







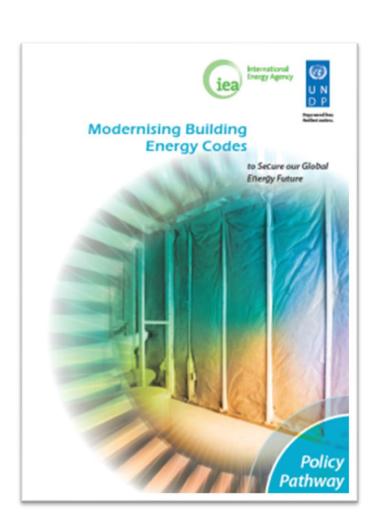
Building Efficiency Accelerator Webinar Series

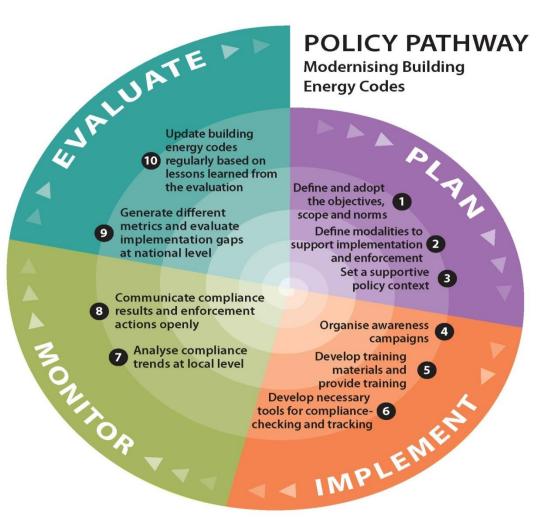
Understanding the process of creating codes



Together Modernising Building Energy Codes

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4-Part Governance

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& IMPROVE DEVELOP SESS,

S d

Technical Lead:

TBD

Policy Lead:

TBD

Support:

Stakeholders

1. Plan & **Development**

> 4. **Review**

> > &

Update

Lead:

Implementing jurisdiction

Technical Support:

TBD

Policy Support:

2. **Adoption** **TBD**

Adaptation

Lead:

TBD

Support:

Stakeholders

Enforcement Certification

Lead:

Implementing jurisdiction

Support:

TBD

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Secure Sustainable Together Roadmaps are critical for harmonisation

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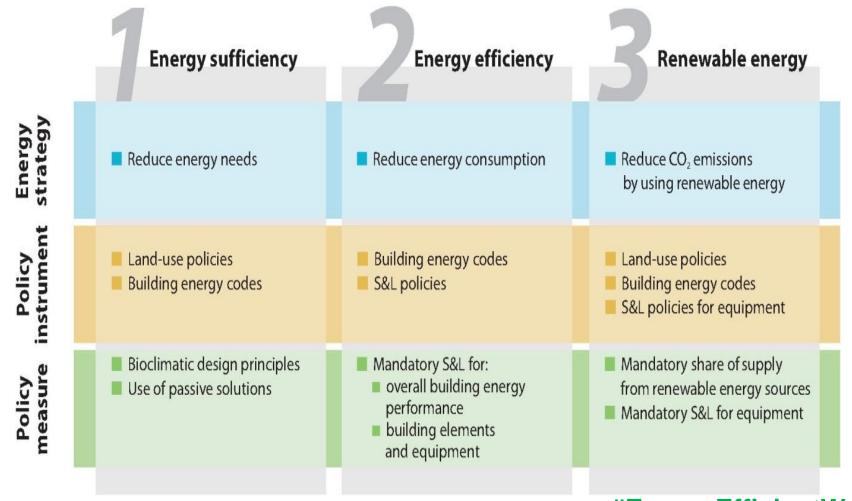
	2016 202	21	2030			
	Short-term activities and targets		Medium-term activities and targets		Long-term activities and targets	
Capacity Building	Market capacity and awareness		Medium-term market capacity and awareness		Long-term market capacity and awareness	
Development	2015 national model code & model code & 2021 stretch		2021 national 2024 national 2027 national model code & model code & model code & 2024 stretch 2027 stretch 2030 stretch		2030 national 2033 national 2036 national 2039 national 2042 national model code & model code & model code & model code 2033 stretch 2036 stretch 2039 stretch 2042 stretch 2045 stretch	le &
Adoption	Model code adoption: 10 states Stretch code adoption: 1 state	>	Model code adoption: 20 Model: 32 Stretch code adoption: 5 Stretch: 10		Continued adoption of building energy codes by 100% of states.	
Enforcement	>50% verification and certification of compliance with adopted building energy code	>	>75% verification and 100% verification certification	on and	Continued 100% verification and certification	
Review & Update	Evaluation of 2015 and 2018 code adoption and enforcement	>	Evaluation of 2021 and Evaluation of 2024 code adoption and enforcement Evaluation of 2024 code adoption enforcement		Evaluation of 2033 and 2036 Evaluation of 2039 and 2042 code adoption and enforcement code adoption and enforcement	ent



Sustainable Together Sufficiency, Efficiency, Renewable

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Items to consider in the Plan and Develop Stages





Sustainable Together Most Effective Policy to Impact Construction

Items to consider in the Implementation Stage

Before issuing construction permit:

- review plans;
- review test reports of construction materials;
- review calculation assumptions;
- review thermal calculation results.

Check compliance at the design stage

k Check

compliance at
the construction stage

At the construction stage:

- at least one to two random on-site checks;
- review list of materials substituted in the field;
 - review test reports indicating the approval of the changes;
 - ensure insulation is well installed.

When the building is occupied:

- meter energy consumption at least during the first two years of occupancy;
- adjust heating, cooling, ventilation and lighting systems;
- implement energy managment system;
- work with end-users on their behaviour.

Check compliance when the building is occupied

Check compliance prior to the occupancy of the building

Before issuing occupancy permit:

- conduct blower-door test;
 - fix the leaks;
- check each building system;
- conduct comprehensive commissioning.

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OECD/IEA 2016



Sustainable Together Development, Infrastructure, Enforcement

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Understand that these policies impact the economy

Code Development

- Sends a strong message to economy.
- Set voluntary stretch goals and mandatory minimum performance.

Infrastructure

- Needed to assess key building components.
 - Likely starting point, but hard to get interest without codes.

Enforcement

- Key issue to achieve results.
- Core problems include lack of product ratings, product availability, lack of knowledge.
 - Design and construction compliance, with commissioning for operation.











Building Efficiency Accelerator Webinar Series

Reporting and reviewing progress through IEA's Building Energy Efficiency Policy database



IEA's Policy databases: Able Together PAMS & BEEP

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Addressing Climate Change Database

The Dealing with Climate Change policies and measures database provides information on energy-related policies and measures taken or planned to reduce greenhouse gas emissions.



IEA/IRENA Global Renewable Energy Policies and Measures Database

The IEA/IRENA Global Renewable Energy Policies and Measures Database provides information on policies and measures taken or planned to encourage the uptake of renewable energy in all IEA and IRENA Member countries and signatories.



Energy Efficiency Database

The Energy Efficiency Policies and Measures database provides information on policies and measures taken or planned to improve energy efficiency. The database further supports the IEA G8 Gleneagles Plan of Action mandate to "share best practice between participating governments", and the agreement by IEA Energy Ministers in 2009 to promote energy efficiency and close policy gaps.



Building Energy Efficiency Policies (BEEP) Database

The BEEP database was launched in 2012 as part of the work of the IEA's Sustainable Buildings Centre (SBC). It provides a detailed breakdown of policies for energy efficiency in buildings around the world, including those supporting buildings codes, labels, incentive schemes and zero-energy buildings.

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Energy Agency PAMS database: Together Energy Efficiency Policies & Measures



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.





International Energy Agency PAMS database:

Together Energy Efficiency Policies & Measures a.org

Advanced search

Countries	Policy Type	Energy Efficiency Policy Targets	
+ Regions + Countries	+ Economic Instruments + Information and Education + Policy Support + Regulatory Instruments + Research, Development and Deployment (RD&D) + Voluntary Approaches	+ Buildings + Commercial/Industrial Equipment + Energy Utilities + Industry + Lighting + Residential Appliances + Transport	
25 Energy Efficiency	Effective between	Jurisdiction	
Recommendations Appliances and equipment Buildings Cross-sectoral Energy Utilities Industry Lighting Transport	Select ▼ and Select ▼	☐ International ☐ National ☐ State/Regional ☐ Municipal	
Policy Status	Search by keyword(s)		
☐ Ended ☐ In Force ☐ Planned ☐ Superseded ☐ Under Review			

[■] Search only recently updated policies #EnergyEfficientWorld



EE Policy Recommendations

Buildings

- Mandatory building codes and MEPS
- Net-zero energy consumption in buildings
- Improved energy efficiency in existing buildings
- Building energy labels or certificates
- Energy performance of building components and systems





www.iea.org/topics/energyefficiency/publications/energyefficiencypolicyrecommendations



International Energy Agency BEEP database

Together Building Energy Efficiency Policies

www.iea.org

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IEA Building Energy Efficiency Policies Database



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Highcharts.com ® Natural Earth



International Energy Agency BEEP database

Secure Sustainable Together Building Energy Efficiency Policies

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Search policies

Country	Туре	Building type	Requirement type	Search by keywords
+ Australia	Codes	New residential	■ Mandatory	
Austria	Incentive	Existing residential	Model Code	
+ 🔲 Belgium	Labels	New non-residential	Voluntary	
■ Brazil		Existing non-residential		
+ Canada				
+ China				
Czech Republic				
Denmark				
Finland				
France	•			



International Energy Agency BEEP database

Together Building Energy Efficiency Policies

www.iea.org

Policies

Codes

Alberta Building Code 2011	New residential	Alberta
National Building Code of Canada 2010	New residential, New non-residential, Existing residential, Existing non-residential	Canada
National Energy Code of Canada for Buildings 2011	New residential, New non-residential	Canada
Ontario Supplementary Standard SB-10 2011	Existing non-residential, Existing residential, New non-residential, New residential	Ontario
Ontario Supplementary Standard SB-12 2011	Existing residential, New residential	Ontario
Quebec E-1.1 2012	New residential, Existing residential	Quebec

Labels

BOMA BESt (Building Environmental Standards) Version 2
ENERGY STAR Portfolio Manager Benchmarking Tool
LEED Canada (2009)
LEED Canada (Existing Building: Operations & Maintenance)

Incentives

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International Secure

Energy Agency BEEP database

Sustainable

Together Building Energy Efficiency Policies

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Prescriptive Compliance path

Prescriptive Compliance Path

Prescriptive requirements apply to building envelope components, heating ventilating and air conditioning equipment, and potable water heating equipment.

Energy Requirements:

Insulation

Building assemblies above ground:

U-Values (W/m2.K)	Floors	Roofs, Attic	Roofs, Other	Walls
Climate zone 4	0.214	0.145	0.214	0.360
Climate zone 5	0.214	0.115	0.214	0.325
Climate zone 6	0.214	0.115	0.214	0.325
Climate zone 7A	0.199	0.096	0.199	0.325
Climate zone 7B	0.199	0.096	0.199	0.385
Climate zone 8	0.199	0.096	0.199	0.385

Building assemblies in contact / below the ground:

U-Values (W/m2.K)	Floors, heated	Floors, above the frost lint	Roof	Walls
Climate zone 4	0.431	0.510	0.510	0.503
Climate zone 5	0.431	0.510	0.510	0.336

Performance Compliance path

Energy Performance Compliance

Performance compliance calculations determines the annual energy consumption of a reference house and sets the minimum energy target for the proposed house to that level.

Energy Requirements:

Insulation

Reduction is limited by health and safety requirements.

Windows

Where fenestration and door to gross wall area is less than 17%, the reference house is set to 17%. Where fenestration and door to gross wall area is greater than 22%, the reference house is set to 22%.

Air Leakage

An assumed building airtightness of 2.5 air changes per hour (ACH) is applied to the reference house. The proposed can measure airtightness or use an assumed 2.5 ACH in the simulation.

Space Heating System

Reference house applies a prescriptive type system for the applicable fuel type

Space Cooling System

Reference house applies a prescriptive type system for the applicable fuel type

Water Heating System

Reference house applies a prescriptive type system for the applicable fuel type

Compliance Softwares:

All energy modelling software used for code compliance calculations must conform to ANSI/ASHRAE 140, "Evaluation of Building Energy Analysis Computer Programs"

End-uses considered:

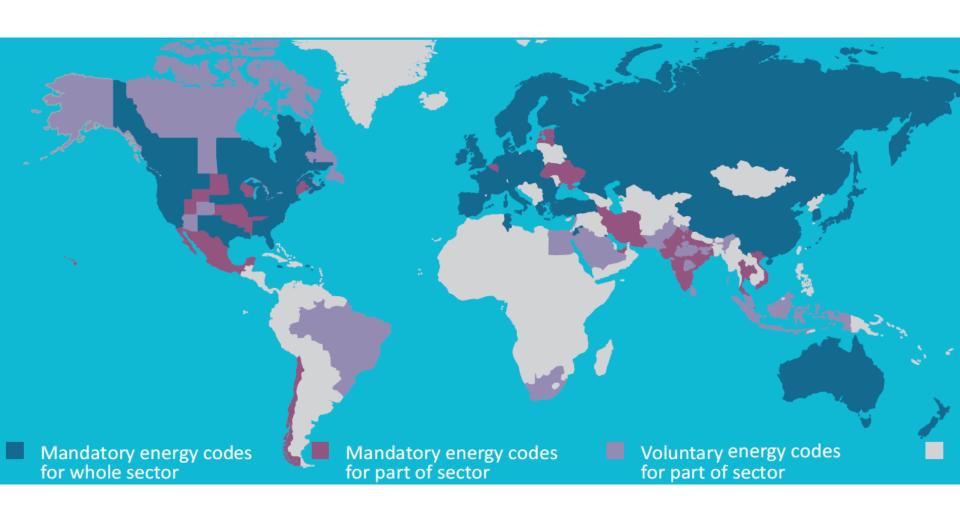
Space cooling, Space heating, Ventilation, Water heating

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Building Energy Code Status

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Energy Efficiency Indicators

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Energy Efficiency Indicators Statistics: Country Practices Database

A supplement to the publication Energy Efficiency Indicators: Fundamentals on Statistics —, this database presents practices on collection of data for developing efficiency indicators from a variety of OECD Members and non-Members.

Practices are searchable by country and territory, sector, methodology and type of available documentation. By sharing these experiences, we hope to help countries and organisations to develop their own energy efficiency indicators programmes.

Countries and territories	Sector	Methodology	Available content
□ Albania □ Australia □ Austria □ Belgium □ Bosnia and Herzegovina □ Brazil □ Bulgaria □ Canada □ China	☐ Industry ☐ Residential ☐ Services ☐ Transport	☐ Administrative sources ☐ Measuring ☐ Modelling ☐ Surveying	methodologyproject web sitequestionnairereportresults
Search by keywords			
		Reset Search	