Dear Contributor,

We are pleased to invite you to participate in the project ***"Leveraging Building Energy Codes and Standards for Climate Change Mitigation"***, a new World Bank Group knowledge product focused on green energy codes. Your expertise and extensive experience will allow us to better understand the current state of green building energy code adoption, enforcement and compliance in your city and to compare it to other cities around the world.

The World Bank Group is committed to producing research and data to promote the transition towards energy efficient infrastructure and to finding innovative ways to reduce carbon emissions and reliance on fossil fuels, including through the adoption of green building standards.

The intended outcome of the project is to create and make publicly available a new dataset of quantitative and comparable measures on the adoption, enforcement and compliance of building energy codes and minimum energy efficiency performance standards. This dataset, the first version of which we intend to publish by December of 2022, will be the most comprehensive and detailed in existence and will allow researchers and policymakers to identify and compare regulatory frameworks that achieve carbon emissions reductions and that are successful in transforming the construction industry and the built environment.

The purpose of the questionnaire below is to collect relevant data on your city. We ask that you complete as much of the questionnaire as possible. If you are unable to answer a particular question but know of an individual or organization with the relevant expertise, we ask that you provide us with the name and contact information (phone or e-mail) of that person or organization.

Please make sure to complete the section on the contributor's information so that we can acknowledge your participation on our project website: www.worldbank.org/building-green. If you prefer, your contribution can also be anonymous.

We thank you in advance for your valuable contribution to the work of the World Bank Group. We reiterate our sincere appreciation for your participation and invite you to contact us regarding any questions or comments you may have.

Sincerely,

Building Green Team
Global Indicators Group
Development Economics Vice Presidency
World Bank Group
Email: BuildingGreen@worldbank.org

By voluntarily answering the below questionnaire, contributors are consenting that their name, firm affiliation, and contact information will be permanently retained in a password and access-restricted database by the World Bank Group's Global Indicators Unit for the sole purpose of contacting respondents for conducting current and future research, in accordance with the World Bank Group Privacy Policy. This information will be retained in line with the applicable WBG Records Retention and Disposition Schedule and with the consent provided. Contributors can revoke at any time their consent for the processing of their name, firm affiliation and contact information by contacting DECIG. Contact information will remain strictly confidential within the Unit and will only be acknowledged on its website or publications per contributor preferences indicated below.

Contact Information:

Please check the box next to information if you **do not** want us to publish on our website:		
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	First Name	[ ]
	Last Name	[ ]
Never Published	Position *(e.g. manager, associate, partner)*	[ ]
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Street		[ ]	P.O. Box		[ ]
City		[ ]	State/ Province		[ ]
Zip/Postal code		[ ]	Country		[ ]

Additional Contributor(s):

Name	Occupation	Email	Phone	Address
[title] [first name] [last name]	[firm] [position] [profession]	[ ]	[phone] [mobile]	[street] [state/province] [city/country]
[title] [first name] [last name]	[firm] [position] [profession]	[ ]	[phone] [mobile]	[street] [state/province] [city/country]

If there are more people whom you would like us to acknowledge, kindly send us an e-mail.

Referrals: Please help us expand our list of contributors by referring us to other experts who can respond to the questionnaire.

First name	Last name	Position	Firm	Address	Phone	E-mail
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A. Mandatory Minimum Energy Efficiency Standards

1. A) Does your city have **mandatory** minimum energy efficiency performance standards in its building code or in any of its building or environmental regulations?

☐ Yes ☐ No

If yes, please specify the name of the green building code or relevant regulations that are **mandatory**:

Please provide URL if it is available online:

B) Are the standards enforced in practice? ☐ Yes ☐ No ☐ Yes, but inconsistently or partially

If yes or partially, please specify the year in which they were effectively first **enforced**:

If partially, what is the main barrier to implementation?

C) Is any update in the standards planned or in the process of development? ☐ Yes ☐ No

If yes, please provide details:

2. Which party is ***principally*** charged with the enforcement of energy efficiency performance standards? *(Select all that apply)*

☐ Local Building control authority
☐ Environmental protection authority
☐ Other public authority (please specify): _____
☐ Single, non-governmental organization (please specify): _____
☐ Third party (private) inspection system (for example - by authorized energy auditors): (please specify): _____
☐ Self-certification by the applicant
☐ Other: (please specify): _____

3. *Only if principal method of enforcement is third-party inspection system:*

A. Does the code or relevant regulations specifically describe the requisite documentation to verify compliance based on third-party inspections? ☐ Yes ☐ No
B. Does the code or relevant regulations specifically describe the procedure to authorize third-party inspectors? ☐ Yes ☐ No
C. Does the code or relevant regulations specifically establish the professional qualifications required to register as a third-party inspectors? ☐ Yes ☐ No
D. Is there an independent body charged with developing guidelines, standards and/or codes of conduct for third-party inspectors? ☐ Yes ☐ No
E. Does the code or relevant regulations specifically establish a supervisory body to ensure third-party inspections are conducted appropriately and without conflict of interest? ☐ Yes ☐ No

4. How would you describe the type of building energy code enforced in your city?

☐ detailed standards for passive design and for equipment, appliances and systems ("prescriptive" code)

☐ points-based system mandating a minimum energy performance of the building as a whole but not mandating specific standards for each component ("performance" code)

☐ Combination of the two above: (please describe): _____

☐ Other (please specify): _____

5. Which types of buildings are covered in the mandatory minimum energy efficiency standards in its building code or in its building or environmental regulations? *(Select all that apply)*

☐ New buildings

☐ Renovations, Additions, Alterations and/or Repair Project

☐ Change of Occupancy

☐ Other: (please specify): _____

6. In practice, which buildings are ***exempted*** from the enforcement of the minimum energy efficiency standards established in the building code or in its building or environmental regulations?

Building Category	Exempted in practice	Criteria for exemptions (e.g. size threshold, project value threshold etc.):
Commercial Buildings		
Retail establishments (grocery stores, department stores, malls)	☐Yes ☐No	
Office buildings	☐Yes ☐No	
Public service establishments (post offices, public libraries, social security offices)	☐Yes ☐No	
Medical services establishments	☐Yes ☐No	
Education (schools, universities)	☐Yes ☐No	
Storage facilities and Warehouses	☐Yes ☐No	
Entertainment and recreation venues	☐Yes ☐No	
Residential Buildings		
Single Houses	☐Yes ☐No	
Townhouses (terraced housing)	☐Yes ☐No	
Apartment buildings	☐Yes ☐No	
Movable dwellings	☐Yes ☐No	
Other Buildings (please list below)		
	☐Yes ☐No	

	☐Yes ☐No	
	☐Yes ☐No	

7. Does your city accept internationally recognized Green Building Rating and Certification Systems as an **alternative** to complying with the local standards? ☐ Yes ☐ No

If yes, please specify the accepted systems: *(Select all that apply)*

☐ Leadership in Energy and Environmental Design (LEED)
☐ Building Research Establishment Environmental Assessment Method (BREEAM)
☐ Green Mark
☐ Green Star
☐ EDGE
☐ Pearl Rating System
☐ Living Building Challenge
☐ Green Globes
☐ Other: (please specify): _____

B. Pre-Construction Enforcement of Energy Efficiency Standards

8. Does your city require proof of design compliance to the green building code as a pre-condition for the issuance of a building permit? ☐ Yes ☐ No

If yes, please provide the legal reference:

If yes, please specify which documentation is submitted in the context of a building permit application process to demonstrate compliance with the green building code:

Required documentation	Mandatory	Enforced in Practice
Checklist of passive design (daylight, orientation, and other features)	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Energy Verification Worksheet	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Energy Model	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Commissioning Plan	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
HVAC Plan	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Lighting Plan and Schedule	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

9. Which of the following is verified as part of the building plan review process to ensure compliance to the building energy code or other relevant mandatory energy efficiency standards?

Components	Mandatory	Enforced in Practice
Thermal transmittance or insulation calculations for building envelope	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Solar heat gain calculations for building envelope	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

	Glazing factors for fenestration	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Heating/cooling demand calculations	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Daylighting and orientation	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Permanent shading	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Air barrier, air leakage or air infiltration	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Efficiency of heating and cooling equipment and controls	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Efficiency of water heating equipment and controls	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Efficiency of lighting fixtures and controls	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
	Insulation and heat traps	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

10. Is **energy modeling** to ensure compliance to the building energy code or other relevant mandatory energy efficiency standards required? ☐ Yes ☐ No

If yes, how is compliance verified? *(Select all that apply)*

☐ Building Plan Review by building control authority
☐ Building Plan Review by third party specialized in energy modeling
☐ Audit system- compliance is verified for a sample of buildings only
☐ Compliance is assumed but not verified

Note: *By energy modeling, consider any computer-generated calculations that provides information predicting anticipated energy consumption of a building and its systems.*

11. If energy modeling is required, which method is used to verify compliance? *(Select all that apply)*

☐ Paper based Building Plan Review and verification of calculations
☐ Digital building plan review and verification of calculations
☐ Digital building plan review using plug-ins
☐ Automated compliance checking using Building Information Modeling software
☐ Other: (please specify): _____

12. If energy modeling is automated, which sort of building information modeling analysis and verification is utilized? *(Select all that apply)*

☐ Building authority proprietary platform (e-permitting)
☐ Building Information Modeling Analysis and Verification on open-source software
☐ Building Information Modeling Analysis and Verification on proprietary software (please specify software): _____
☐ Other: (please specify): _____

C. Post-construction Enforcement of Energy Efficiency Standards

13. Does your city require proof of compliance to the green building code as a pre-condition for the issuance of an occupation permit or prior to receive occupancy authorization? ☐ Yes ☐ No

If yes, please provide the legal reference:

If yes, please specify:

Compliance mechanisms	**Mandatory according to code**	**Enforced in Practice**
As-built Energy Verification Worksheet or Compliance Report	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Visual/Walk through Inspection by building authority representative	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Energy audit	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Other: **(please specify):** _____	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

Only if city requires energy audits:

14. Which diagnostic tools are commonly utilized to verify compliance?

Diagnostic tools	**Mandatory according to code**	**Enforced in Practice**
Blower door test	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Duct leakage checks	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Static pressure tests	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Infrared Camera Scan	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Testing, adjusting, and balancing of the heating, cooling, and mechanical ventilation systems	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Testing, adjusting, and balancing of Water Heating Systems	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Testing, adjusting, and balancing of controlled receptacles and lighting control systems	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

D. Retrofitting, Retro-commissioning and Energy Performance Disclosure for Existing Buildings

15. Does your city enforce retro-commissioning standards? ☐Yes ☐No

If yes, please provide the legal reference:

If yes, please specify which retro-commissioning requirements are currently being enforced:

Retro-commissioning requirements	Mandatory	Enforced in Practice
Thermostats and sensors repair or calibration	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Air balancing systems repair or calibration	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Economizer repair or calibration	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Air leakage tests	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Air barrier integrity testing	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Calibration of heating, cooling or lighting schedule and setpoints to match occupancy	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Chilled-water resets	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

16. Does your city enforce retrofitting requirements ? ☐Yes ☐No

If yes, please specify which enforcement mechanisms are currently being used:

Retrofitting requirements	Mandatory	Enforced in Practice
Thermal bridging	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Duct sealing	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Envelope air gap sealing	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Chilled-water resets	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Installation of automatic sensors	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Installation of solar water heaters or rooftop renewables	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Replacement of fossil fuel heating/cooling with heat pumps	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

17. Does your city enforce the public disclosure of energy efficiency performance ? ☐Yes ☐No

If yes, please specify which enforcement mechanisms are currently being used:

Enforcement mechanisms	Mandatory	Enforced in Practice
Parametric energy use monitoring	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Parametric energy performance	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

Building schedule of maintenance	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
Metered energy data display	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently
CO2 emissions equivalents	☐Yes ☐No	☐Yes ☐No ☐ Yes, but inconsistently

18. Are there mandatory requirements for the energy efficiency performance of construction materials?
☐Yes ☐No

if *yes*, specify the types of enforcement in place:

- ☐ Mandatory laboratory testing
- ☐ Mandatory labeling
- ☐ Mandatory independent certification
- ☐ Energy efficiency ratings
- ☐ Other (please specify): _____

19. What resources are available to facilitate compliance and improve uptake of energy efficiency technologies and designs?

- ☐ 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
- ☐ Other (please specify): _____

20. What financial incentives are available to facilitate compliance and improve uptake of energy efficiency technologies and designs?

Financial Incentives	**Available**	**Name of Program**
Grants	☐Yes ☐No	
Fee Waivers	☐Yes ☐No	
Tax Credits or deductions	☐Yes ☐No	
Rebates	☐Yes ☐No	
Loans	☐Yes ☐No	
Preferential utility rates	☐Yes ☐No	
Other (please specify): _____	☐Yes ☐No	