Gain Coefficient	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
		Natural Ventilation Coverage	..
		Space Heating Coverage	..
		Space Cooling Coverage	..
	 <b>HVAC</b>	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	..
	 <b>Building Materials</b>	Labelling	..
		Independent Certification	..
		Resources to Facilitate Compliance	..
		Financial Incentives	..

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# Kuwait, Kuwait



 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Energy Conservation Code for Buildings (MEW/R-6/2018)	
	<b>Code adoption date</b>	2018	
	<b>Type of code</b>	Prescriptive	
	<b>Coverage of Code</b>	New Buildings	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>		Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.26	0.26
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.26	0.26
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.48	0.45
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	3.6	1.1
		Maximum Solar Heat Gain Coefficient	0.40	0.22
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>HVAC</b>		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	..	
 <b>Water Heating</b>		Fossil Fuel Water Heater EF	..	
		Electric Water Heater EF	..	
		Maximum Wattage or Lighting Allowances (Outdoor)	..	
 <b>Lighting</b>		Maximum Wattage or Lighting Allowances (Indoor)	✓	
		Luminary Efficacy (lm/W)	..	
		Lab Testing	..	
 <b>Building Materials</b>		Labelling	..	
		Independent Certification	..	
		Resources to Facilitate Compliance	..	
		Financial Incentives	..	
 <b>Incentives and Resources</b>			..	

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# Kyrgyz Republic, Bishkek



**6,974,900**  
Population



**996,319**  
City population



**Mixed, Humid**  
Climate Zone  
Classification



**224%**  
Average urban growth  
(2010–2020)



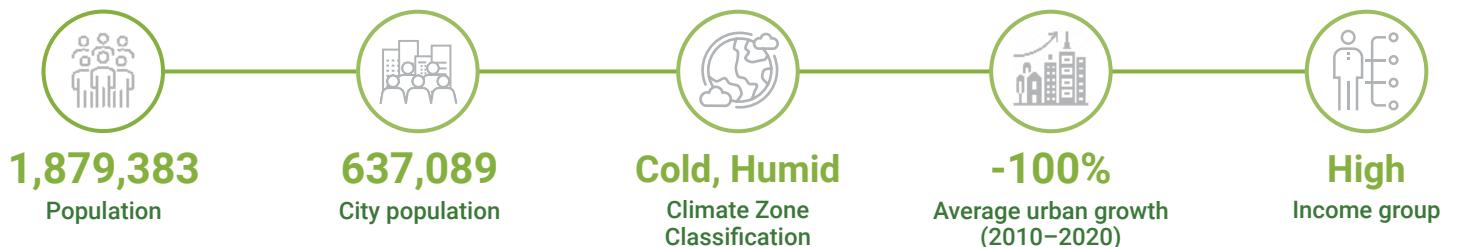
**Lower middle**  
Income group

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	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

	TYPE OF BUILDING	Residential	Commercial
			✓
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.32	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	4.0	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage	..	
<p><b>HVAC</b></p>	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	
	Fossil Fuel Water Heater EF	..	
<p><b>Water Heating</b></p>	Electric Water Heater EF	..	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	..	
<p><b>Lighting</b></p>	Lab Testing	✓	
	Labelling	✓	
	Independent Certification	✓	
<p><b>Building Materials</b></p>	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	

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# Latvia, Riga



 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	Building Energy Efficiency Code or Main Source of Mandatory Standards	Energy Efficiency Law
	Code adoption date	2020
	Type of code	Prescriptive
	Coverage of Code	New Buildings and Existing Buildings

TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	TYPE OF BUILDING	Residential	Commercial
			✓
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20	0.23
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.30	0.35
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.20	0.25
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.8	2.0
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	3.0	3.0
 <b>HVAC</b>	Natural Ventilation Coverage	✓	
	Space Heating Coverage	✓*	
	Space Cooling Coverage	✓*	
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	1.8*	1.8*
 <b>Water Heating</b>	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)	✓	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	✓	
	Luminary Efficacy (lm/W)	65*	
	Lab Testing	..	
 <b>Building Materials</b>	Labelling	..	
	Independent Certification	..	
	Resources to Facilitate Compliance	Mandatory labeling; Mandatory laboratory testing; Energy efficiency ratings	
 <b>Incentives and Resources</b>	Financial Incentives	Designer guides for architects and engineers	

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# Lithuania, Vilnius



**2,831,639**  
Population



**536,055**  
City population



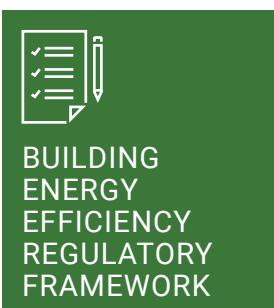
**Cold, Humid**  
Climate Zone Classification



**-86%**  
Average urban growth  
(2010–2020)



**High**  
Income group



Building Energy Efficiency 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		



TYPE OF BUILDING	Residential	Commercial	
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)		
	0.14	0.19	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)		
	0.16	0.25	
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)		
	0.15	0.22	
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)		
	1.4	1.9	
HVAC	Maximum Solar Heat Gain Coefficient		
	0.80	0.80	
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )		
	..	..	
	Natural Ventilation Coverage		
	..	..	
	Space Heating Coverage		
	✓	✓	
Water Heating	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*	
Lighting	Fan Coverage		
	✓*	✓*	
	Fossil Fuel Water Heater EF		
	✓*	✓*	
	Electric Water Heater EF		
	✓*	✓*	
	Maximum Wattage or Lighting Allowances (Outdoor)		
	..	..	
Building Materials	Maximum Wattage or Lighting Allowances (Indoor)		
	..	..	
	Luminary Efficacy (lm/W)		
	150	..	
	Lab Testing		
	..	..	
	Labelling		
	..	..	
Incentives and Resources	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 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

TYPE OF BUILDING	Residential	Commercial
	✓	
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.11
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.13
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.13
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.0
	Maximum Solar Heat Gain Coefficient	0.87
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
HVAC	Natural Ventilation Coverage	..
	Space Heating Coverage	✓*
	Space Cooling Coverage	✓
	Fossil Fuel Furnace Energy Efficiency (%)	..
	Heat Pump (Heating) COP (Wh/Wh)	1.8*
Water Heating	Split AC System EER (Wh/Wh)	2.3*
	Fan Coverage	✓
	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*
	Lab Testing	..
Building Materials	Labelling	..
	Independent Certification	..
	Resources to Facilitate Compliance	Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances; Occupant guides for HVAC or lighting systems; Operator or maintenance guides
Incentives and Resources	Financial Incentives	Grants; Tax Credits or deductions

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# 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

  <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Energy Efficiency and Use of Renewable Energy for Non-Residential Buildings - Code of Practice
	<b>Code adoption date</b>	2017
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings

  <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
	Passive Design		
	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	0.60
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
	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	

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# Malta, Valletta



**531,113**  
Population



**212,768**  
City population



**Warm, Humid**  
Climate Zone Classification



**195%**  
Average urban growth  
(2010–2020)



**High**  
Income group

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Energy Performance of Buildings Regulations (Subsidiary Legislation 623.01)	
	<b>Code adoption date</b>	2018	
	<b>Type of code</b>	Prescriptive	
	<b>Coverage of Code</b>	New Buildings and Existing Buildings	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>		Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.59	0.59
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.6	1.6
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.6	1.6
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	4.0	4.0
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
 <b>HVAC</b>		Natural Ventilation Coverage	..	
		Space Heating Coverage		✓
		Space Cooling Coverage		✓
		Fossil Fuel Furnace Energy Efficiency (%)	..	..
		Heat Pump (Heating) COP (Wh/Wh)	2.5	2.5
 <b>Water Heating</b>		Split AC System EER (Wh/Wh)	2.6	2.6
		Fan Coverage		✓*
		Fossil Fuel Water Heater EF		✓
		Electric Water Heater EF		✓
 <b>Lighting</b>		Maximum Wattage or Lighting Allowances (Outdoor)		✓
		Maximum Wattage or Lighting Allowances (Indoor)		✓
		Luminary Efficacy (lm/W)	65*	
 <b>Building Materials</b>		Lab Testing	..	
		Labelling	..	
		Independent Certification	..	
 <b>Incentives and Resources</b>		Resources to Facilitate Compliance	Trainings for any of the stakeholders	
		Financial Incentives	Loans;	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Mexican Official Standards in Energy Efficiency - Buildings (NOM Edificaciones)	
	<b>Code adoption date</b>	2001	
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)	
	<b>Coverage of Code</b>	New Buildings and Existing Buildings	

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
		..	..
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.91 0.39
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	.. ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.91 2.2
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	.. ..
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
<p><b>HVAC</b></p>	<p><b>HVAC</b></p>	Natural Ventilation Coverage	..
		Space Heating Coverage	..
		Space Cooling Coverage	..
		Fossil Fuel Furnace Energy Efficiency (%)	.. ..
		Heat Pump (Heating) COP (Wh/Wh)	.. ..
		Split AC System EER (Wh/Wh)	.. ..
		Fan Coverage	..
<p><b>Water Heating</b></p>	<p><b>Water Heating</b></p>	Fossil Fuel Water Heater EF	..
		Electric Water Heater EF	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..
<p><b>Lighting</b></p>	<p><b>Lighting</b></p>	Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	..
		Lab Testing	✓
<p><b>Building Materials</b></p>	<p><b>Building Materials</b></p>	Labelling	✓
		Independent Certification	✓
		Resources to Facilitate Compliance	Designer guides for architects and engineers
<p><b>Incentives and Resources</b></p>	<p><b>Incentives and Resources</b></p>	Financial Incentives	Tax Credits or deductions

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# Moldova, Chișinău



**2,538,894**  
Population



**509,707**  
City population



**Cool, Humid**  
Climate Zone  
Classification



**-82%**  
Average urban growth  
(2010–2020)



**Upper middle**  
Income group

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	NCM M.01.01-2016 Energy performance of buildings
	<b>Code adoption date</b>	2016
	<b>Type of code</b>	Prescriptive
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20 0.20
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.30 0.30
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.24 0.24
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.8 1.8
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
		Natural Ventilation Coverage	..
		Space Heating Coverage	..
		Space Cooling Coverage	..
<p><b>HVAC</b></p>		Fossil Fuel Furnace Energy Efficiency (%)	.. ..
		Heat Pump (Heating) COP (Wh/Wh)	.. ..
		Split AC System EER (Wh/Wh)	.. ..
		Fan Coverage	..
		Fossil Fuel Water Heater EF	..
<p><b>Water Heating</b></p>		Electric Water Heater EF	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..
		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	..
<p><b>Lighting</b></p>		Lab Testing	✓
		Labelling	✓
		Independent Certification	✓
<p><b>Building Materials</b></p>		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

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# 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 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

	TYPE OF BUILDING	Residential	Commercial	
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	 <b>Passive Design</b>  <b>HVAC</b>  <b>Water Heating</b>  <b>Lighting</b>  <b>Building Materials</b>  <b>Incentives and Resources</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.30 0.30	
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	1.4 1.4	
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.4 1.4	
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.9 2.9	
		Maximum Solar Heat Gain Coefficient	0.50 0.50	
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..	
		Natural Ventilation Coverage	..	
		Space Heating Coverage	✓	
		Space Cooling Coverage	..	
	 <b>Resources to Facilitate Compliance</b>	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	..	
	 <b>Financial Incentives</b>	Labelling	..	
		Independent Certification	..	
		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		
		Grants; Loans		

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# 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

	TYPE OF BUILDING	Residential	Commercial	
<b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.75	0.65
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	5.8	5.8
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage	..	
		Space Heating Coverage	..	
		Space Cooling Coverage	..	
<b>HVAC</b>	Fossil Fuel Furnace Energy Efficiency (%)	..	..	
	Heat Pump (Heating) COP (Wh/Wh)	..	..	
	Split AC System EER (Wh/Wh)	..	..	
	Fan Coverage	..		
<b>Water Heating</b>	Fossil Fuel Water Heater EF	..		
	Electric Water Heater EF	..		
<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor)	..		
	Maximum Wattage or Lighting Allowances (Indoor)	..		
	Luminary Efficacy (lm/W)	..		
<b>Building Materials</b>	Lab Testing	..		
	Labelling	..		
	Independent Certification	..		
<b>Incentives and Resources</b>	Resources to Facilitate Compliance	Trainings for any of the stakeholders; Designer guides for architects and engineers		
	Financial Incentives	0		

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Myanmar National Building Code 2020
	<b>Code adoption date</b>	2020
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.23	0.27
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	2.0	2.0
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	2.8	8.2
	Maximum Solar Heat Gain Coefficient	0.35	0.35
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage	..	
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	✓	
	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	Tax Credits or deductions; Loans; Grants; Fee Waivers; Preferential utility rates	

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# 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

TYPE OF BUILDING	Residential	Commercial			
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓			
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.27	0.27		
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.27	0.27		
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.27	0.27		
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	3.4	3.4		
	Maximum Solar Heat Gain Coefficient	0.85	0.85		
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..		
	Natural Ventilation Coverage	✓			
	Space Heating Coverage	✓			
	Space Cooling Coverage	✓*			
HVAC	Fossil Fuel Furnace Energy Efficiency (%)	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	✓			
Water Heating	Electric Water Heater EF	✓			
	Maximum Wattage or Lighting Allowances (Outdoor)	..			
	Maximum Wattage or Lighting Allowances (Indoor)	..			
	Luminary Efficacy (lm/W)	65*			
Lighting	Lab Testing	✓			
	Labelling	✓			
	Independent Certification	✓			
Building Materials	Resources to Facilitate Compliance	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			
Incentives and Resources					

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	New Zealand Building Code
	<b>Code adoption date</b>	1992
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.15	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.34	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.33	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	0.84	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<p><b>HVAC</b></p>	<p><b>HVAC</b></p>	Natural Ventilation Coverage	..	
		Space Heating Coverage	..	
		Space Cooling Coverage	..	
		Fossil Fuel Furnace Energy Efficiency (%)	..	..
		Heat Pump (Heating) COP (Wh/Wh)	..	..
		Split AC System EER (Wh/Wh)	..	..
		Fan Coverage	..	
<p><b>Water Heating</b></p>	<p><b>Water Heating</b></p>	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	..	
<p><b>Building Materials</b></p>	<p><b>Building Materials</b></p>	Independent Certification	..	
			Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances; Trainings for any of the stakeholders	
		Resources to Facilitate Compliance		
<p><b>Incentives and Resources</b></p>	<p><b>Incentives and Resources</b></p>	Financial Incentives	Rebates; Loans	

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# Nigeria, Lagos



**218,541,212**  
Population



**13,463,421**  
City population



**Extremely hot,  
Humid**  
Climate Zone  
Classification



**441%**  
Average urban growth  
(2010–2020)



**Lower middle**  
Income group

## BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK

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

Building Energy Efficiency Code

### Code adoption date

2017

### Type of code

Prescriptive

### Coverage of Code

New Buildings and Existing Buildings

## TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS



### Passive Design

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



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

0.80

0.80

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

..

..

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

..

..

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

..

..

#### Maximum Solar Heat Gain Coefficient

..

..

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

..

..

#### Natural Ventilation Coverage

..



### HVAC

#### Space Heating Coverage

..



### Water Heating

#### Space Cooling Coverage



#### Fossil Fuel Furnace Energy Efficiency (%)

..

..

#### Heat Pump (Heating) COP (Wh/Wh)

..

..

#### Split AC System EER (Wh/Wh)

..

..

#### Fan Coverage

..



### Lighting

#### Fossil Fuel Water Heater EF

..



### Building Materials

#### Electric Water Heater EF

..

#### Maximum Wattage or Lighting Allowances (Outdoor)

..



### Incentives and Resources

#### 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; 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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.18	0.18
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.18	0.18
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.2	1.2
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.2	1.2
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	✓	
Space Heating Coverage	✓	
Space Cooling Coverage	✓	
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



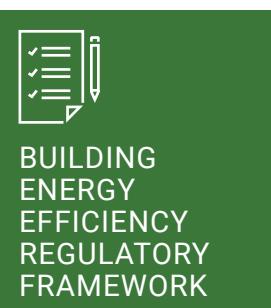
**Hot, Humid**  
Climate Zone  
Classification



**269%**  
Average urban growth  
(2010–2020)



**Lower middle**  
Income group



**Building Energy Efficiency 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

	TYPE OF BUILDING	Residential	Commercial	
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	 <b>Passive Design</b>  <b>HVAC</b>  <b>Water Heating</b>  <b>Lighting</b>  <b>Building Materials</b>  <b>Incentives and Resources</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.44	
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.57	
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	5.0	
		Maximum Solar Heat Gain Coefficient	..	
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	
		Natural Ventilation Coverage	..	
		Space Heating Coverage	✓	
		Space Cooling Coverage	✓	
	 <b>Building Materials</b>  <b>Incentives and Resources</b>	Fossil Fuel Furnace Energy Efficiency (%)	0.78	
		Heat Pump (Heating) COP (Wh/Wh)	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	..	
	 <b>Incentives and Resources</b>	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	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	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)
	<b>Code adoption date</b>	2016
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
	<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage	..	..
	<b>HVAC</b>	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	..	..
	<b>Water Heating</b>	Fossil Fuel Water Heater EF	..	..
		Electric Water Heater EF	..	..
		Maximum Wattage or Lighting Allowances (Outdoor)	..	..
	<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..	..
		Luminary Efficacy (lm/W)	..	..
		Lab Testing	..	..
	<b>Building Materials</b>	Labelling	..	..
		Independent Certification	..	..
		Resources to Facilitate Compliance	Designer guides for architects and engineers	..
	<b>Incentives and Resources</b>	Financial Incentives	Loans; Preferential utility rates	..

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# 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 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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
Passive Design		
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.83	0.83
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.0	1.0
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage	✓	
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	..	
Financial Incentives	..	

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# 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

	<b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>
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**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

TYPE OF BUILDING	Residential	Commercial
Passive Design		
Thermal Transmittance (W/m <sup>2</sup> .K)		✓
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	2.2	2.2
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	2.6	3.3
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	2.4	3.6
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
Maximum Solar Heat Gain Coefficient	..	..
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
Natural Ventilation Coverage		✓
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)	100	
Building Materials		
Lab Testing		..
Labelling		..
Independent Certification		..
Incentives and Resources		
Resources to Facilitate Compliance		..
Financial Incentives		..

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	The Philippine Green Building Code
	<b>Code adoption date</b>	2015
	<b>Type of code</b>	
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K) Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K) Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K) Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K) Maximum Solar Heat Gain Coefficient Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> ) Natural Ventilation Coverage		..	..
			..	..
			..	..
			..	..
			..	..
			..	..
			✓	
 <b>HVAC</b>	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		..	..
			..	..
			..	..
			..	..
			..	..
 <b>Water Heating</b>	Fossil Fuel Water Heater EF Electric Water Heater EF		✓	
			✓	
			..	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor) Maximum Wattage or Lighting Allowances (Indoor) Luminary Efficacy (lm/W)		✓	
			✓	
			..	
 <b>Building Materials</b>	Lab Testing Labelling Independent Certification		..	
			..	
			..	
 <b>Incentives and Resources</b>	Resources to Facilitate Compliance Financial Incentives		Designer guides for architects and engineers	
			Tax Credits or deductions; Loans	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Regulation of the Minister of Infrastructure on the Technical Conditions to be met by Buildings and their Location (Journal of Laws 2022 No. 1225)
	<b>Code adoption date</b>	2022
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)			✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.15	0.15	
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.30	0.30	
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.20	0.20	
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.3	1.3	
	Maximum Solar Heat Gain Coefficient	..	..	
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..	
 <b>HVAC</b>	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		✓*	
 <b>Water Heating</b>	Fossil Fuel Water Heater EF		✓*	
	Electric Water Heater EF		✓*	
	Maximum Wattage or Lighting Allowances (Outdoor)	..		
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)		✓	
	Luminary Efficacy (lm/W)	65*		
	Lab Testing	..		
 <b>Building Materials</b>	Labelling	..		
	Independent Certification	..		
	Resources to Facilitate Compliance			Designer guides for architects and engineers; Operator or maintenance guides; Occupant guides for HVAC or lighting systems
 <b>Incentives and Resources</b>	Financial Incentives			..

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Decree-Law establishing the Requirements applicable to Buildings to Improve their Energy Performance (No. 101-D/2020)
	<b>Code adoption date</b>	2020
	<b>Type of code</b>	Prescriptive
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40 0.50
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.40 0.50
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.50 0.70
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	0.50 0.70
		Maximum Solar Heat Gain Coefficient	0.56 0.56
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
		Natural Ventilation Coverage	..
		Space Heating Coverage	✓
		Space Cooling Coverage	✓
 <b>HVAC</b>		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	✓
 <b>Water Heating</b>		Electric Water Heater EF	✓
		Maximum Wattage or Lighting Allowances (Outdoor)	..
		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	65*
 <b>Lighting</b>		Lab Testing	..
		Labelling	..
		Independent Certification	..
 <b>Building Materials</b>		Resources to Facilitate Compliance	Consumer guides or databases for energy efficient appliances; Designer guides for architects and engineers
		Financial Incentives	..
 <b>Incentives and Resources</b>			

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# Qatar, Doha



<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	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	

<p>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</p>	TYPE OF BUILDING	Residential	Commercial		
		Passive Design	HVAC	Water Heating	Lighting
	Thermal Transmittance (W/m <sup>2</sup> .K)	✓			
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.44	0.44		
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..		
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.57	0.57		
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..		
	Maximum Solar Heat Gain Coefficient	0.30	0.30		
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..		
	Natural Ventilation Coverage	..			
	Space Heating Coverage	..			
	Space Cooling Coverage	✓			
	Fossil Fuel Furnace Energy Efficiency (%)	..	..		
	Heat Pump (Heating) COP (Wh/Wh)	..	..		
	Split AC System EER (Wh/Wh)	2.42	2.42		
	Fan Coverage	..			
	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	Grants			

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# 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	
	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20 ..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.22 ..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.56 ..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.3 ..
		Maximum Solar Heat Gain Coefficient	0.75
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
	HVAC	Natural Ventilation Coverage	✓
		Space Heating Coverage	✓*
		Space Cooling Coverage	✓*
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Water Heating	Fossil Fuel Furnace Energy Efficiency (%)	.. ..
		Heat Pump (Heating) COP (Wh/Wh)	1.8* 1.8*
	Lighting	Split AC System EER (Wh/Wh)	2.3* 2.3*
		Fan Coverage	✓*
		Fossil Fuel Water Heater EF	✓*
		Electric Water Heater EF	✓*
	Building Materials	Maximum Wattage or Lighting Allowances (Outdoor)	..
		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	65*
	Incentives and Resources	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

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# 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

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

### Code adoption date

2019

### Type of code

Performance-based

### Coverage of Code

New Buildings

Technical Components Covered by Building Regulations	Type of Building	Residential	Commercial
Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	1.0
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	2.0
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
HVAC	Natural Ventilation Coverage		✓
	Space Heating Coverage		..
	Space Cooling Coverage		..
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
Water Heating	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage		..
	Fossil Fuel Water Heater EF		..
Lighting	Electric Water Heater EF		..
	Maximum Wattage or Lighting Allowances (Outdoor)		..
	Maximum Wattage or Lighting Allowances (Indoor)		✓
Building Materials	Luminary Efficacy (lm/W)		..
	Lab Testing		..
	Labelling		..
Incentives and Resources	Independent Certification		..
	Resources to Facilitate Compliance		Designer guides for architects and engineers
	Financial Incentives		..

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# 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 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

TYPE OF BUILDING	Residential	Commercial
Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.37	0.37
Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.41	0.41
Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.31	1.3
Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	5.9	5.9
Maximum Solar Heat Gain Coefficient	0.25	0.25
Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
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	..	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Rulebook on Energy Efficiency of Buildings ("RS Official Gazette" No. 61/2011)
	<b>Code adoption date</b>	2011
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
		Thermal Transmittance (W/m <sup>2</sup> .K)		✓
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.15	0.15
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.30	0.30
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.6	1.6
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage		✓
<p><b>HVAC</b></p>	<p><b>HVAC</b></p>	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
<p><b>Water Heating</b></p>	<p><b>Water Heating</b></p>	Fan Coverage	..	
		Fossil Fuel Water Heater EF		..
		Electric Water Heater EF		..
<p><b>Lighting</b></p>	<p><b>Lighting</b></p>	Maximum Wattage or Lighting Allowances (Outdoor)	..	
		Maximum Wattage or Lighting Allowances (Indoor)		..
		Luminary Efficacy (lm/W)		..
<p><b>Building Materials</b></p>	<p><b>Building Materials</b></p>	Lab Testing	..	
		Labelling		..
		Independent Certification		..
<p><b>Incentives and Resources</b></p>	<p><b>Incentives and Resources</b></p>	Resources to Facilitate Compliance	Designer guides for architects and engineers	
		Financial Incentives	Grants; Loans	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	The Code for Environmental Sustainability of Buildings (Edition 4.0)
	<b>Code adoption date</b>	2008
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>		Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.50	1.2
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage		✓
 <b>HVAC</b>		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		✓
 <b>Water Heating</b>		Fossil Fuel Water Heater EF	..	
		Electric Water Heater EF	..	
		Maximum Wattage or Lighting Allowances (Outdoor)	..	
 <b>Lighting</b>		Maximum Wattage or Lighting Allowances (Indoor)		✓
		Luminary Efficacy (lm/W)	..	
		Lab Testing	..	
 <b>Building Materials</b>		Labelling	..	
		Independent Certification	..	
		Resources to Facilitate Compliance	Designer guides for architects and engineers	
 <b>Incentives and Resources</b>		Financial Incentives	Grants; Tax Credits or deductions; Fee Waivers	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	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

<p>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</p>	<p>TYPE OF BUILDING</p>		Residential	Commercial
<p>Passive Design</p>	<p>HVAC</p>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.15	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.20	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.22	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	0.85	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<p>Water Heating</p>	<p>Lighting</p>	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		✓*
<p>Building Materials</p>	<p>Incentives and Resources</p>	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		..
<p>Incentives and Resources</p>		Independent Certification		..
		Resources to Facilitate Compliance		Designer guides for architects and engineers
		Financial Incentives		Grants; Loans

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# Slovenia, Ljubljana



**2,111,986**  
Population



**286,491**  
City population



**Mixed, Humid**  
Climate Zone  
Classification



**73%**  
Average urban growth  
(2010–2020)



**High**  
Income group

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Rules on the Efficient Use of Energy in Buildings (No. 70/22 and 161/22)
	<b>Code adoption date</b>	2022
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.15	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.35	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.18	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	 <b>HVAC</b>	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	✓*	
	 <b>Water Heating</b>	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	..	
	 <b>Building Materials</b>	Independent Certification	..	
		Resources to Facilitate Compliance	Designer guides for architects and engineers	
		Financial Incentives	Grants; Loans	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	South African National Standard. The Application of the National Building Regulations. Part X: Environmental Sustainability. Part XA: Energy Usage in Buildings (SANS 10400 XA)
	<b>Code adoption date</b>	2011
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..	
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..	
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..	
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..	
	Maximum Solar Heat Gain Coefficient	0.81	..	
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..	
 <b>HVAC</b>	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	..		
 <b>Water Heating</b>	Fossil Fuel Water Heater EF		✓	
	Electric Water Heater EF		..	
	Maximum Wattage or Lighting Allowances (Outdoor)		..	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)		..	
	Luminary Efficacy (lm/W)		..	
	Lab Testing		..	
 <b>Building Materials</b>	Labelling		..	
	Independent Certification		..	
 <b>Incentives and Resources</b>	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			..

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Technical Code of Building (CTE)
	<b>Code adoption date</b>	1999
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40	0.40
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.49	0.49
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.49	0.49
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	5.7	5.7
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	9.0	9.0
<p><b>HVAC</b></p>	<p><b>Water Heating</b></p>	Natural Ventilation Coverage	..	
		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	✓*	
<p><b>Lighting</b></p>	<p><b>Building Materials</b></p>	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	..	
<p><b>Incentives and Resources</b></p>	<p><b>Resources to Facilitate Compliance</b></p>	Independent Certification	..	
		Resources to Facilitate Compliance	Designer guides for architects and engineers	
		Financial Incentives	..	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Energy Efficiency Building Code of Sri Lanka
	<b>Code adoption date</b>	2021
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..		1.3
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..		..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..		2.5
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..		..
	Maximum Solar Heat Gain Coefficient	..		..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..		..
	Natural Ventilation Coverage	..		
 <b>HVAC</b>	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	✓		
 <b>Water Heating</b>	Fossil Fuel Water Heater EF	✓		
	Electric Water Heater EF	✓		
	Maximum Wattage or Lighting Allowances (Outdoor)	..		
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..		
	Luminary Efficacy (lm/W)	..		
	Lab Testing	..		
 <b>Building Materials</b>	Labelling	..		
	Independent Certification	..		
	Resources to Facilitate Compliance	Trainings for any of the stakeholders; Designer guides for architects and engineers		
 <b>Incentives and Resources</b>	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 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

	TYPE OF BUILDING	Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS		Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40 0.33
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.40 0.33
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.40 0.33
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	.. ..
		Maximum Solar Heat Gain Coefficient	.. ..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	.. ..
		Natural Ventilation Coverage	✓
		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

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# 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

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

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

# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Joint Order of the 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)	
	<b>Code adoption date</b>	2009	
	<b>Type of code</b>		
	<b>Coverage of Code</b>		

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓	
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.75	..	
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..	
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	1.1	..	
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..	
	Maximum Solar Heat Gain Coefficient	0.95	..	
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..	
	Natural Ventilation Coverage	..		
 <b>HVAC</b>	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	..		
 <b>Water Heating</b>	Fossil Fuel Water Heater EF	..		
	Electric Water Heater EF	..		
	Maximum Wattage or Lighting Allowances (Outdoor)	..		
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..		
	Luminary Efficacy (lm/W)	..		
	Lab Testing	..		
 <b>Building Materials</b>	Labelling	..		
	Independent Certification	..		
	Resources to Facilitate Compliance	..		
	Financial Incentives	..		
 <b>Incentives and Resources</b>				

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# Türkiye, İstanbul



**84,979,913**  
Population



**4,919,074**  
City population



**Warm, Humid**  
Climate Zone Classification



**219%**  
Average urban growth  
(2010–2020)



**Upper middle**  
Income group

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Building Energy Performance Regulation (BEP)
	<b>Code adoption date</b>	2008
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
		..	..
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓	..
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.40	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.60	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.60	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	..
	Space Heating Coverage	..	..
	Space Cooling Coverage	..	..
	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	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Main Requirements to Buildings and Structures. Energy Saving (DBN V.1.2-11-2008)
	<b>Code adoption date</b>	2008
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.20
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.27
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.30
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.7
		Maximum Solar Heat Gain Coefficient	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
		Natural Ventilation Coverage	..
	 <b>HVAC</b>	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	..
	 <b>Water Heating</b>	Fossil Fuel Water Heater EF	..
		Electric Water Heater EF	✓
		Maximum Wattage or Lighting Allowances (Outdoor)	..
	 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	75
		Lab Testing	..
	 <b>Building Materials</b>	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
	 <b>Incentives and Resources</b>	Financial Incentives	..

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# United Arab Emirates, Dubai



 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	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	TYPE OF BUILDING	Residential	Commercial
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		✓
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.30	0.30
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.57	0.57
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.57	0.57
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	5.0	5.0
	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage		✓
 <b>HVAC</b>	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	
	Fossil Fuel Water Heater EF	..	
 <b>Water Heating</b>	Electric Water Heater EF	..	
	Maximum Wattage or Lighting Allowances (Outdoor)		✓
	Maximum Wattage or Lighting Allowances (Indoor)		✓
	Luminary Efficacy (lm/W)	..	
 <b>Lighting</b>	Lab Testing	..	
	Labelling	..	
	Independent Certification	..	
 <b>Building Materials</b>	Resources to Facilitate Compliance	Designer guides for architects and engineers; Consumer guides or databases for energy efficient appliances	
	Financial Incentives		Loans

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Building Act 1984; Building Regulations 2010 (SI 2010/2214); Building Regulations etc. (Amendment) (England) Regulations 2021 (SI 2021/1391)
	<b>Code adoption date</b>	2021
	<b>Type of code</b>	Combination (Prescriptive/Performance-based)
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.16
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.18
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	1.6
		Maximum Solar Heat Gain Coefficient	0.48
	 <b>HVAC</b>	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	8.0
		Natural Ventilation Coverage	✓
		Space Heating Coverage	✓
 <b>Water Heating</b>	 <b>Lighting</b>	Space Cooling Coverage	✓
		Fossil Fuel Furnace Energy Efficiency (%)	0.91
		Heat Pump (Heating) COP (Wh/Wh)	2.5
	 <b>Building Materials</b>	Split AC System EER (Wh/Wh)	..
		Fan Coverage	..
		Fossil Fuel Water Heater EF	✓
 <b>Incentives and Resources</b>	 <b>Building Materials</b>	Electric Water Heater EF	✓
		Maximum Wattage or Lighting Allowances (Outdoor)	..
		Maximum Wattage or Lighting Allowances (Indoor)	✓
	 <b>Incentives and Resources</b>	Luminary Efficacy (lm/W)	75
		Lab Testing	✓
		Labelling	✓
		Independent Certification	✓
	Resources to Facilitate Compliance		Designer guides for architects and engineers; Operator or maintenance guides or manuals; Consumer guides or databases for energy efficient appliances
	Financial Incentives		Grants; Loans; Rebates; Fee Waivers; Levy

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# United States, Los Angeles



**333,287,557**  
Population



**12,457,765**  
City population



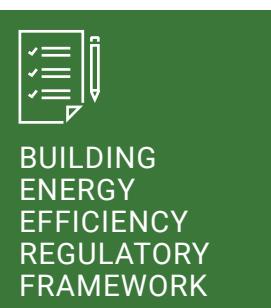
**Warm, Marine**  
Climate Zone Classification



**89%**  
Average urban growth (2010–2020)



**High**  
Income group



**Building Energy Efficiency 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

	TYPE OF BUILDING		
		Residential	Commercial
TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS	Passive Design	Thermal Transmittance (W/m <sup>2</sup> .K)	✓
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.04
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	0.04
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.07
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	0.20
		Maximum Solar Heat Gain Coefficient	0.23
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..
HVAC		Natural Ventilation Coverage	✓
		Space Heating Coverage	✓
		Space Cooling Coverage	..
		Fossil Fuel Furnace Energy Efficiency (%)	0.81
		Heat Pump (Heating) COP (Wh/Wh)	..
		Split AC System EER (Wh/Wh)	3.28
		Fan Coverage	..
Water Heating		Fossil Fuel Water Heater EF	✓
		Electric Water Heater EF	✓
		Maximum Wattage or Lighting Allowances (Outdoor)	..
Lighting		Maximum Wattage or Lighting Allowances (Indoor)	..
		Luminary Efficacy (lm/W)	45
		Lab Testing	..
Building Materials		Labelling	..
		Independent Certification	..
		Resources to Facilitate Compliance	Consumer guides or databases for energy efficient appliances
Incentives and Resources		Financial Incentives	Rebates

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# 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

	<b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>
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**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

TYPE OF BUILDING	Residential	Commercial	
<b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)		
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	0.85	0.85
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	0.85	0.85
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
<b>HVAC</b>	Natural Ventilation Coverage	..	
	Space Heating Coverage	..	
	Space Cooling Coverage	..	
	Fossil Fuel Furnace Energy Efficiency (%)	..	..
	Heat Pump (Heating) COP (Wh/Wh)	..	..
<b>Water Heating</b>	Split AC System EER (Wh/Wh)	..	..
	Fan Coverage	..	
	Fossil Fuel Water Heater EF	..	
	Electric Water Heater EF	..	
<b>Lighting</b>	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	..	
<b>Building Materials</b>	Lab Testing	..	
	Labelling	..	
	Independent Certification	..	
<b>Incentives and Resources</b>	Resources to Facilitate Compliance	..	
	Financial Incentives	..	

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Minimum energy performance requirements (MEPRs)
	<b>Code adoption date</b>	2011
	<b>Type of code</b>	Performance-based
	<b>Coverage of Code</b>	New Buildings

	<b>TYPE OF BUILDING</b>		<b>Residential</b>	<b>Commercial</b>
<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
		Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
		Maximum Solar Heat Gain Coefficient	..	..
		Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
		Natural Ventilation Coverage	..	
<p><b>HVAC</b></p>	<p><b>HVAC</b></p>	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	..	
<p><b>Water Heating</b></p>	<p><b>Water Heating</b></p>	Fossil Fuel Water Heater EF	..	
		Electric Water Heater EF	..	
		Maximum Wattage or Lighting Allowances (Outdoor)	..	
<p><b>Lighting</b></p>	<p><b>Lighting</b></p>	Maximum Wattage or Lighting Allowances (Indoor)	..	
		Luminary Efficacy (lm/W)	..	
		Lab Testing	..	
<p><b>Building Materials</b></p>	<p><b>Building Materials</b></p>	Labelling	..	
		Independent Certification	..	
		Resources to Facilitate Compliance	..	
<p><b>Incentives and Resources</b></p>	<p><b>Incentives and Resources</b></p>	Financial Incentives	Loans; Preferential utility rates; Tax Credits or deductions; Fee Waivers	

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# 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

 <b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	Ordinance on thermal quality of buildings in the Maracaibo municipality
	<b>Code adoption date</b>	2005
	<b>Type of code</b>	
	<b>Coverage of Code</b>	

 <b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b>	<b>TYPE OF BUILDING</b>	Residential	Commercial
		..	..
 <b>Passive Design</b>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	..	..
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	..	
 <b>HVAC</b>	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	..	
 <b>Water Heating</b>	Fossil Fuel Water Heater EF	..	
	Electric Water Heater EF	..	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
 <b>Lighting</b>	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	45	
	Lab Testing	..	
 <b>Building Materials</b>	Labelling	..	
	Independent Certification	..	
	Resources to Facilitate Compliance	..	
	Financial Incentives	..	
 <b>Incentives and Resources</b>			

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# 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

<p><b>BUILDING ENERGY EFFICIENCY REGULATORY FRAMEWORK</b></p>	<b>Building Energy Efficiency Code or Main Source of Mandatory Standards</b>	National Technical Regulation on Energy Efficiency Buildings 2017 (QCVN 09:2017/ BXD)
	<b>Code adoption date</b>	2017
	<b>Type of code</b>	Prescriptive
	<b>Coverage of Code</b>	New Buildings and Existing Buildings

<p><b>TECHNICAL COMPONENTS COVERED BY BUILDING REGULATIONS</b></p>	<b>TYPE OF BUILDING</b>	<b>Residential</b>	<b>Commercial</b>
		..	..
<p><b>Passive Design</b></p>	Thermal Transmittance (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Roof U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Floors U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: External Walls U-value (W/m <sup>2</sup> .K)	..	..
	Thermal Transmittance: Doors U-value (W/m <sup>2</sup> .K)	..	..
	Maximum Solar Heat Gain Coefficient	0.90	0.90
	Maximum Air Leakage (m <sup>3</sup> /hr.m <sup>2</sup> )	..	..
	Natural Ventilation Coverage	✓	
	Space Heating Coverage	✓	
	Space Cooling Coverage	✓	
<p><b>HVAC</b></p>	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	✓	
<p><b>Water Heating</b></p>	Electric Water Heater EF	✓	
	Maximum Wattage or Lighting Allowances (Outdoor)	..	
	Maximum Wattage or Lighting Allowances (Indoor)	..	
	Luminary Efficacy (lm/W)	..	
<p><b>Lighting</b></p>	Lab Testing	..	
	Labelling	..	
	Independent Certification	..	
<p><b>Building Materials</b></p>	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	
<p><b>Incentives and Resources</b></p>			

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