Building Energy Codes

WHAT THEY ARE

Building energy codes are a regulatory instrument in the buildings policy package. They set minimum requirements for energy use in buildings. They may set requirements for the overall energy efficiency of an entire building (performance-based codes) or for individual building components such as insulation, lighting systems, or heating and cooling systems (prescriptive codes). They may include both types of requirements to provide flexibility to the market. Only buildings compliant with the energy code are allowed to be built.

To get buildings on track for a net-zero emissions future, building energy codes should include not only energy efficiency requirements, but also requirements around on-site renewable energy production, embodied carbon, energy management and the integration of smart appliances and equipment to enable demand response. Building energy codes should be applied to both new buildings and existing buildings undergoing major renovations. They can also set deadlines for energy efficiency upgrades. They improve the efficiency of buildings and help industry prepare for, and adapt to, market changes. As of 2023, there were around 80 building energy codes in place across the world, with only 40% of new buildings constructed globally covered by requirements for energy efficiency.

HOW TO IMPLEMENT

Specific steps to implement building energy codes vary by country and should be adapted to the regulatory context. The most common implementation steps include:

1. **Assessment and planning**: Analyse the current state of energy use in buildings, identify opportunities for improvement in energy efficiency in different building types and climate conditions, and develop a strategic plan for implementing building energy codes.
2. **Code development**: Establish a task force with stakeholders from government, industry, and academia to discuss the code design. Consider aligning with international standards (e.g. International Energy Conservation Code) or existing successful codes in other countries. Then the actual drafting of the building energy code can commence, including specific requirements for construction and operation. Specify the scope, including building types, geographic areas, and the time frame. Lastly, establish mechanisms for compliance with the building energy code, including penalties for non-compliance.
3. **Public consultation**: Solicit input from industry professionals, builders, architects, and the general public to gather feedback on the proposed regulation.

4. **Approval and adoption**: Present the regulation to relevant authorities for approval and adopt the building energy code through legislative or regulatory means.
5. **Training and education**: Provide training programmes for architects, builders, contractors, code officials, enforcement personnel and other stakeholders. Raise awareness about the new building energy code and its requirements.
6. **Updates and revisions**: Regularly review and update the building energy code based on your monitoring efforts to incorporate technological advancements and industry best practices. Consider amendments based on lessons learned from implementation.
7. **Collaboration**: Foster collaboration between government agencies, industry experts and advocacy groups to support implementation.

HOW TO MONITOR

Setting up a monitoring and evaluation (M&E) system may include some of the following common steps:

- Identify key performance indicators (KPIs) and set measurable objectives for building energy codes, such as compliance rates, energy savings and wider socio-economic impacts.
- Determine data sources and collection methods. Collect data on energy consumption, building characteristics, and other relevant parameters, taking into account a variety of design and renovation practices, as well as climatic conditions.
- Establish a baseline for energy consumption and building characteristics (preferably before the regulation is developed).
- Develop a reporting system. Regularly publish results on the KPIs and areas for improvement.
- Implement regular audits and inspections focusing on compliance with the building energy code.