

# Delivering Energy Savings in Buildings



## International Collaboration on Building Energy Code Implementation

### **A report of the IPEEC Building Energy Efficiency Taskgroup (BEET)**

International collaboration can support improved building energy code implementation—putting codes into practice. This can help deliver massive energy savings in the building sector and provide a range of benefits for families, businesses, the economy, and the environment.

### **The Energy Savings Potential of the Building Sector is Massive**

- Globally, the wide deployment of best-available technologies and energy efficiency policies could lower annual final energy use in buildings by roughly 53 exajoules (EJ) by 2050—equivalent to the combined building energy use in China, France, Germany, Russia, the United Kingdom and the United States in 2012.<sup>1</sup>
- Countries represented in the Major Economies Forum could collectively reduce annual building energy use by 37 EJ by 2050, a 30% reduction relative to business-as-usual and consistent with achieving the 2°C energy scenario of the International Energy Agency. The remaining G20 economies could add savings of 2 EJ per year by 2050.
- Such reductions would deliver a number of benefits: lower energy costs for households and businesses; greater reliability in meeting energy demand without costly infrastructure and disruptions; and reductions in emissions of heat-trapping greenhouse gases and other pollutants that pose a threat to human health.

### **Effective Code Implementation is Key to Realising Energy Savings**

- Effective implementation of energy codes ensures that buildings are built to code-required design, leading to the wide deployment of best-available technologies and construction practices needed to realise the energy savings potential.
- Establishing and implementing ambitious code requirements for very low energy buildings would further boost energy savings.

### **International Collaboration Can Support Improved Code Implementation**

While countries have different code requirements, they face common challenges in implementation, including within the priority areas highlighted by government representatives from major economies (below). International collaboration can increase the effectiveness of activities in these areas.

**Code Compliance Checking Systems.** To ensure buildings are able to deliver energy savings, code compliance needs to be checked in the building design and construction phases. Countries could collaborate to:

- Identify effective practices in conducting physical checks of buildings, including who conducts the checks, how, and when.
- Implement simplified code compliance systems, especially when there is little local capacity and a need to phase in systems that are low-cost and minimally time-consuming.

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1. Energy projections from IEA-IPEEC, 2015: Building Energy Performance Metrics.

- Share experiences of cities, regions, and countries on the efficacy of code compliance checking systems.
- Develop and share evidence-based studies on the effectiveness of different approaches to enforcement.

**Measuring Performance against Code-Required Design.** The energy savings potential of buildings will only be realised if actual energy performance is tracked. Countries could collaborate to:

- Develop and track metrics on the gap between actual building energy performance and code design.
- Exchange information on energy performance measurement methodologies and share lessons learned about the policy implications from measurement studies.
- Gather data on building characteristics and energy use and establish performance benchmarks for building types, including through collaborative studies.

**Compliance Software and Tools.** Making good quality compliance tools and software available to practitioners can enhance compliance with codes. Countries could collaborate to:

- Integrate code compliance checking software with design software so that compliance can be evaluated early in the design stage.
- Improve the robustness and user-friendliness of software for both the performance and prescriptive paths to compliance.
- Where software does not exist, develop and share simplified spreadsheet tools.
- Improve training in the use of performance-based simulation software for more effective whole-building compliance checking.

**Incentives: Penalties and Positive Motivators.** Energy efficiency requirements are recent additions to many building codes. Practitioners often need incentives to ensure code compliance. Countries could collaborate to:

- Develop evidence-based information on the effectiveness of different incentive schemes.
- Share information on incentive programmes for beyond-code performance and very low-energy building policies.
- Exchange information on innovative ways to incentivise private sector initiatives in code compliance.

**Forms of Collaboration.** With the support of governments, the BEET and its partners could support country actions in these areas through priority forms of collaboration, including the following:

- **Web Portal:** Expand the BEET web portal on building energy code implementation with tools, resources, and educational and training materials.
- **Webinars:** Establish a codes-focused webinar series on key collaboration areas.
- **Network of Experts:** Further build a network of experts in code implementation to share best practices and provide expert guidance to one another and to other policy officials.
- **Best Practice Guide:** Develop a best practice guide on options for code development, implementation, compliance, and enforcement programmes.
- **Collaborative Studies:** Conduct collaborative studies on code topics of mutual interest.