Japan

Building Code Implementation - Country Summary


Section I: Code Development

History

Starting year

In 1979, Japan issued the Energy Conservation Law, or Law on Rational Use of Energy. Based on this law, Japan issued a set of building energy standards for commercial and residential buildings called the Criteria for Clients on the Rationalization of Energy Use for Buildings (CCREUB). Two standards apply to residential buildings: 1) Design and Construction Guidelines on the Rationalization of Energy Use for Houses (DCGREUH), issued by the Ministry of Construction in 1980 and later revised in 1992, 1999, 2003, 2006 and 2008; and 2) Criteria for Clients on the Rationalization of Energy Use for Houses (CCREUH), issued by the Ministry of International Trade and Industry and the Ministry of Construction in 1980 and later revised several times between 1992 and 2008. Compliance with these standards is voluntary for most buildings, although Japan has recently adopted penalties for non-compliance that blur this distinction. Japan has both mandatory requirements and a point system for a whole range of energy issues related to buildings. Each new building must have a minimum number of points either in total or by category. Buildings that exceed the minimum point requirement may be eligible for certain benefits, such as relaxation of some zoning rules.

Since 2002, the Energy Conservation Law required that owners of new commercial buildings larger than 2,000 m² submit reports (plans) on energy conservation to local authorities whenever there is new construction, an extension, alternation, major repair or remodeling. Since 2009, local authorities can impose penalties for non-compliance.

Timeline/road map

The Ministry of Land, Infrastructure, Transport, and Tourism announced plans to create mandatory building energy efficiency standards that would apply to the whole country by 2020.
Existing codes

Structural coverage

<table>
<thead>
<tr>
<th>Scale (National, regional, local, etc.)</th>
<th>Building size threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential buildings</td>
<td></td>
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<tr>
<td>New buildings</td>
<td>National</td>
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<tr>
<td>Existing buildings for retrofits</td>
<td>National (major retrofits)</td>
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<tr>
<td>Commercial buildings*</td>
<td></td>
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<tr>
<td>New buildings</td>
<td>National</td>
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<tr>
<td>Existing buildings for retrofits</td>
<td>National (major retrofits)</td>
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Japan developed a set of building energy standards, and it has recently adopted penalties for non-compliance. Buildings must demonstrate compliance with the standards in their plans, but currently no enforcement during the construction phase is required. Japan’s code compliance is based on points, with prescriptive and optional requirements. New buildings have to meet the minimum point requirements; buildings beyond the minimum performance are eligible for extra benefits. Japan has mandatory reporting on energy conservation for commercial buildings. State or provincial and local governments enforce and oversee the compliance of buildings with the help of third parties.

Measures covered

- Envelope
- HVAC
- Service water heating

$^1$ http://www.sustainablebuildingscentre.org/buildings/codes/Japan/National/residential/new/Rational%20use%20of%20energy%20within%20buildings
- Lighting [But lighting power density is not covered]
- Electric power [Lifting equipment is covered]
- Option for trade-off approach
- Option for performance-based approach

**Correction/new codes**

*Motivation/policies for improving existing building energy codes*

Japan has several policies to promote improvements in building energy efficiency. The primary policy is the Energy Conservation Law, revisions to which have introduced new requirements for energy efficiency in buildings. For example, commercial buildings have to submit reports on energy conservation since 2003, and residential buildings have to report since 2005. Beginning 2009, local authorities can impose penalties for non-compliance. The 2009 revisions also expanded the number of buildings for which reports on energy conservation are required, as well as required owners of small and medium-sized buildings (300 to 2,000 m²) to submit reports on energy conservation before construction or renovations. Also, construction companies building more than 150 houses per year needed to improve energy performance of the houses they built. The 2013 revisions newly added building materials, such as windows and heat insulating materials, to the list of participating programs in the government-created the “Top Runner” program.

The Ministry of Land, Infrastructure and Transport (MLIT) issued the “Basic Program for Housing” in 2006, which aimed to improve housing standards by 2015. Two of the 21 targets MLIT announced include: (1) 40% of housing should have energy saving measures, and (2) the life span of housing should be increased from 30 years in 2003 to 40 years by 2015 (Evans et al. 2009).

At the municipal level, Tokyo has a cap-and-trade program, launched in April 2010. The target of the Tokyo cap-and-trade program is to reduce greenhouse gas emissions to 25% below the 2000 levels by 2020. The greenhouse gas emissions cap applies to large-scale industrial facilities and commercial buildings consuming more than 1,500 kiloliters of oil equivalent per year. About 80% of facilities covered by the program are commercial buildings. The program set two compliance periods (2010-2014 and 2015-2019) and aims to reduce emissions by 6-8% and 17%, respectively, compared to 2000. Facilities can bank their surplus when their actual emissions are less than the allowances in a given compliance period, but they cannot borrow allowances from a future compliance period. The five-year compliance period provides some flexibility and enables reducing energy use and CO₂ emissions steadily through planned investments.
Section II: Code Implementation

Administration

Administrative/enforcement structures

Government agency

In Japan, local governments review and approve all building designs. The government does not inspect on-going construction for energy efficiency provisions, although inspectors check buildings for compliance with structural and fire code requirements. A local government agency (such as a municipality or special ward that has a district construction inspector pursuant to the Building Standards Act) may provide guidance and advice on energy efficiency to property owners of regulated (so called “specified”) buildings.

Private sector/third party

Third parties, referred to as “designated confirmation bodies,” validate building designs before they are submitted to the local government. These bodies are officially approved by a government agency. The designated confirmation bodies of Japan abide by the regulations set out in the Building Standard Law of Japan.

Self-certification to owner/government

Building owners must provide local authorities with reports on maintenance every three years and, in most cases, reports on energy conservation.

The roles of stakeholders

<table>
<thead>
<tr>
<th>Role of Stakeholders</th>
<th>Design</th>
<th>Construction</th>
<th>Pre-Occupancy Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of federal/central government</td>
<td>Oversight and accreditation</td>
<td>None</td>
<td>Oversight</td>
</tr>
<tr>
<td>The role of state/provincial and local government</td>
<td>Review of mandatory energy savings reports, permits, inspection and approval of building design</td>
<td>None</td>
<td>Inspection, review of mandatory energy savings reports</td>
</tr>
<tr>
<td>Involvement of third parties and their role</td>
<td>Review of building design before submission to local government</td>
<td>None</td>
<td>Prepare mandatory energy savings reports</td>
</tr>
</tbody>
</table>
Requirements for energy audits after occupancy
None, but mandatory reports on building energy consumption and conservation plans are in place.

Tools used for compliance checking

Software used for compliance checking
Software is available free of charge. The Japanese government financed its development.

Other tools used to check compliance

Japan has a protocol outlining how to carry out performance evaluations that meet the provisions of relevant sections of the building standards.

A guide to housing policy in Japan: “A Quick Look at Housing in Japan” (August 2008). This 68-page booklet explains the housing policy in Japan with editorial comments from the Ministry of Land, Infrastructure, Transport and Tourism.

Capacity building and education

Education and capacity building programs that support code implementation
The Institute for Building Environment and Energy Conservation holds training seminars to support implementation of the Energy Conservation Law. The seminars cover issues such as building design, construction techniques, insulation and calculations of energy efficiency under the building energy codes. The institute held over 100 training sessions all around Japan to disseminate information on the latest amendment of the Energy Conservation Law. This institute also publishes detailed guidebooks on Japan’s energy efficiency standards. Local governments also provide significant support of the building energy codes. For example, under the Sustainable Building Reporting System, many cities provide tools and information to help improve the energy efficiency of new buildings. Some cities also publish summaries of all new building energy saving reports. Moreover, some cities encourage energy efficiency by allowing builders to build taller or larger buildings than otherwise allowed if the building designs rank highly on energy efficiency. Other cities provide construction subsidies or low-interest loans for highly-ranked residential buildings.

Target groups for programs
Building owners, construction companies, residents.

Effective aspects have been particularly.
Japan has an extensive system of public outreach and training.

Impactful program or capacity building effort
Japan has very extensive training programs for its building energy codes. For example, the Japanese government recently funded over 100 training seminars over several months regarding a single set of changes to the existing code. The training covers a range of issues related to energy efficiency in buildings, not just meeting the minimum standards of the code.

Section III: Compliance & Enforcement

Penalties, incentives and other mechanisms for improving compliance

Penalties for non-compliance with energy provisions in codes

- Fine
- Publication of names of property owners who fail to comply

Incentives/rewards to go beyond minimum required performance level

The Energy Conservation Law requires mandatory reports on energy conservation to local authorities whenever there is new construction, an extension, alternation, major repair or remodeling. After the completion of construction or modification, the property owners must also submit reports every three years on the maintenance of buildings with respect to energy saving measures. If the local authority finds the energy saving measures to be insufficient, the authority provides guidance and advice to the owners for improvement. If an owner does not follow the authority’s advice and instructions for improvement, the authority can publicize the owner’s name on a list for non-compliance (. Since 2008, there are penalties for non-compliance of up to JPY 1,000,000, or about USD11,000.

Japan offers subsidies and low-interest loans for high efficiency energy system to residential and non-residential buildings. In addition, there is a green investment tax rebate for non-residential buildings and support for Energy-Oriented Houses.

In 2005, Japan initiated a dress code programme, “Cool Biz”, which aims to reduce summer peak load by encouraging more informal attire than suits.

Other mechanisms to encourage compliance

The Ministry of Economy, Trade and Industry provides guidance and advice to businesses that manufacture, process or import building materials to help them improve and ensure the thermal insulation properties of the materials.

Compliance assessment

Assessments on rate and effectiveness of compliance

The government used mandatory reports on energy conservation to analyze compliance with the voluntary standards.
Publicly available information on compliance assessment
The information is publicly available.

Lessons learned from compliance studies
According to data from the mandatory reports on energy conservation, in 2005, 85% of commercial buildings complied with the 1999 energy efficiency requirements at the design stage. A similar survey for residential buildings, reviewing implementation of the Housing Quality Assurance Law, showed that 36% of new homes complied with the 1999 energy efficiency requirements in 2006.

Section IV: Building Materials & Energy Performance Certificates

Building materials (e.g., windows, insulation, HVAC, lighting)

Rating building materials
Most construction materials have to obtain Japan Industrial Standard Certification, which covers aspects of energy performance. Materials can also obtain Comprehensive Assessment System for Built Environment Efficiency (CASBEE) certification.

Tested by certified test labs
Yes.

Energy Performance Certificates

Building codes and energy performance certificates
There are voluntary schemes, such as Comprehensive Assessment System for Built Environment Efficiency (CASBEE). CASBEE is adopted as a voluntary programme by local governments.

In April 2014, Ministry of Land, Infrastructure and Transport established the building energy-efficient labelling system (BELS) certification. Buildings are classified as one (lowest) to five (highest) stars. Compared with CASBEE, BELS certification is more focused on energy efficiency.

Enforcement of codes and energy performance certificates
The two are enforced separately.

References