

# Environmental Performance Assessment Tool for Municipalities

## Overview of **CASBEE**<sup>®</sup> for Cities

Comprehensive **A**ssessment **S**ystem for **B**uilt **E**nvironment **E**fficiency

This assessment tool helps identify environmental, social and economic characteristics of your city and quantify the effectiveness of your citywide policies

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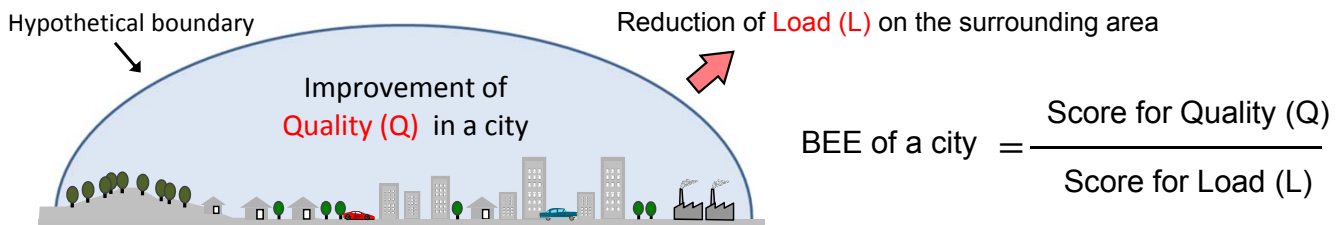
## Background of the development of the tool

Upon the adoption of the Aalborg Charter in Denmark in 1994, people became highly aware of the importance of actions at the city level for the creation of low carbon societies. Since then, countries around the world have been implementing a variety of programs and policies. In order to evaluate (estimate) the effectiveness of these city-led policies, the Japan Sustainable Building Consortium (JSBC) decided to develop a new assessment tool for cities, applying the methodology of a Comprehensive Assessment System for Built Environment Efficiency (CASBEE) — a widely used system in Japan.

## Outline of CASBEE for Cities

“CASBEE for Cities” (hereinafter referred to as “CASBEE City”) is a system for comprehensively evaluating the environmental performance of cities, using a triple bottom-line approach of “environment,” “society” and “economy.” The JSBC has been developing this new tool with the cooperation of the Promotion Council of Future City Initiative (PCFCI) (Secretary: The Regional Revitalization Bureau of Cabinet Secretariat). The PCFCI consists of Eco-Model Cities, Future cities and other local governments, government related organizations, relevant ministries and agencies, private companies and other bodies in Japan.

When evaluating a city, CASBEE City sets a hypothetical boundary to enclose the city. In doing so, it can evaluate the Built-Environment Efficiency (BEE) of the city. Improvement in environmental quality and activities (referred to as “Quality,” or “Q”) within the enclosed space and reduction in negative environmental impact (referred to as “Load,” or “L”) on the area beyond the boundary lead to higher BEE values, thus a better rating.



## Assessment items of CASBEE City

CASBEE City calculates Environmental Load (L) of cities and evaluates Quality (Q) in cities from the following assessment items

	Major category	Minor category	Sub-category	
Quality (Q)	Q1 Environmental aspects	Q1.1 Nature conservation	Q1.1.1	Ratio of green and water spaces
		Q1.2 Local environmental quality	Q1.2.1	Air
			Q1.2.2	Water
		Q1.3 Resources recycling	Q1.3.1	Recycling rate of general waste
	Q1.4 CO <sub>2</sub> absorption	Q1.4.1	CO <sub>2</sub> absorption by forests	
	Q2 Social aspects	Q2.1 Living environment	Q2.1.1	Adequate quality of housing
			Q2.1.2	Traffic safety
			Q2.1.3	Crime prevention
			Q2.1.4	Disaster preparedness
		Q2.2 Social services	Q2.2.1	Adequacy of education services
			Q2.2.2	Adequacy of cultural services
			Q2.2.3	Adequacy of medical services
			Q2.2.4	Adequacy of childcare services
			Q2.2.5	Adequacy of services for the elderly
		Q2.3 Social vitality	Q2.3.1	Rate of population change due to births and deaths
Q2.3.2	Rate of population change due to migration			
Q3 Economic aspects	Q3.1 Industrial vitality	Q3.1.1	Amount equivalent to gross regional product	
	Q3.2 Financial viability	Q3.2.1	Tax revenues	
		Q3.2.2	Outstanding local bonds	
Q3.3 Emission trading	Q3.3.1	Contribution inCO <sub>2</sub> reduction in other regions		
Environmental load (L)	L1 CO <sub>2</sub> emissions from energy sources	L1.1 Industrial sector	—	—
		L1.2 Residential sector	—	—
		L1.3 Commercial sector	—	—
		L1.4 Transportation sector	—	—
	L2 CO <sub>2</sub> emission from non-energy sources	L2.1 Waste disposal sector and other sectors	—	—

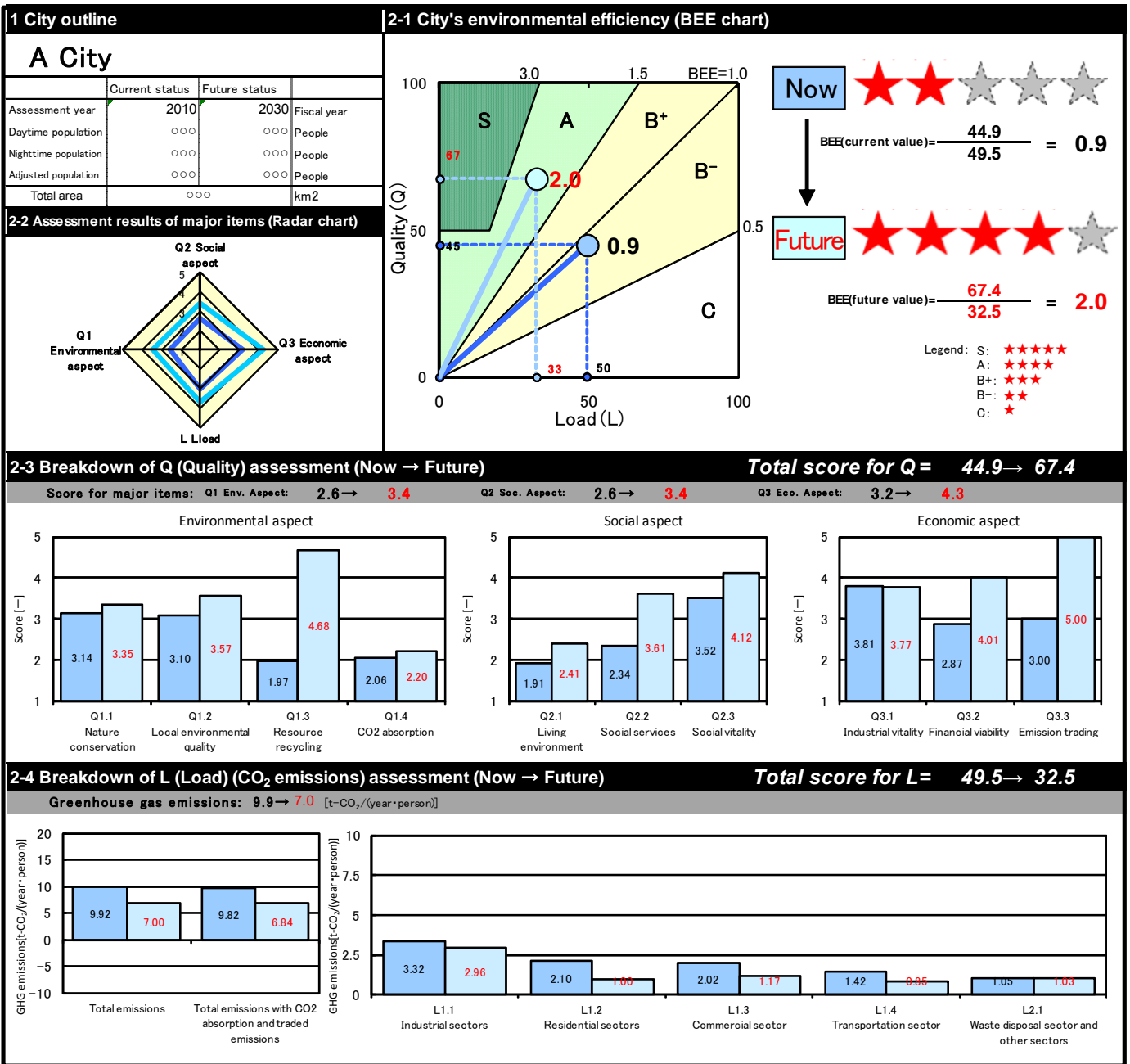
Note: After-mentioned CASBEE-City “professional edition” further includes assessment items such as: Noise, Chemicals, Efforts and policies to improve the environment and biodiversity, Adequate provision of parks and open spaces, Adequate sewage systems, Adequacy of services for the disabled, Progress toward an information society, Efforts and policies for vitalizing society, Ratio of change in the number of employees, Index equivalent to the number of people visiting the city and Efficiency of public transportation

## Example of output given by the CASBEE-City tool

# CASBEE<sup>®</sup> - City (Standard edition)

## Assessment Results

Manual: CASBEE-City (2012 Edition) Software: CASBEE-City\_2012v1.00.xls



## Built-Environment Efficiency (BEE) of cities

CASBEE City carries out assessment of each category of Q and L. Total scores for Q and L are each given on a 100-point scale. Then, for comprehensive assessment, a BEE value is calculated from Q and L and shown in a 2D graph, called a BEE chart, which plots a Q value on the vertical axis and an L value on the horizontal axis. The gradient of the straight line that passes through the origin (0, 0) and the point of intersection of Q and L values represents the BEE of a city. CASBEE City classifies the results in five ranks: S (Excellent), A (Very Good), B+ (Good), B- (Fairly Poor) and C (Poor) based on the BEE value.

## Assessment results of major items (Radar chart)

A radar chart collectively representing the scores of Q1, Q2, Q3 and L is placed in top left part of the assessment result sheet, in which features of the city's environment-related efforts can be recognized immediately.

## Breakdown of Q (Quality) and L (Load) assessment (Bar chart)

The detailed assessment results of the city are expressed as a bar chart by individual assessment items in the lower half part of the assessment result sheet.

## ■ CASBEE-City “Standard edition” and “Professional edition”

There are two editions available for you to use:

- 1) **Standard edition** – allows you to conduct an assessment of your city based on the public statistical information which reduces the time and human resources required to conduct city assessment (introduced in this brochure).
- 2) **Professional edition** – allows you to conduct an assessment of your city from totally comprehensive perspective which helps us to gain a deeper understanding of the city condition.

## ■ Two principles for assessing Environmental Load (L): “emitter-pays principle” and “beneficiary-pays principle”

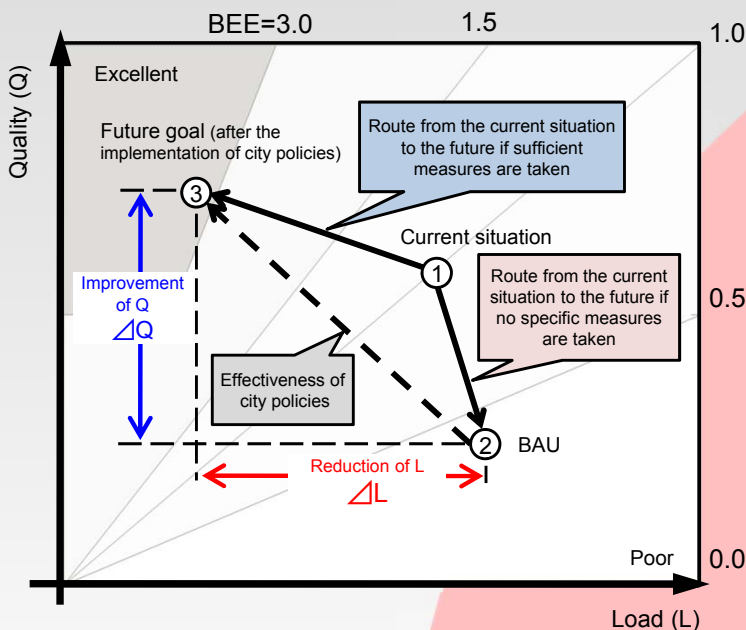
By calculating Environmental Load (L) from GHG emissions, industrial cities tend to receive lower scores. Acknowledging the fact that environmental loads are high, industrial cities need to continue their efforts to reduce emissions. Yet we must not forget that the entire nation benefits from the industrial activities in these cities (i.e., the products that are produced). With this aspect in mind, the JSBC developed two assessment methods for the calculation of GHG emissions resulting from industrial activities. CASBEE City uses “**emitter-pays principle,**” which allocates all GHG emissions to producing areas, and “**beneficiary-pays principle,**” which reallocates GHG emissions to consuming areas. Assessment based on standard edition introduces “beneficiary-pays principle” while professional edition introduces both principles.

## ■ Assessment of current and future environmental performance

CASBEE City aims to evaluate the current environmental performance of cities. It also aims to assess the projected effect of city policies by assuming a case where no measures are taken (Business As Usual [BAU]) and a case where specific measures are taken, and comparing the difference in the two scenarios.

## ■ Effectiveness of city policies: expected improvement from the current situation

CASBEE City measures the current BEE of a city and estimates the BEE after the implementation of policies. By comparing the two values, CASBEE City quantitatively evaluates (estimates) the effectiveness of city policies and presents the results in an easy-to-understand form. We hope this new tool will help administrative officers and other stakeholders to share a common understanding of the current state and cooperate together in setting goals and pursuing them in order to create a low-carbon society.



### Reference:

- 1) **Eco-Model City Project**  
<http://ecomodelproject.go.jp/en/>
  - 2) **“Future City” Initiative**  
<http://futurecity.rro.go.jp/en/>
  - 3) **Institute for Building Environment and Energy Conservation**  
<http://www.ibec.or.jp/>
  - 4) **Japan Sustainable Building Consortium**  
<http://www.jsbc.or.jp/>
- The committee for the development of CASBEE City would like to express its sincere gratitude to the members of the Promotion Council of Low Carbon Cities and all others who have contributed to the development of this document.
  - Please note that the main objective of this document is to introduce the assessment tool that is currently under development; thus, this tool is subject to change in the future.

■ Edited by: “Committee for the Development of an Environmental Performance Assessment Tool for Cities

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