

IGES-ERI Policy Research Workshop
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Assessing the effectiveness of
Reporting System of the Eco-friendly
Building Planning

Jin Zhen

Climate Change Group, IGES

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What is “Eco-friendly Building Plan System”?



- ◆ reporting system used by local governments, based on ordinances or guidelines
- ◆ The aim is to encourage builders to take eco-friendly measures when building or renovating buildings above a certain size.
- ◆ limiting thermal burden of buildings, promoting the use of natural energies, improving the efficiencies of equipment and systems, and efficient operation of the buildings.

Research objectives



- ◆ Identify local bodies that introduced the system
- ◆ Analyze characteristics of the introduced systems
- ◆ Assess the operational effectiveness
- ◆ Identify options for improvement

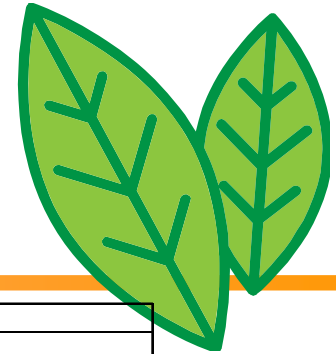
(1) Research methods and focusing points



◆ Ordinance analysis + Interviews & surveys

Criteria	Analysis method	Content
System design	<ul style="list-style-type: none">● Ordinance analysis	<p>Ordinance analysis of 15 local bodies</p> <ul style="list-style-type: none">• Regulation structure• Degree of regulation
Operational effectiveness	<ul style="list-style-type: none">● Interviews and surveys to local bodies	<ul style="list-style-type: none">• No. of notifications• No. of persons in dept. in charge• policy officials' thoughts on system's effectiveness• etc.

Ordinance analysis in Regulation structure



建築物計画書制度(※1)																		
団体名			都道府県								政令指定都市							
			埼玉県	東京都	長野県	静岡県	愛知県	京都府	大阪府	兵庫県	徳島県	札幌市	さいたま市	横浜市	川崎市	名古屋市	京都市	
制度の概要	制度導入時期		2009.10.1	2002.06.1	2007.02.20	2007.07.1	2009.10.1	2006.04.1	2006.04.1	2006.10.1	2009.04.1	2007.11.1	2009.04.1	2005.07.1	2006.10.1	2004.04.1	2005.10.1	
	対象	新築・増築	○	○	○	○	○(改築)	○	○		○(改築)	○	○(改築)	○(改築、移転)	○(改築)	○	○	
		修繕・模様替え			○													
		空気調整設備の設置・改			○													
	義務	努力義務	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
		最低基準遵守義務		※2														
届出時期		工事着手21日前	確認申請30日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	工事着手21日前	確認申請21日前	工事着手21日前	工事着手21日前		
計画書の公表		ウェブ公開	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
提出義務確保のための措置・手法	計画書の提出は虚偽記載	是正措置	勧告	○	○	○(拒否の場合のみ)	○	○	○	○	○	○	○(拒否の場合のみ)	○(拒否の場合のみ)	○(提出しない場合のみ)	○(提出しない場合のみ)	○(提出しない場合のみ)	
		提出命令																
	制裁措置	公表	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
		罰則																
その他の規制の仕組み	提出した計画書の内容が不十分の場合の対応	是正措置	指導・助言		○(指導、助言)	○(知事の指導努力義務)					○(指導、助言)	○(指導、助言)	○(指導、助言)	○(指導、助言)	○(指導、助言)	○(指導、助言)		
			勧告		○													
			是正命令															
	をな計画と異なる工事	制裁措置	公表		○													
			罰則															
			罰則															
	調査権限	調査権限	資料・報告書の徴収	○	○	○	○	○	○	○	○		○	○	○	○	○	
			立入調査	○	○			○	○※3					○	○	○		
		報告書の提出拒否、または虚偽の記載	過料															
			刑罰											○(5万円以下)	○(懲役6か月、30万円以下)		○(10万円以下)	
			公表															
			過料															
調査・検査の拒み、妨害、忌避	公表																	
	刑罰		○(10万円以下)			○						○(20万円以下)	○(懲役6か月、30万円以下)		○(10万円以下)			

※1 2009年末までの条例内容 ※2 東京都では、2010年1月1日より導入、最低基準遵守義務を導入 ※3 特定緑化建築物が対象

Surveys To obtain information on operation of the system



Survey targets	Survey scale
Questionnaire survey (conducted : 6–22 January 2010, method of collection : e-mail to departments in charge, <u>all 21 local government bodies which had adopted the system at the time of my survey and had a 100 percent reply ratio</u>)	21 local bodies
Telephone survey (Survey content : no. of notifications in FY2008, guidance on content of notification, whether advice was given/content of advice, operational issues)	17 local bodies
Direct hearing survey (Survey content : measures to improve notification ratio, measures to improve standards compliance rate, state of linkage btw. departments, system operation issues)	6 local bodies, 1 business



RESULTS

(2-1) Current status of system introduction



- ◆ By 2012, 28 local bodies, broken down as 13 prefectures and 15 designated cities, had introduced the system.
- ◆ This accounts for more than 40 percent of the total of 65 prefectures and designated cities in Japan.
- ◆ And among those 28 bodies, 90 percent use CASBEE as the assessment criteria(except Tokyo Met. Gov't and Nagano Prefecture).

(2-2) Current status of system introduction



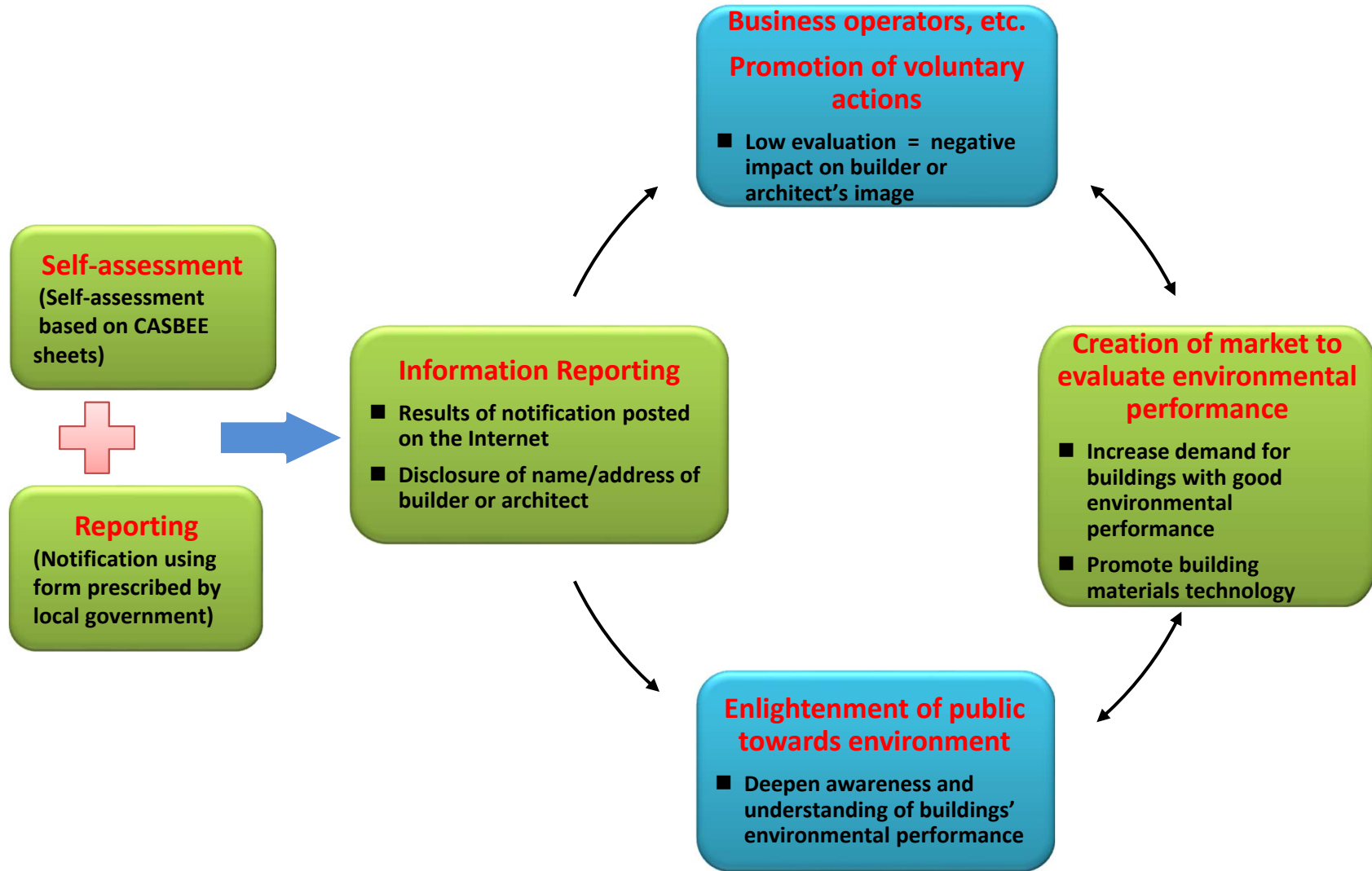
- ◆ At the time, 18 bodies, set the notification requirement at a floor area of 2,000 square meters or over.
- ◆ 3 bodies \Rightarrow 5,000 or over
- ◆ 1 bodies(Tokyo) \Rightarrow 10000 or over.
 - since 2010 they have expanded the subjected buildings to 5000 square meters.
- ◆ 1,514 notifications had been submitted by 2008

(3-1) Essential elements of the Eco-friendly Building Plan System



- ◆ Common elements observed in 21 local bodies:
=> Self-assessment + Reporting + Disclosure
- ① Self-assessment by the builders
- ② Assessment reporting to local gov'ts = legal obligation (false notification or refusal to submit notification resulting in announcement of violation or a fine)
- ③ Public disclosure of reported assessment results by local gov'ts
 - Posting on local government website
 - Inspection by dept. in charge of policy

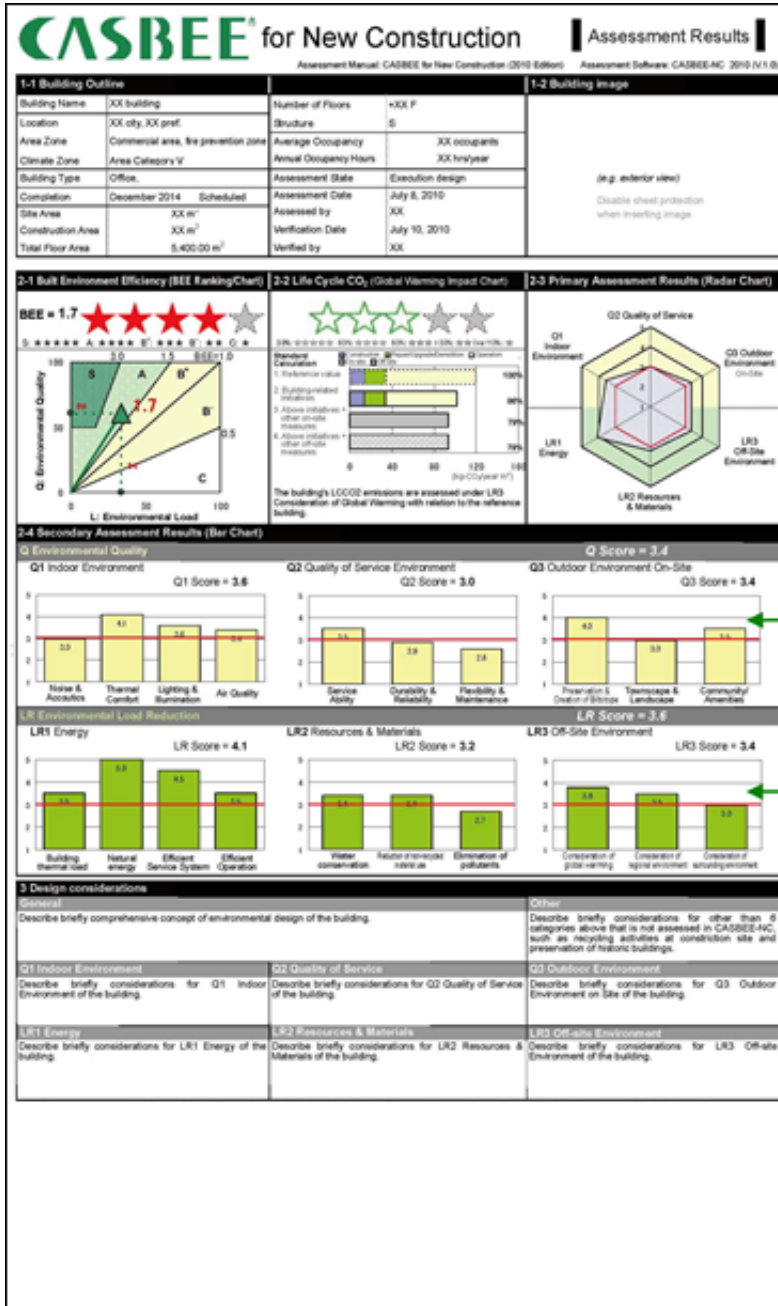
Eco-friendly Building Plan System



(3-2) different perceptions in the Eco-friendly Building Planning System



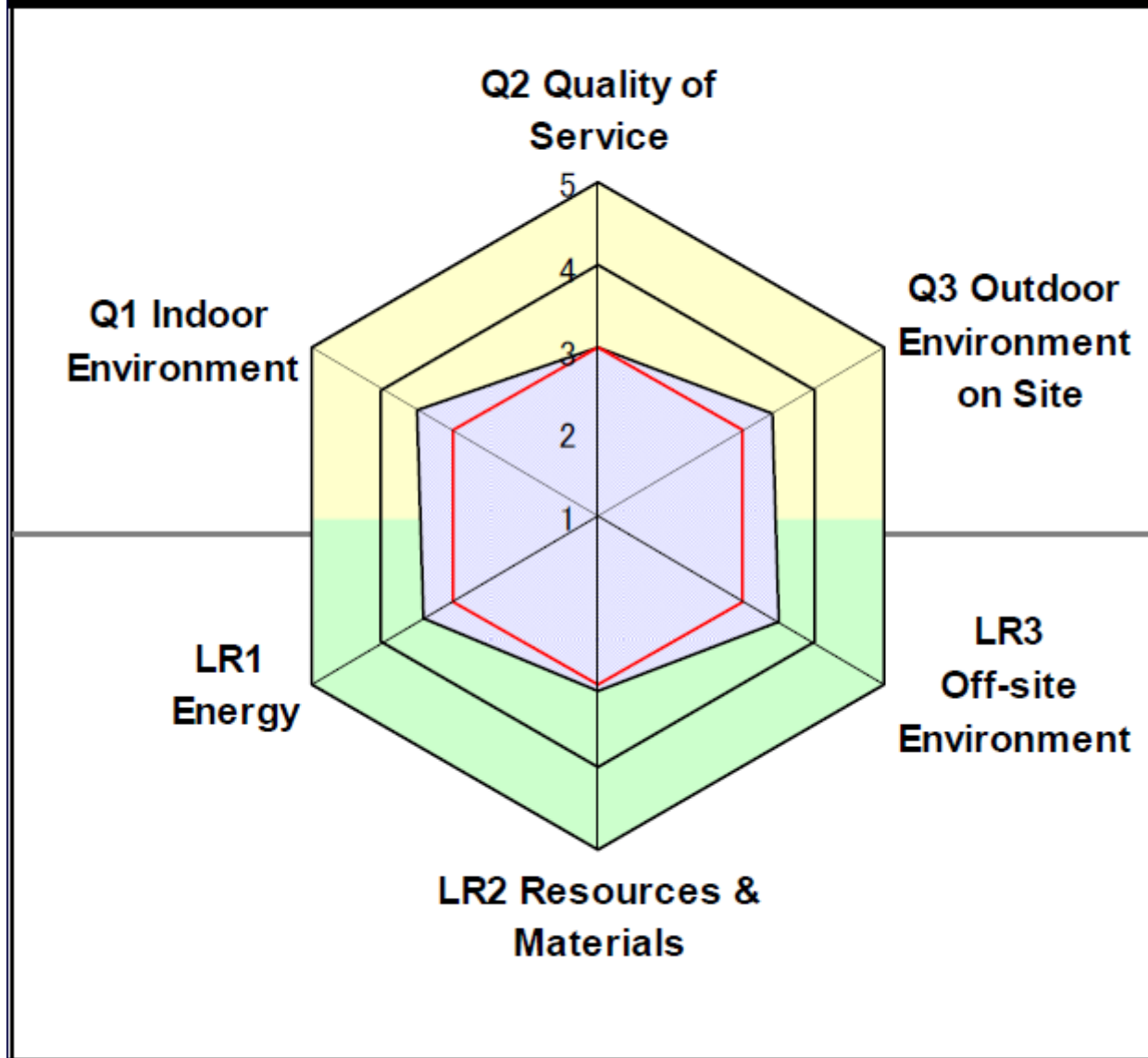
- ◆ local governments and builders have different perceptions of whether this system is a regulatory system or not.
- ◆ Local governments' perception: this system does not make it mandatory for builders to introduce specific measures
- ◆ Builders' perception: the system requires the builder to prepare document and submit a notification, and provides for penalties such as announcement of a violation or payment of a fine in the case of refusal to submit report.



Assessment Item	Assessment Method	Score	Weight	Max. Score	Weighted Score	Max. Weighted Score
1-1 Building Outline		100	1.0	100	100	100
1-2 Building Image		100	1.0	100	100	100
2-1 Built Environment Efficiency (BEE)		1.7	10	10	17	10
2-2 Life Cycle CO ₂		100	1.0	100	100	100
2-3 Primary Assessment Results		3.4	10	10	34	10
2-4 Secondary Assessment Results		3.4	10	10	34	10
3 Design considerations		100	1.0	100	100	100

- Comprehensive Assessment System for Built Environment Efficiency
- the assessment criteria used by over 90 percent of local bodies.
- It is provided free of charge as an Excel file to individuals and local government bodies.

2-2 Assessment results of Major Categories (radar chart)



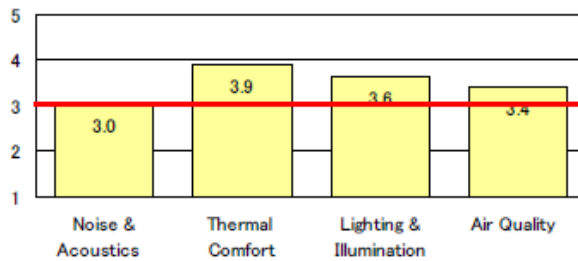
2-4 Assessment results of Medium-level categories (bar charts)

Q Environmental Quality

Score of Q= 3.3

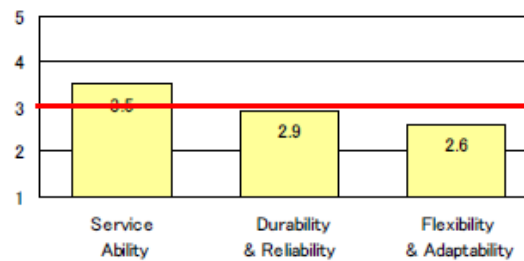
Q1 Indoor Environment

Score of Q1= 3.5



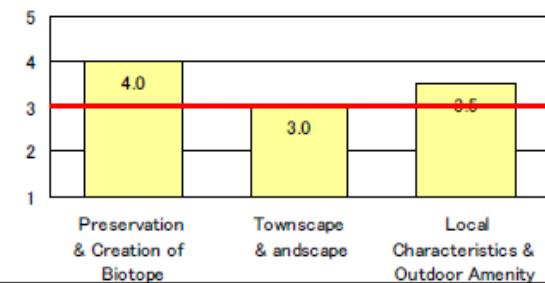
Q2 Quality of Service

Score of Q2= 3.0



Q3 Outdoor Environment on Site

Score of Q3= 3.4

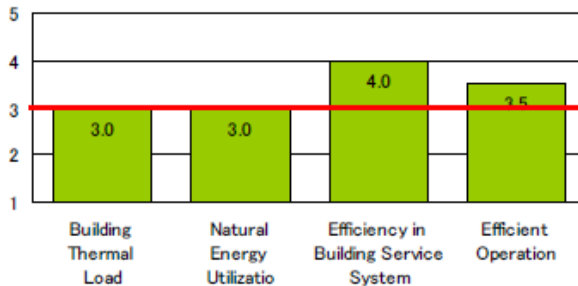


LR Environmental Load Reduction

Score of LR= 3.3

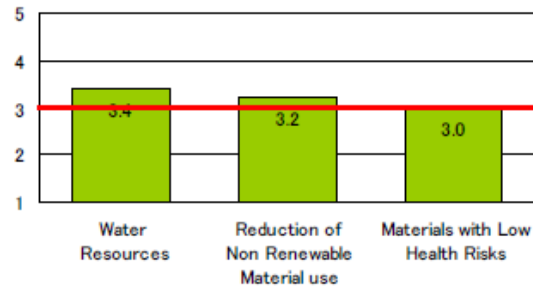
LR1 Energy

Score of LR1= 3.4



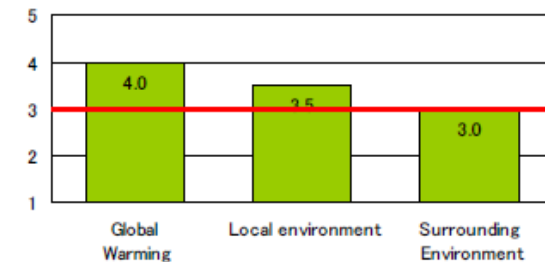
LR2 Resources & Materials

Score of LR2= 3.1



LR3 Off-site Environment

Score of LR3= 3.5

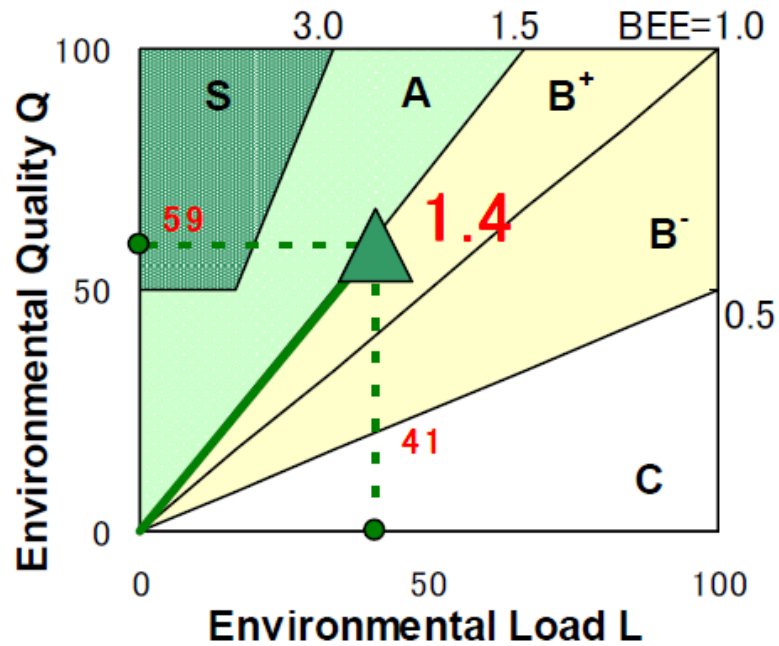


2-1 Building Environmental Efficiency (rank and chart)

BEE = 1.4



S: ★★★★★ A: ★★★★★ B⁺: ★★★ B⁻: ★★ C: ★

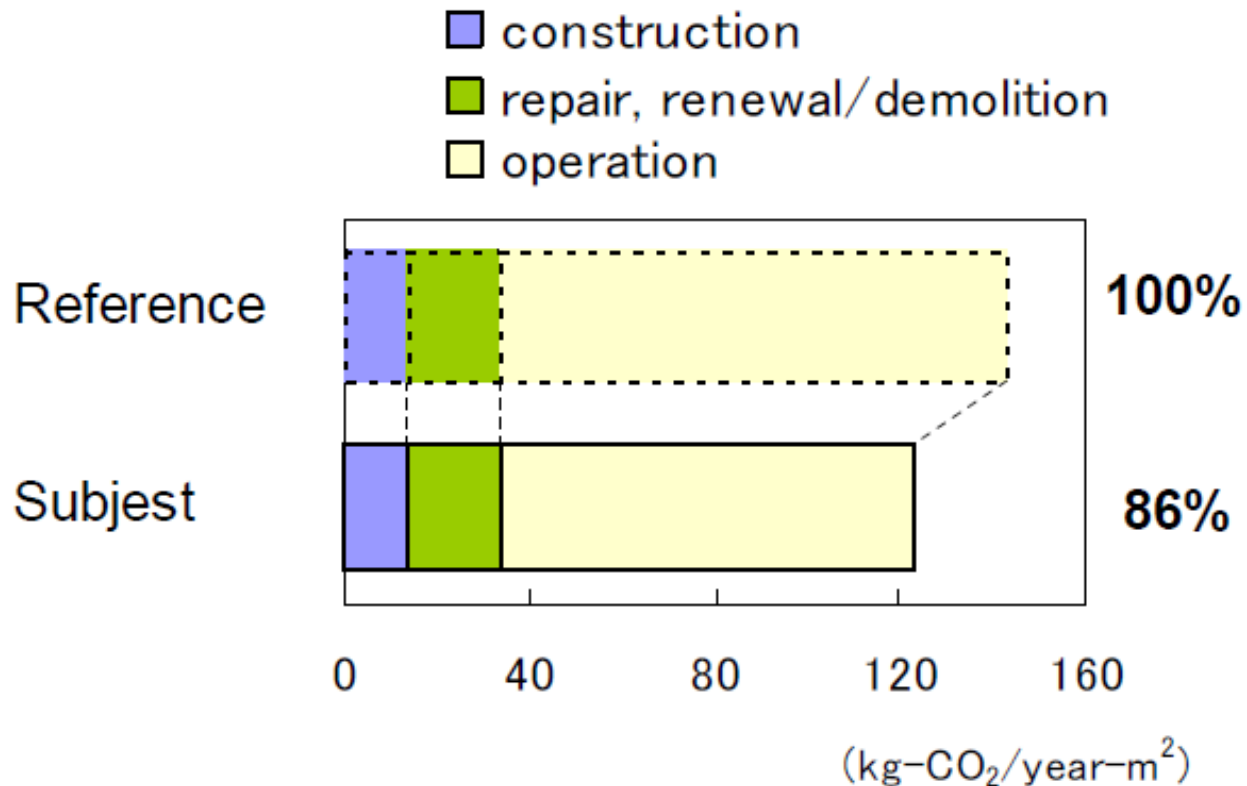


$$\begin{aligned}
 \text{BEE} &= \frac{\text{Quality}}{\text{Load}} \\
 &= \frac{(Q_1 + Q_2 + Q_3)}{(L_1 + L_2 + L_3)} \\
 &= \frac{59}{41} = 1.4
 \end{aligned}$$

ライフサイクルCO₂計算シート(標準計算用)

		評価対象					参照値		
		kg-CO ₂ /年m ²			kg-CO ₂ /年m ²	kg-CO ₂ /年m ²			
		レベル3	レベル4	レベル5	採点結果	CO ₂ 排出量	採点結果	CO ₂ 排出量	
1. 建設に係るCO₂排出量									
1-1. 評価結果のCO ₂ 排出量への置き換え									
Q2/2.2.1 躯体材料の耐用年数	事務所	延床面積比率 1.00	13.85	13.85	13.85	3.0	13.85	3.0	13.85
	学校	0.00	12.66	12.66	12.66	3.0	12.66	3.0	12.66
	物販店	0.00	24.24	24.24	24.24	3.0	24.24	3.0	24.24
	飲食店	0.00	24.24	24.24	24.24	3.0	24.24	3.0	24.24
	集会所	0.00	13.47	13.47	13.47	3.0	13.47	3.0	13.47
	工場	0.00	22.71	22.71	22.71	3.0	22.71	3.0	22.71
	病院	0.00	13.24	13.24	13.24	3.0	13.24	3.0	13.24
	ホテル	0.00	13.97	13.97	13.97	3.0	13.97	3.0	13.97
	集合住宅	0.00	21.94	11.07	7.47	3.0	21.94	3.0	21.94
評価対象の構造	RC造								
LR2/2.2 既存建築躯体等の継続使用		0%					0		
LR2/2.3 躯体材料におけるリサイクル材(高炉セメント)		0%					0		
1-2. 合計の計算						13.85		13.85	
2. 修繕・更新・解体に係るCO₂排出量									
2-1. 評価結果のCO ₂ 排出量への置き換え									
Q2/2.2.1 躯体材料の耐用年数	事務所	延床面積比率 1.00	20.67	20.67	20.67	3.0	20.67	3.0	20.67
	学校	0.00	17.14	17.14	17.14	3.0	17.14	3.0	17.14
	物販店	0.00	13.19	13.19	13.19	3.0	13.19	3.0	13.19
	飲食店	0.00	13.19	13.19	13.19	3.0	13.19	3.0	13.19
	集会所	0.00	18.04	18.04	18.04	3.0	18.04	3.0	18.04
	工場	0.00	14.27	14.27	14.27	3.0	14.27	3.0	14.27
	病院	0.00	20.89	20.89	20.89	3.0	20.89	3.0	20.89
	ホテル	0.00	18.80	18.80	18.80	3.0	18.80	3.0	18.80
	集合住宅	0.00	14.10	15.09	16.23	3.0	14.10	3.0	14.10
2-2. 合計の計算						20.67		20.67	
3. 運用時のエネルギーに係るCO₂排出量									
3-1. 建築物の取組み(②)									
						80.12	参照値(①)	85.09	
3-2. 上記+上記以外のオンサイト手法(③)									
						80.12			
太陽光発電の発電量		kWh/年	排出係数	削減量		0.00			
		0	0.418	0.00					
4. ライフサイクルCO₂の計算(標準計算)									
					kg-CO ₂ /年m ²		kg-CO ₂ /年m ²		
建設					CO ₂ 排出量	13.85	CO ₂ 排出量	13.85	
修繕・更新・解体						20.67		20.67	
運用						80.12		85.09	
合計						114.64		119.61	

2-3 Lifecycle CO₂(Global warming impact chart)



This chart indicates rough estimate of lifecycle CO₂ emission from subject building compared with that from reference building.

(4-1) Challenges with the system observed through ordinance analysis



- ◆ First, since this system is ordinance-based, they have no legal authority under ordinances to stop Building Certification applications.
- ◆ most local bodies only require the building plan to be submitted after a Building Certification application has been approved, this means that administrative guidance cannot be carried out either.
- ◆ none of the local bodies conduct inspections to confirm whether construction work conforms to the contents of the notification.

(4-2) Challenges on system operation



- ◆ No local bodies have statistical data on reporting rate
 - 14 bodies, or slightly under 70 percent, answered “less than 90 percent” or “no figures available.”
- ◆ No sufficient incentives to promote introduction
 - 9 of the local bodies had no such measures.

- ◆ Reporting rate and ways to improve compliance

届出率	団体数		向上策の内容	団体数
100%	1		①金利優遇	5
95%以上	4		②表彰制度	2
90%以上	2		③認証制度	1
90%未満	8		④総合設計制度とのリンク	9
未把握	6		⑤特に対策を講じていな	9

(4-3) Challenges for identifying and improving reporting rates



- ◆ Identifying reporting rate
 - ① Department in charge differs depending on local body (environmental dept., construction dept., urban planning dept., etc.)
 - ② Difficult to link ordinance with Building Certification application procedure
 - ③ Link with private building certification companies

- ◆ Improving reporting (compliance) rates
 - ① Financial difficulties, lack of personnel
 - ② Link with Building Certification application procedure

(4-4) Significance of this system



- ◆ Initial policy needed for development of various policies
 - Comparative low cost of administration
 - Comparatively low burden on builders
 - Accumulation of basic information and know-how needed for policymaking

(5) Ways to guarantee effectiveness



① Link with process prior to Building Certification application(Adopted by 10 bodies)

○ The reporting system is positioned as an adjustment procedure prior to the application for building certification, and at the stage of this prior adjustment procedure, the builder can be notified of the purpose of the eco-friendly building plan system and the documents that should be submitted, to ensure that the notification is complete.

② Link with overall design system(Adopted by 9 bodies)

○ This link means that when it is judged that a building plan is sufficiently eco-friendly, the overall design system is used, which relaxes the plot ratio and absolute height restrictions.



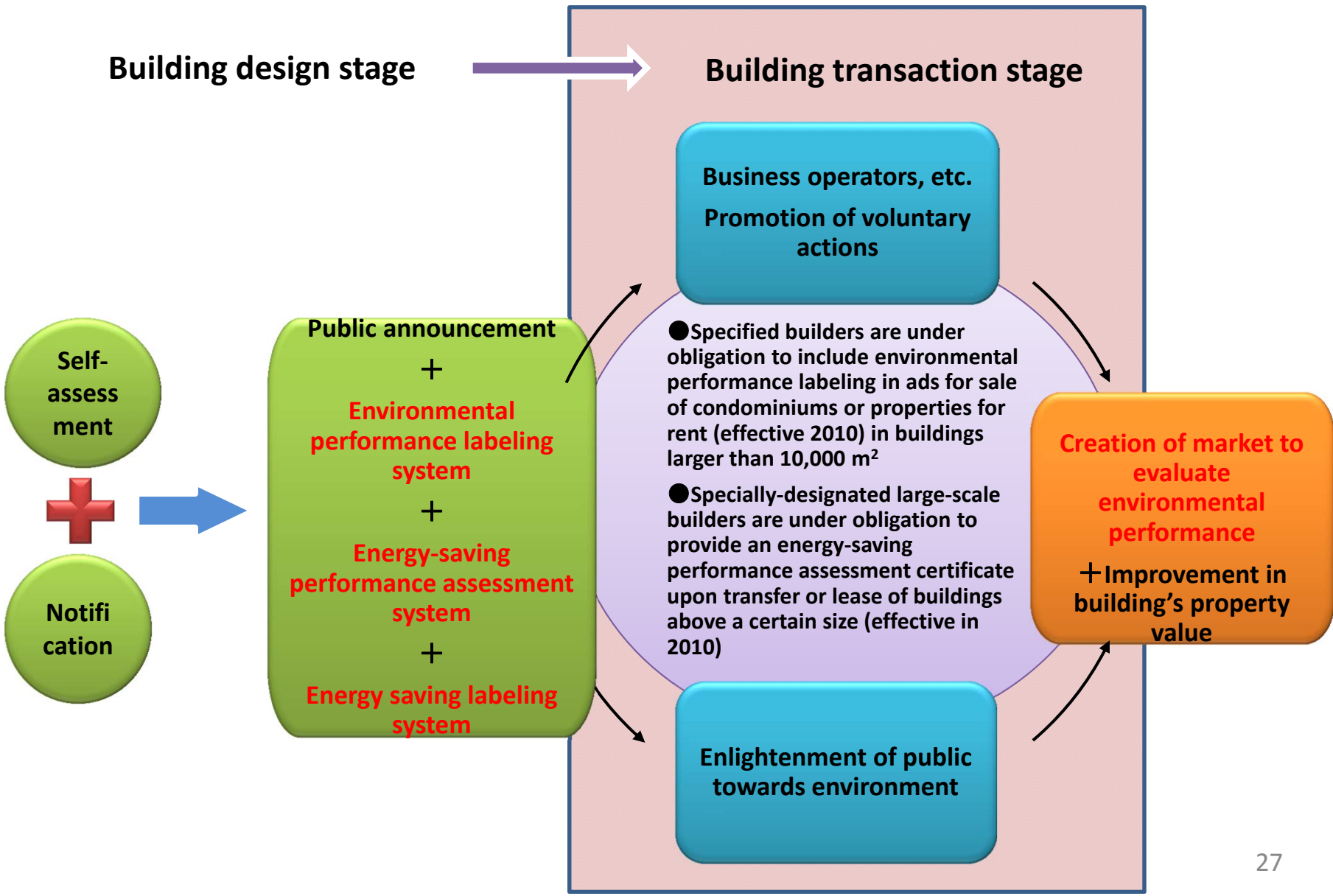
③ Building environmental performance labeling system(Tokyo, Saitama, Kawasaki, Osaka, Yokohama, etc.)





④ Building environmental performance labeling system

- advertising for buildings for sale must carry this clear, easy to understand labeling describing a building's environmental performance.
- Sales advertising takes place 6 months before the building is completed; when a sales contract is signed, the labeling system is expected to make the builder legally responsible for delivering a building that conforms to the label.
- If the completed building is found to differ in its environmental performance, the builder may be responsible under civil law and the real estate vendor may be liable to administrative sanctions or criminal charges.



*Thank you very much for your
kind attention!*

