

SB08 Special Forum 20
Global Building Regulation and Sustainability

Japanese Building Regulatory Framework for Energy Efficiency

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Contents

- Japanese Policy Framework
- Regulatory Schemes
 - National government
 - The newly amended “Energy Conservation Law”
 - Local governments
 - Sustainable Building Reporting Schemes

Japanese Policy Framework for Energy Efficient Building/Housing

National

	Building (non-residential)	Housing
Regulatory	Energy Conservation Law Newly amended - Mandatory Report - New construction, extension, major repair, remodeling	
Economic	Low-interest loan - by Development Bank of Japan	Low-interest mortgage - by Japan Housing Finance Agency
	Tax incentives Extended - Upgrading, - Income Tax etc	Tax incentives New - Upgrading - Income & Fixed Asset Tax
	Subsidy for CO2 reduction leading project (housing & building) - FY2008~2012, JPY 5,000mil/year, – Up to 1/2 New	
Information		Housing Quality Assurance Law -Voluntary scheme -“Energy Efficiency” is optional and only for new buildings
	Labeling for Windows New -insulation performance	
	CASBEE Evolving + New tools	

Energy Conservation Law

National

(1979 ~, last amended in May 2008)

current policy (as of 2008)

(1) Energy Efficiency Standard

- Buildings (1980, 1993 & 1999)
- Housing (1980, 1992 & 1999 (& 2006 (facilities)))

(2) Mandatory report on energy conservation

- Buildings and housing larger than 2000m² (new construction, extension, alternation as well as major repair or remodeling)
- From building owners to local authorities
- Prior to construction

(3) Instructions when measures are unsatisfactory

- From local authorities to building owners

(4) Periodic report on maintenance

- Owners to local authorities
- once in 3 years.

Strengthen the Law...

	Building 2000m ² ~ (300m ² ~)		Housing 2000m ² ~ (300m ² ~)	
New construction	2002	2008 April 2010~	2005	2008 April 2010~
Extension & Alternation	2005	2008 April 2010~	2005	2008 April 2010~
Major Repairs & Remodeling	2005	2008 April 2010~	2005	2008 April 2010~
Periodic Report (every 3 years)	2005	2008	2005	

Instructions when measures are unsatisfactory


 April 2009 ~

improvement orders and penalties
 (2000 m² ~)

Energy Conservation Law

(Last amendment in May 2008)

National

(Enforcement in April 2010)

(i) For those who **build** or **sell** housing:

- Criteria of energy efficiency improvement for housing suppliers
- Introduction of recommendation, announcement, improvement orders (penalty) (for those supply more than a certain number)

(ii) For those who **design** or undertake **construction** of buildings:

- Instructions by the Minister for energy efficiency improvement and performance indication

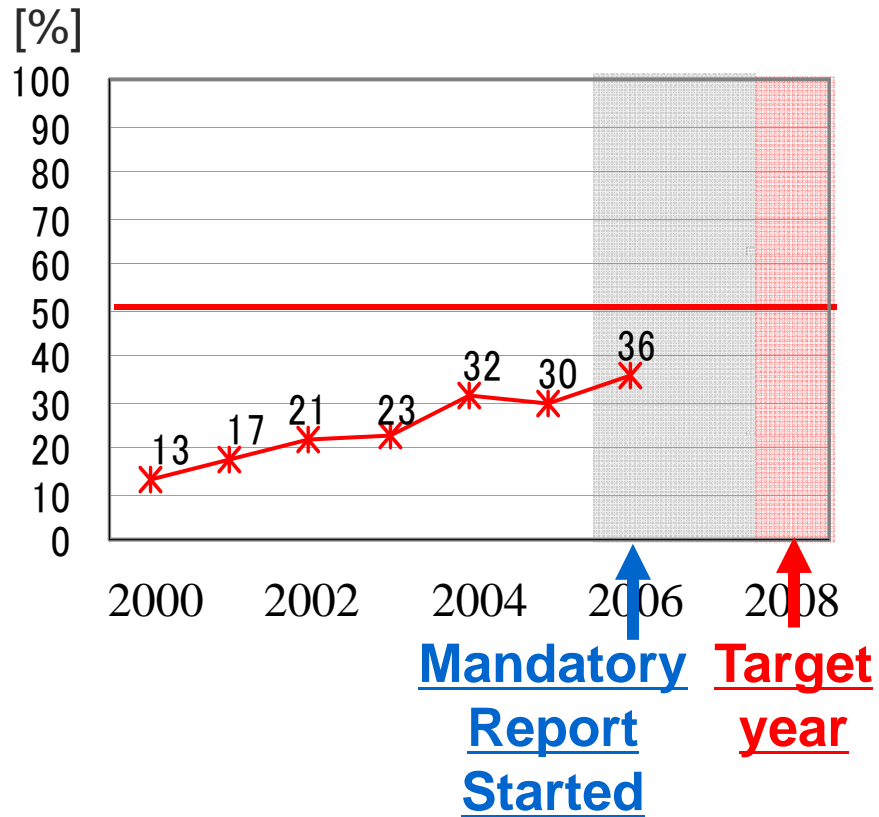
(iii) For those who **sell** or **rent** buildings:

- Mandatory effort for indication of energy efficiency performance towards consumers

Compliance Rate of 1999 Energy Efficiency Standard

New Housing

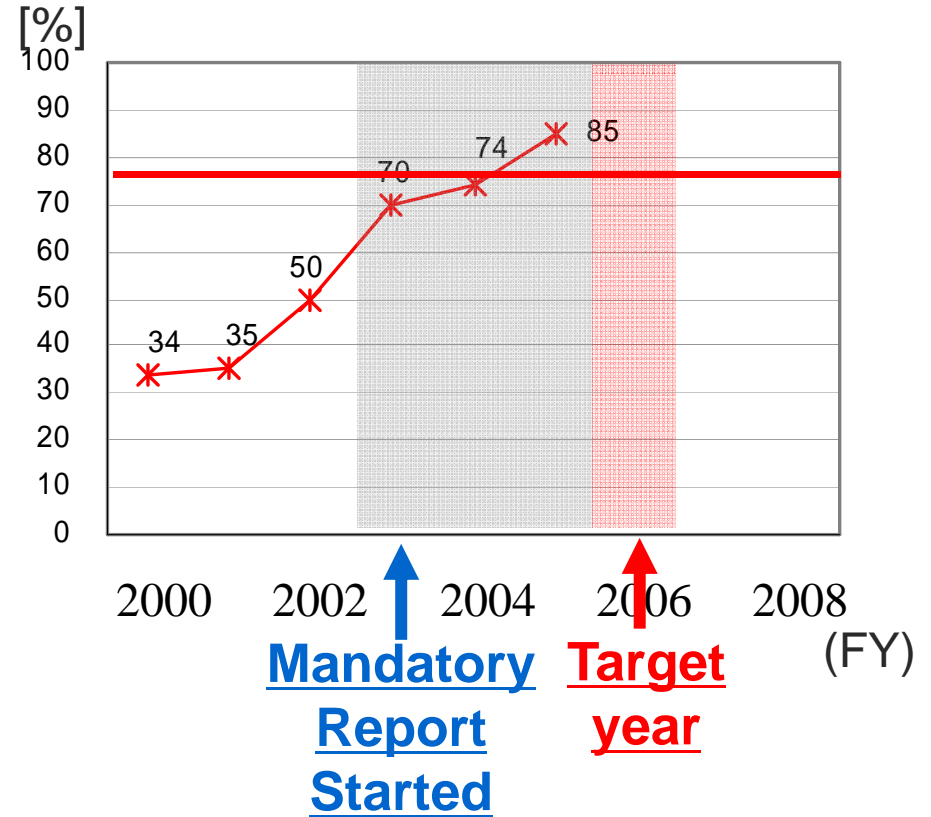
Target:
50% in FY2008



Source: New housing evaluated under Housing Quality Assurance Law (voluntary)

New Building

Target: (2000m²~)
80% by FY2006



Source: Building permits

Contents

- National Schemes

- Local Governments' Schemes (Example)

- Sustainable Building Reporting System & more...

Sustainable Building Reporting System (SBRS) by Local governments

Local

(2002~2008)



Tokyo: Own assessment system
Others: CASBEE (Localized)

Source: Japan Sustainable Building Consortium (JSBC), Copyright: IBEC

Localized CASBEE

- **Local authorities can tailor CASBEE to local conditions, such as climate and prioritized policies.**
 - (1) Use of CASBEE-NC (Brief version) as the original tool**
 - (2) Assessment criteria responding to the local standards**
 - (3) Weighting coefficient responding to the regional condition**
 - (4) Contents of assessment results published (on the website) responding to the local public needs**

SBRS: Nagoya City



- Target: All building owners intending to newly build or rebuild a building with floor area over 2,000 m²
- Requirement: To report the assessment result of CASBEE Nagoya.
- Published at Nagoya City's website.

The first municipal to have adopted CASBEE

<http://www.city.nagoya.jp/>

Advanced Applications of CASBEE by local governments

Local

1) Judging tool for giving premium extra-floor area

e.g.) Osaka City, Yokohama City & Nagoya City

2) Judging tool for subsidies to housing project

e.g.) Osaka City & Nagoya City

3) Judging tool for lower interest mortgage

e.g.) Kawasaki City, Sapporo City,
& Kitakyushu City



Thank you

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(references)

Economic Incentives

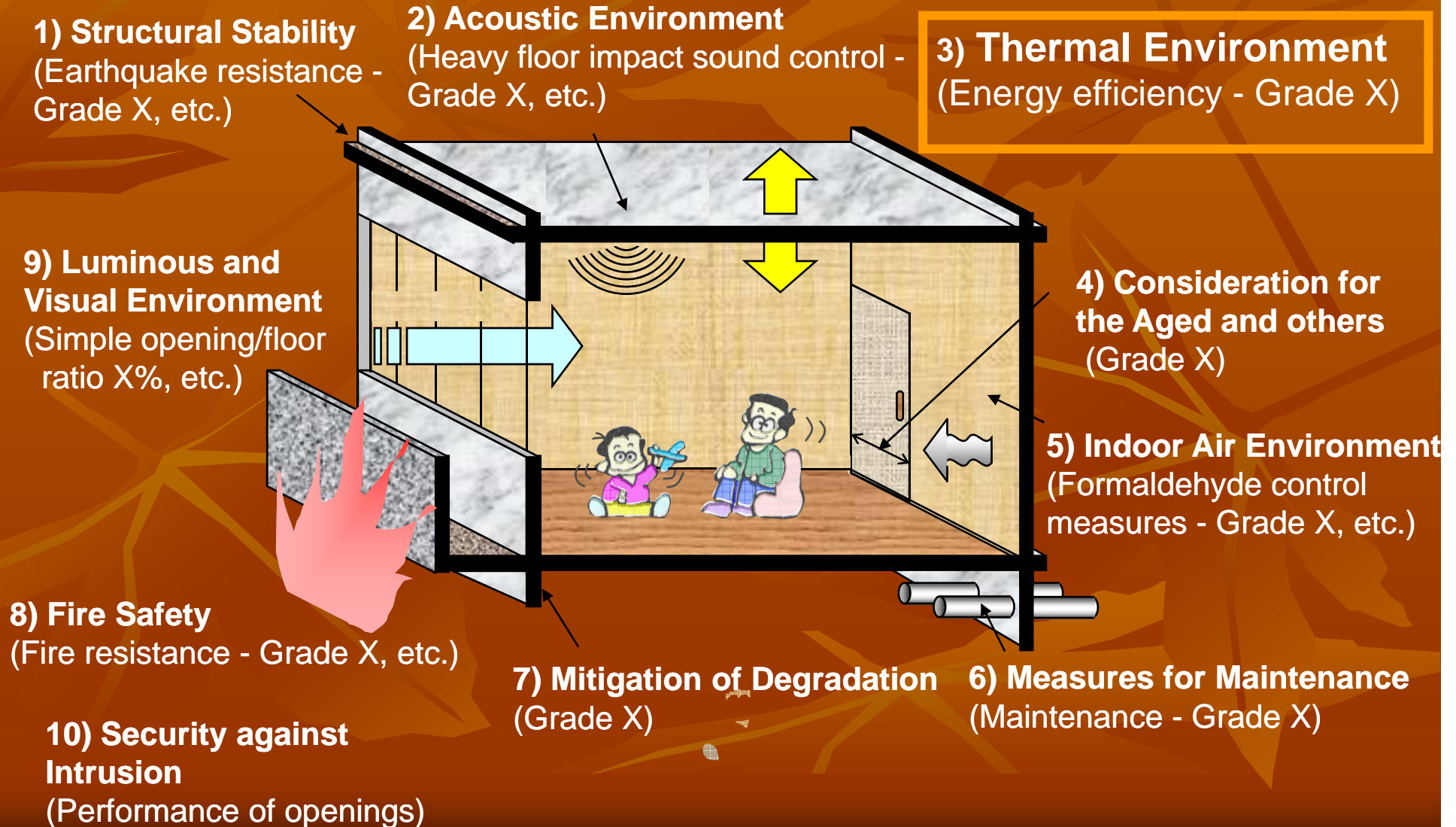
- (1) Subsidy for leading project for CO₂ emission reduction from Housing and Building
 - Started in April 2008
 - Budget: JPY 5000 million = USD 50 million, Up to 1/2
- (2) Tax incentive to promote upgrading of energy efficiency in existing housing and building stock
 - **Housing**
 - Income tax: April ~ December 2008 / 2.0% of Loans / 5 years / above JPY 300,000 / up to JPY 10 mil (incl. other constructions)
 - Fixed asset tax: April 2008 ~ March 2010 / above 300 mil JPY / 1/3 reduction from the Fixed Asset Tax of next year (up to 120 m²)
 - **Building**
 - Income tax, Corporate tax, Corporate inhabitant tax, Business tax for introduction of energy saving building systems / Special depreciation of 30% of acquisition value

Housing Quality Assurance Law (2000)

- ① New voluntary labeling scheme for the protection of consumers**
- ② Standardized criteria to evaluate and indicate a wide variety of housing performance**
 - 1) Structural Stability 2) Acoustic Environment 3) Thermal Environment
 - 4) Consideration for the Aged and others 5) Indoor Air Environment
 - 6) Measures for Maintenance 7) Mitigation of Degradation 8) Fire Safety
 - 9) Luminous and Visual Environment 10) Security against Intrusion
- ③ Results of evaluation are indicated by rank**
- ④ Enables consumers to compare the performance of housing and to make a rational choice**

Items of Housing Quality

(New housing: 10 fields)

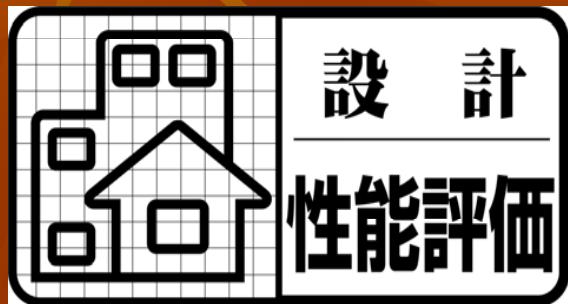


Designated Evaluation Bodies and Logos for Housing Quality Assurance Law

- More than 100 registered evaluation bodies

- Logos
for Housing Performance Evaluation Reports

**design-stage
(new housing)**



**construction-stage
(new housing)**



**(existing
housing)**



Advanced Applications of CASBEE by local governments

Local

1) Judging tool for giving premium extra-floor area

■ Osaka City

Permission for premium extra-floor is given when the assessment result gets rank B+ or above by CASBEE-Osaka.

■ Yokohama City

Permission for premium extra-floor is given when the assessment result gets rank A or above by CASBEE-Yokohama.

■ Nagoya City

Buildings with rank S by CASBEE-Nagoya are permitted to use the premium extra-floor area ratio up to 250%, whereas this value is 200 % for buildings with lower ranks.

Advanced Applications of CASBEE by local governments

Local

2) Judging tool for subsidies to housing project

■ Osaka City

Buildings above rank A by CASBEE-Osaka can apply for subsidies.

Subsidies are given only to higher-score buildings.

■ Nagoya City

Subsidies are given only to higher-score buildings assessed by CASBEE-Nagoya.

Advanced Applications of CASBEE by local governments

Local

3) Judging tool for lower interest rates

■ Kawasaki City

- For residential buildings, the CASBEE results must be displayed on sales advertisements, e.g. on website, in publication.
- Two private financing companies in Kawasaki city (“Bank of Yokohama” and “The Sumitomo Trust & Banking Co., Ltd”) have decided to offer the special interest rates on housing loans for those who are buying residential units that marked high BEE value in their CASBEE results.

Energy Efficiency Standard of Buildings

- Energy standard of buildings consists of
 - “Perimeter Annual Load (PAL)” and
 - “Coefficient of Energy Conservation (CEC)”.
- CEC:
 - CEC/AC (Air Conditioning)
 - CEC/V (Ventilation)
 - CEC/L (Lighting)
 - CEC/HW (Hot Water Supply)
 - CEC/E (Elevator)
- “PAL” and “CEC”: set by building use
i.e. for office, hotel, hospital, retail, restaurant,
school, public hall and factory.

PAL & CEC

(1) PAL: Performance of Building Envelope
(Perimeter Annual Load)

$$PAL = \frac{\text{Annual Air-con Load in perimeter zone (MJ/year)}}{\text{Area of perimeter zone (m}^2\text{)}}$$

(2) CEC: Performance of Building Equipment
(Coefficient of Energy Consumption)

$$CEC = \frac{\text{Actual Energy Consumption (MJ/year)}}{\text{Standard Energy Consumption (MJ/year)}}$$

Energy Conservation Standards for Houses

- The country is divided into six areas
- Standards for thermal insulation, airtightness, sun shielding, etc., are provided for each area.

Item		Before 1980	1980 standard	1992 standard	1999 standard (current)
Efficiency	Heat loss factor	—	Less than 5.2 W/(m ² K)	Less than 4.2 W/(m ² K)	Less than 2.7 W/(m ² K)
	Equivalent clearance area	—	—	—	Less than 5.0 cm ² /m ²
Specification	Thermal insulating material (external walls)	None	Glass wool 30 mm	Glass wool 55 mm	Glass wool 100mm
	Thermal insulating material (ceilings)	None	Glass wool 40 mm	Glass wool 85 mm	Glass wool 180mm
	Openings (windows)	Aluminum sash + single pane	Aluminum sash + single pane	Aluminum sash + single pane	Aluminum double sash or Aluminum sash + double glazing
Annual cost of air conditioning*		Approx. ¥133,000/year	Approx. ¥92,000/year	Approx. ¥75,000/year	Approx. ¥52,000/year
Annual energy consumption for heating & air conditioning*		Approx. 56GJ	Approx. 39GJ	Approx. 32GJ	Approx. 22GJ

* Trial calculation by MLIT based on certain assumptions.

Economic Incentives

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National

Insulation performance labeling scheme for windows

- voluntary labeling scheme
- under the Energy Conservation Law
- Separate labels for glass or frame are also acceptable (because of the supplier's structure in this industry).

for Window



Star Rating: 4 grades
U-value (recommendation)

for Glass



for Frame



Enforced on 1st April, 2008