

Comprehensive Assessment System for the Promotion of Green Buildings

Project Profiles No.15

- CASBEE Yokohama -



CASBEE Yokohama
image character
"Casbippi"



**By promoting eco-friendly building designs,
this program has helped reduce
4,500 tons of CO₂ a year.**

Source of Photos: Institute for Building Environment and Energy Conservation

Background and Objective

CASBEE or Comprehensive Assessment System for Built Environment Efficiency is a mechanism for evaluating and rating the environmental performance of buildings. It was developed in 2001 through joint efforts between industry and academia with the support of the Japanese government. In July 2005, Yokohama City developed the "Reporting System for Environment-conscious Buildings" to encourage building owners to prepare reports on environment-conscious building which consists of building designs and their environmental performance based on CASBEE. The system requires building owners to submit such reports when constructing buildings with floor areas of more than 2,000 m² (before March 2010, it was 5,000 m²). Since 2010, owners also have had to show the CASBEE label (see image at right)

when advertising the building for selling/leasing. In Yokohama, CASBEE rating emphasizes the: 1) prevention of global warming, 2) mitigation of the heat island effect, 3) extension of service life, and 4) respect for townscape. The reporting is optional but encouraged when constructing buildings with less than 2,000 m² floor areas or detached houses. The city also offers a certification system for eco-friendly buildings based on evaluations done by special academic advisers at the request of building owners. This system intends to promote corporate social responsibility among building owners.

Impact of CASBEE

In 2005–2012, reports for approximately 970 buildings were submitted, about 80% of which were assessed highly (with S, A, or B+ rating), indicating that the evaluation system has motivated building owners to adopt greener designs. In particular, after the introduction of the label, the percentage of buildings with higher ratings has increased. Based on submitted reports on collective housing in 2011 alone, it is estimated that the system contributed to CO₂ reduction of 4,446.5 tons.



Source: Housing and Architecture Bureau, City of Yokohama

City of Yokohama website—CASBEE (JAPANESE)

<http://www.city.yokohama.lg.jp/kenchiku/center/kankyo/casbee>

CASBEE Yokohama

CASBEE Methodology

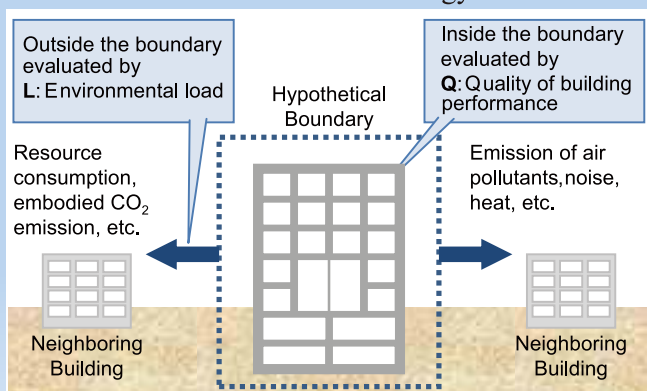
Built environment efficiency (BEE) is an indicator of CASBEE calculated from built environment quality like habitability, green coverage, and built environment load such as the application of renewable energy and recycling of resources.

$$BEE = \frac{Q \text{ (Built Environment Quality)}}{L \text{ (Built Environment Load)}}$$

Q: represents improved living amenity for building users and for the surrounding area.

L: represents the building's negative environmental impact on its surrounding area.

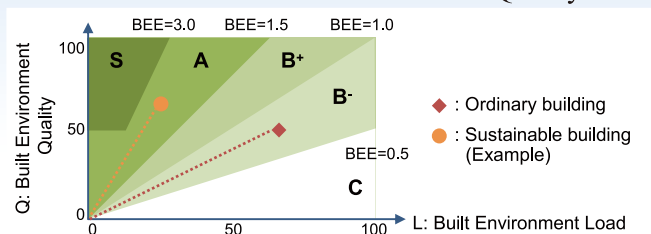
CASBEE Methodology



Source: JICA Study Team based on information from Housing and Architecture Bureau, City of Yokohama

The higher the Q value and the lower the L value, the higher the BEE value is. The assessment result is based on the five categories listed below.

Assessment of Built Environment Quality



Rating	Assessment	BEE Q Value	Expression
S	Excellent	BEE ≥ 3.0, Q ≥ 50	★★★★★
A	Very Good	3.0 > BEE ≥ 1.5	★★★★★
B+	Good	1.5 > BEE ≥ 1.0	★★★
B-	Slightly Poor	1.0 > BEE ≥ 0.5	★★
C	Poor	BEE < 0.5	★

Source: JICA Study Team based on information from Housing and Architecture Bureau, City of Yokohama

Iconic Sustainable Buildings

Below are three buildings certified by CASBEE Yokohama (photos on page 1).

Yokohama Dia Building

- ✓ One of the largest solar panels in Japan (approx. 1,500 m²) installed on the exterior wall of the office tower.

Keio University Hiyoshi Campus Collaboration Complex

- ✓ Equipped with cogeneration and ice thermal storage systems, the building is highly efficient in energy and power consumption in summer.

Minato Mirai Center Building

- ✓ Distinctive exterior design in harmony with the buildings in the same block.
- ✓ Safe and durable due to the combined use of seismic isolation and seismic response control systems.
- ✓ Daylighting system (T-Soleil) installed in an atrium in the common office area.
- ✓ Automatic blinds controlled by sunlight tracking sensors and lighting control systems.



Source: Institute for Building Environment and Energy Conservation

Interview -Voice of the Yokohama City Government

Before 2010, S and A ratings for large collective housing with floor areas of more than 5,000 m² accounted for 27% of submitted reports. After the labeling system was introduced, the share of such ratings increased to 49%. The labels are shown in magazine and newspaper advertisements of properties for lease/sale, allowing interested parties to compare CASBEE ratings. It is assumed that this has motivated building owners to pursue greener designs and has also improved the environmental awareness of people who rent/purchase such properties.

