

Handbook on Self-Assessment Indicator (CO₂ Emission Benchmark) 【Brief Version】



1. Introduction of Self-Assessment Indicator (CO₂ Emission Benchmark)

Tokyo Metropolitan Government (TMG) is aiming to turn Tokyo into a low-emission yet comfortable “Smart Energy City” with a high level of disaster prevention capability, utilizing experience and skills earned through development of climate change countermeasures and the advanced energy-saving technologies of Japan.

In order to achieve this objective, it is important to promote measures to improve energy efficiency and reduce CO₂ emissions in the building sector, which accounts for a large part of energy usage and carbon emissions in the city.

Against this background, TMG has established the Self-Assessment Indicator (CO₂ Emission Benchmark) to show the status of CO₂ emissions in each sector and created the Handbook on Self-Assessment Indicator (CO₂ Emission Benchmark) so that the businesses submitting reports in accordance with the Tokyo Carbon Reduction Reporting Program for Small and Medium-scale Facilities can ascertain the emission level of their facilities. This leaflet is the brief version of the Handbook.

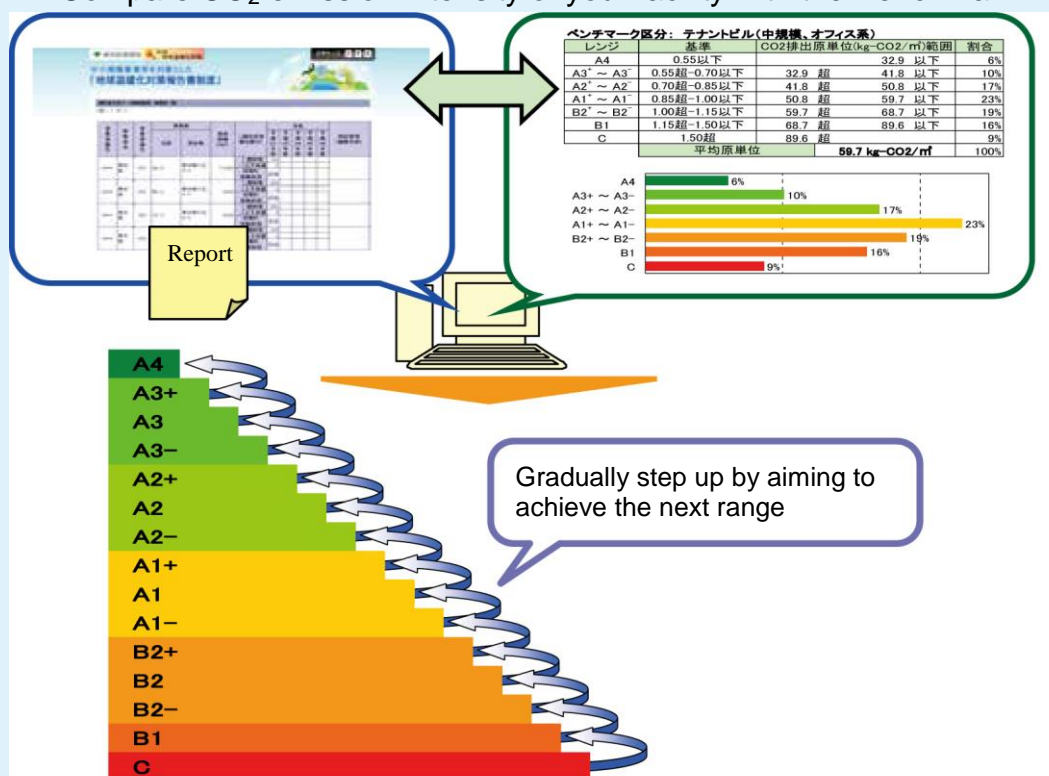
The existing Benchmark has been created based on CO₂ emissions for fiscal 2009. TMG has revised the Benchmark based on the records of fiscal 2012, when new energy-saving measures and power saving initiatives were introduced subsequent to the Great East Japan Earthquake and nuclear power plant accident. In addition, the range for the Benchmark has been reviewed and new categories have been added to facilitate target setting.

TMG hopes that this Handbook is widely utilized by the businesses that submitted reports in accordance with the Tokyo Carbon Reduction Reporting Program for Small and Medium-scale Facilities.

2. Utilization of Benchmark and Assessment on CO₂ Emission

Utilizing the Benchmark, businesses can find out the subject facility's variance from average CO₂ emission intensity of the industrial sector. Businesses can steadily step up their climate change countermeasures by aiming to reach the next Benchmark range.

Compare CO₂ emission intensity of your facility with the Benchmark



<Reference> How to calculate benchmark

CO₂ emission intensity (kg-CO₂/m²)

||

Benchmark

CO₂ emission (t) x 1,000

Floor area (m²)

Note) “Intensity” generally refers to the amount of input required against per unit output.
CO₂ emission intensity here refers to annual CO₂ emission per floor area of 1 m².

3. How to Check the Benchmark range which your facility fall into

Procedure 1: Search “Tokyo Carbon Reduction Reporting Program for Small and Medium-scale Facilities” on Internet search engine.

(URL : <http://www8.kankyo.metro.tokyo.jp/ondanka/>)

Procedure 2: Click “Publication of Reports”.



Procedure 3: The search page will be shown as below.

The screenshot shows the search page for the Tokyo Carbon Reduction Reporting Program for Small and Medium-scale Facilities. The page has two main search sections: '事業者検索' (Search by Facility Owner or User Information) and '事業所検索' (Search by Facility Information). The '事業者検索' section includes fields for '事業者名' (Name of Owner or User), '所在地' (Location of Owner or User), '提出区分' (Submission Category), and '提出回数' (Number of Submissions). The '事業所検索' section includes fields for '事業所名' (Name of Facility), '所在地' (Address of Facility), '郵便番号' (Postal Code), and '区市町村' (City/Town/Village). Both sections have a '検索' (Search) button.

URL : <http://www8.kankyo.metro.tokyo.jp/ondanka/ad135gcce/index.php>

Procedure 4: Scroll down and enter the name of a building to be searched for in the field of “Name of facility” and click “Search”.

事業所検索 Search by Facility Information

事業所名 Name of Facility 新宿都庁ビル

所在地 Address of Facility 郵便番号 (例999-9999) 区市町村名 町名番地以下

提出区分 Submission Category [Mandatory/Voluntary] 指定しない

延床面積 Total Floor Area m²以上 m²未満

用途・業種 Type of Business 主たる用途 産業分類(中分類) 産業分類(細分類)

事業所一覧を表示する Search

↑ 事業者・事業所条件による複合検索が可能です。

Procedure 5: Calculate CO₂ Emission Intensity using the values in the “CO₂ Emission in Fuel etc.”(t- CO₂) and Floor Area (m²) shown in the next page.

4件中 30 件表示

事業者番号 ID	事業者名 Owner or User	事業所等の概要(最新年度)					年度別 公表項目	年度別実績 Performance of Each Year									
		事業所 番号 No.	名称 Facility	所在地 Address	延床 面積 (m ²) Floor	特記事項 (最新年度) Remarks		21年度 実績 (2009)		22年度 実績 (2010)		23年度 実績 (2011)		24年度 実績 (2012)		25年度 実績 (2013)	
								t	kg/m ²	t	kg/m ²	t	kg/m ²	t	kg/m ²	t	kg/m ²
D0004	〇〇〇〇株式会社	0001	〇〇第1ビルディング	東京都新宿区〇〇1-1-1	1234.56		CO ₂ 排出状況	燃料等	75		72		69	70	56.7	68	55.0
							上下水道		—		—		—	0	—	0	—
							目標	有無									
							達成状況										有
							対策の実施状況		詳細		詳細		詳細		詳細		詳細

Officially released CO₂ Emission Intensity

Calculation of CO₂ Emission Intensity for reference (Note that CO₂ Emission Intensity for fiscal 2012 has been officially announced)
(Example) CO₂ Emission Intensity=70(t) x 1,000/1,234.56(m²) = 56.7(kg- CO₂/m²)

Procedure 6: Check the building size and confirm the emission range in the relevant Benchmark list.

Example: Benchmark list for small-sized buildings for rent (1,000 m² or larger but smaller than 3,000 m²)
Classification number: Buildings for rent (office, small-sized)

[1] Self evaluation index (benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)	Number of facilities	Percentage	Average floor area (m ²)
A4	0.55 or less	34.1 or less	48	9.3%	2029
A3 +	More than 0.55-0.60 or less	More than 34.1	37.2 or less	30	1902
A3	More than 0.60-0.65 or less	More than 37.2	40.3 or less	26	1765
A3 -	More than 0.65-0.70 or less	More than 40.3	43.4 or less	36	1891
A2 +	More than 0.70-0.75 or less	More than 43.4	46.5 or less	33	2040
A2	More than 0.75-0.80 or less	More than 46.5	49.6 or less	27	2001
A2 -	More than 0.80-0.85 or less	More than 49.6	52.7 or less	23	2157
A1 +	More than 0.85-0.90 or less	More than 52.7	55.8 or less	33	2097
A1	More than 0.90-0.95 or less	More than 55.8	58.9 or less	23	2070
A1 -	More than 0.95-1.00 or less	More than 58.9	Average value 61.9 or less	30	2117
B2 +	More than 1.00-1.05 or less	Average value/more than 61.9	65.0 or less	25	1933
B2	More than 1.05-1.10 or less	More than 65	68.1 or less	25	1989
B2 -	More than 1.10-1.15 or less	More than 68.1	71.2 or less	17	2214
B1	More than 1.15-1.50 or less	More than 71.2	92.9 or less	88	1977

Calculation result of 56.7(kg- CO₂/m²) falls under range A1.

A1

4. Benchmark Lists of Buildings for rent (for reference)

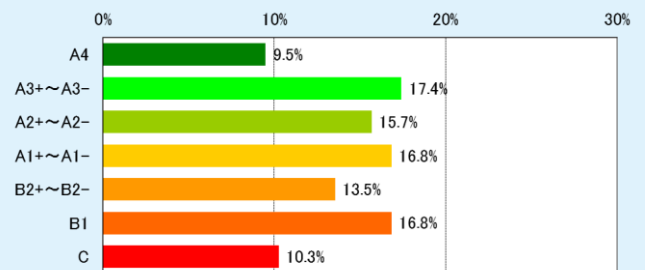
※The following tables can be used for performances after 2015.

Small-sized Buildings for Rent (Office, 1,000 m² or larger but smaller than 3,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)	Number of facilities	Percentage	Average floor area (m ²)
A4	0.55 or less	43.4 or less	49	9.5%	2014
A3 +	More than 0.55-0.60 or less	More than 43.4	47.4 or less	28	1949
A3	More than 0.60-0.65 or less	More than 47.4	51.3 or less	25	1777
A3 -	More than 0.65-0.70 or less	More than 51.3	55.3 or less	37	1885
A2 +	More than 0.70-0.75 or less	More than 55.3	59.2 or less	32	2058
A2	More than 0.75-0.80 or less	More than 59.2	63.2 or less	24	1934
A2 -	More than 0.80-0.85 or less	More than 63.2	67.1 or less	25	2022
A1 +	More than 0.85-0.90 or less	More than 67.1	71.1 or less	35	2157
A1	More than 0.90-0.95 or less	More than 71.1	75.0 or less	24	2004
A1 -	More than 0.95-1.00 or less	More than 75.0	Average value 78.9 or less	28	2151
B2 +	More than 1.00-1.05 or less	Average value/more than 78.9	82.9 or less	26	2023
B2	More than 1.05-1.10 or less	More than 82.9	86.8 or less	24	2026
B2 -	More than 1.10-1.15 or less	More than 86.8	90.8 or less	20	2118
B1	More than 1.15-1.50 or less	More than 90.8	118.4 or less	87	1966
C	More than 1.50	More than 118.4	53	10.3%	1660
Total			517	Average	1966

[2] Percentage of number of facilities

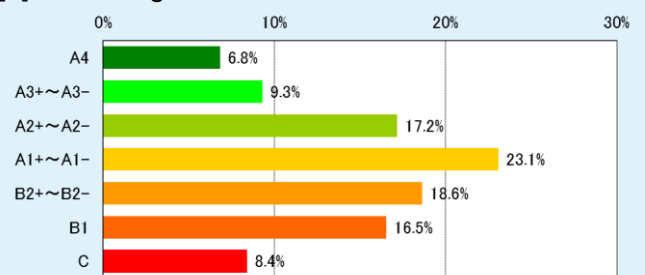


Medium-sized Buildings for Rent (Office, 3,000 m² or larger but smaller than 10,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)	Number of facilities	Percentage	Average floor area (m ²)
A4	0.55 or less	41.6 or less	52	6.8%	5473
A3 +	More than 0.55-0.60 or less	More than 41.6	45.3 or less	19	4997
A3	More than 0.60-0.65 or less	More than 45.3	49.1 or less	19	5580
A3 -	More than 0.65-0.70 or less	More than 49.1	52.9 or less	33	5872
A2 +	More than 0.70-0.75 or less	More than 52.9	56.7 or less	33	5576
A2	More than 0.75-0.80 or less	More than 56.7	60.4 or less	47	5445
A2 -	More than 0.80-0.85 or less	More than 60.4	64.2 or less	51	5604
A1 +	More than 0.85-0.90 or less	More than 64.2	68.0 or less	58	5580
A1	More than 0.90-0.95 or less	More than 68.0	71.8 or less	57	5570
A1 -	More than 0.95-1.00 or less	More than 71.8	Average value 75.5 or less	61	5334
B2 +	More than 1.00-1.05 or less	Average value/more than 75.5	79.3 or less	53	6057
B2	More than 1.05-1.10 or less	More than 79.3	83.1 or less	51	5739
B2 -	More than 1.10-1.15 or less	More than 83.1	86.9 or less	38	5808
B1	More than 1.15-1.50 or less	More than 86.9	113.3 or less	126	5541
C	More than 1.50	More than 113.3	64	8.4%	5812
Total			762	Average	5612

[2] Percentage of number of facilities

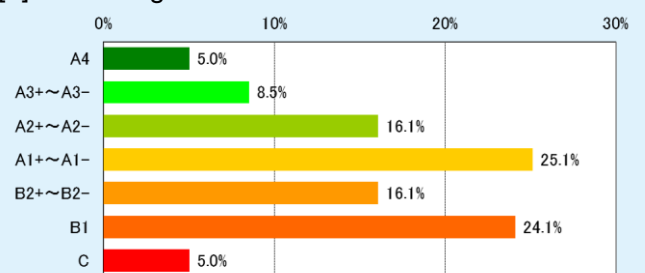


Semi-large-sized Buildings for Rent (Office, 10,000 m² or larger but smaller than 20,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)	Number of facilities	Percentage	Average floor area (m ²)
A4	0.55 or less	41.4 or less	10	5.0%	13061
A3 +	More than 0.55-0.60 or less	More than 41.4	45.1 or less	6	14715
A3	More than 0.60-0.65 or less	More than 45.1	48.9 or less	4	12346
A3 -	More than 0.65-0.70 or less	More than 48.9	52.6 or less	7	11796
A2 +	More than 0.70-0.75 or less	More than 52.6	56.4 or less	8	12261
A2	More than 0.75-0.80 or less	More than 56.4	60.1 or less	7	13809
A2 -	More than 0.80-0.85 or less	More than 60.1	63.9 or less	17	14752
A1 +	More than 0.85-0.90 or less	More than 63.9	67.6 or less	15	14375
A1	More than 0.90-0.95 or less	More than 67.6	71.4 or less	14	13845
A1 -	More than 0.95-1.00 or less	More than 71.4	Average value 75.1 or less	21	14280
B2 +	More than 1.00-1.05 or less	Average value/more than 75.1	78.9 or less	14	14232
B2	More than 1.05-1.10 or less	More than 78.9	82.7 or less	13	13572
B2 -	More than 1.10-1.15 or less	More than 82.7	86.4 or less	5	12583
B1	More than 1.15-1.50 or less	More than 86.4	112.7 or less	48	14382
C	More than 1.50	More than 112.7	10	5.0%	14548
Total			199	Average	13970

[2] Percentage of number of facilities

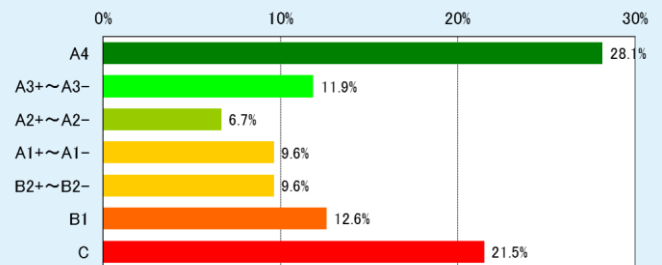


Small-sized Buildings for Rent (Commercial or Complex, 1,000 m² or larger but smaller than 3,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)		Number of facilities	Percentage	Average floor area (m ²)	
A4	0.55 or less	114.3 or less		38	28.1%	1654	
A3 +	More than 0.55-0.60 or less	More than 114.3	124.7 or less	6	11.9%	1765	
A3	More than 0.60-0.65 or less	More than 124.7	135.1 or less	4		1884	
A3 -	More than 0.65-0.70 or less	More than 135.1	145.4 or less	6		1510	
A2 +	More than 0.70-0.75 or less	More than 145.4	155.8 or less	2	6.7%	1448	
A2	More than 0.75-0.80 or less	More than 155.8	166.2 or less	5		1632	
A2 -	More than 0.80-0.85 or less	More than 166.2	176.6 or less	2		1513	
A1 +	More than 0.85-0.90 or less	More than 176.6	187.0 or less	5	9.6%	2012	
A1	More than 0.90-0.95 or less	More than 187.0	197.4 or less	2		2762	
A1 -	More than 0.95-1.00 or less	More than 197.4	Average value 207.7 or less	6		1848	
B2 +	More than 1.00-1.05 or less	Average value/more than 207.7		5	9.6%	2072	
B2	More than 1.05-1.10 or less	More than 218.1		6		2048	
B2 -	More than 1.10-1.15 or less	More than 228.5		2		1891	
B1	More than 1.15-1.50 or less	More than 238.9		17	12.6%	1923	
C	More than 1.50	More than 311.6		29	21.5%	1753	
				Total	135	Average value	1783

[2] Percentage of number of facilities

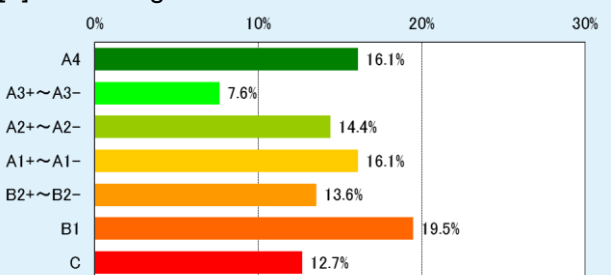


Medium-sized Buildings for Rent (Commercial or Complex, 3,000 m² or larger but smaller than 10,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ² emission intensity (kg-CO ² /m ²)		Number of facilities	Percentage	Average floor area (m ²)
A4	0.55 or less	96.2 or less		19	16.1%	5780
A3 +	More than 0.55-0.60 or less	104.9 or less		2	7.6%	6147
A3	More than 0.60-0.65 or less	113.7 or less		2		6152
A3 -	More than 0.65-0.70 or less	122.4 or less		5		6706
A2 +	More than 0.70-0.75 or less	131.1 or less		6	14.4%	5772
A2	More than 0.75-0.80 or less	139.9 or less		7		6284
A2 -	More than 0.80-0.85 or less	148.6 or less		4		6551
A1 +	More than 0.85-0.90 or less	157.4 or less		3	16.1%	7180
A1	More than 0.90-0.95 or less	166.1 or less		4		5036
A1 -	More than 0.95-1.00 or less	Average value 174.8 or less		12		6375
B2 +	More than 1.00-1.05 or less	Average value/more than 174.8		5	13.6%	5019
B2	More than 1.05-1.10 or less	183.6 or less		4		4398
B2 -	More than 1.10-1.15 or less	192.3 or less		7		5180
B1	More than 1.15-1.50 or less	201.1 or less		23	19.5%	5518
C	More than 1.50	262.2 or less		15	12.7%	4965
Total				118	Average value	5687

[2] Percentage of number of facilities

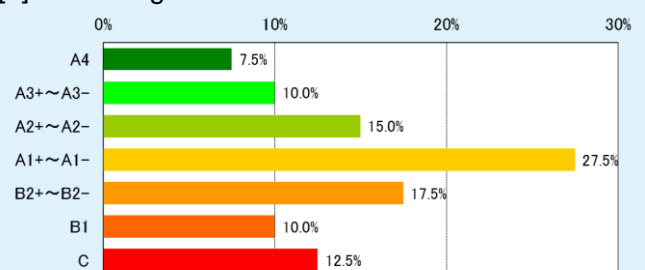


Semi-large-sized Buildings for Rent (Commercial or Complex, 10,000 m² or larger but smaller than 20,000 m²)

[1] Self-Assessment Indicator (CO₂ Emission Benchmark)

Range	Ratio to the average value	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)		Number of facilities	Percentage	Average floor area (m ²)	
A4	0.55 or less	68.3 or less		3	7.5%	16663	
A3 +	More than 0.55-0.60 or less	74.5 or less		1	10.0%	10472	
A3	More than 0.60-0.65 or less	80.7 or less		3		15116	
A3 -	More than 0.65-0.70 or less	86.9 or less		0		0	
A2 +	More than 0.70-0.75 or less	93.1 or less		2	15.0%	13227	
A2	More than 0.75-0.80 or less	99.3 or less		1		15120	
A2 -	More than 0.80-0.85 or less	105.5 or less		3		14173	
A1 +	More than 0.85-0.90 or less	111.7 or less		0	27.5%	0	
A1	More than 0.90-0.95 or less	117.9 or less		5		15446	
A1 -	More than 0.95-1.00 or less	Average value 124.1 or less		6		12705	
B2 +	More than 1.00-1.05 or less	Average value/more than 124.1		1	17.5%	17214	
B2	More than 1.05-1.10 or less	130.4 or less		2		12616	
B2 -	More than 1.10-1.15 or less	136.6 or less		4		12393	
B1	More than 1.15-1.50 or less	More than 142.8		4	10.0%	12191	
C	More than 1.50	More than 186.2		5	12.5%	10928	
				Total	40	Average value	13470

[2] Percentage of number of facilities



5. Emission Range of the Benchmark

The Benchmark consists of 15 ranges in seven grades. The ranges were created by referring to other countries' systems including the Display Energy Certificate (DEC) of the U.K., in consideration of the consistency and comparability with similar systems. Upward from the average CO₂ Emission Intensity line to the top of the list there are A1, A2, A3 and A4 ranges in a descending order; and downward from the average CO₂ Emission Intensity line to the bottom of the list there are B2, B1 and C ranges in an ascending order. A1 through A3 and B2 ranges are further broken down into smaller ranges.

Range		CO ₂ Emission Intensity
A4	A4	55% or less of the average
A3	A3 ⁺	More than 55% but 60% or less of the average
	A3	More than 60% but 65% or less of the average
	A3 ⁻	More than 65% but 70% or less of the average
A2	A2 ⁺	More than 70% but 75% or less of the average
	A2	More than 75% but 80% or less of the average
	A2 ⁻	More than 80% but 85% or less of the average
A1	A1 ⁺	More than 85% but 90% or less of the average
	A1	More than 90% but 95% or less of the average
	A1 ⁻	More than 95% to 100% of the average
<hr style="border-top: 1px dashed red;"/>		
B2	B2 ⁺	More than 100% but 105% or less of the average
	B2	More than 105% but 110% or less of the average
	B2 ⁻	More than 110% but 115% or less of the average
B1	B1	More than 115% but 150% or less of the average
C	C	More than 150% of the average

Average line

6. Points to be Noted When Using the Benchmark

These Benchmarks can be utilized irrespective of the size of the facility because the intensity is calculated by dividing CO₂ emission by floor area. However, as CO₂ emission from facilities varies depending on the operation time and the composition of equipment, it is important to grasp actual emission status accurately as necessary.

As for buildings for rent, factors other than energy saving performance must be considered as the total energy consumption by the building is largely affected by the energy consumption of each tenant.

Please refer to the following examples of factors that can affect the CO₂ emission when making an assessment.

- [1] Status of operation
Tenants opening around-the-clock tend to emit a large amount of CO₂.
- [2] Equipment
CO₂ emission is affected by the circumstance of equipment such as the amount of CO₂ emission of a fitness club largely varies depending on the existence of a swimming pool in the club.
- [3] Usage
CO₂ emission of an office building varies depending on the existence of a server room and the floor area of conference rooms and warehouse.
- [4] Buildings for rent
 - Vacancy rate (The greater the vacancy rate than average, the less the CO₂ emission becomes)
 - Usage (CO₂ emission increases if the building has a server room consuming a large amount of energy.)
 - Operation time (Ex. whether there are tenants opening around-the-clock)

7. Category List of the Benchmark (Based on Results for Fiscal 2012 ※Revised emission factor version)

※The following tables can be used for performances after 2015.

No.	Category of Business	Average Intensity (kg-CO ₂ /m ²)	Number of Facilities [Sample]	Average Floor Area (m ²)
1	Offices (tenant area only)	81.3	722	1,467
2	Offices (company's own building)	65.4	573	4,232
3	Buildings for Rent (office, small-sized)	78.9	517	1,966
	Buildings for Rent (office, medium-sized)	75.5	762	5,612
	Buildings for Rent (office, semi-large-sized)	75.1	199	13,970
4	Buildings for Rent (commercial or complex, small-sized)	207.7	135	1,783
	Buildings for Rent (commercial or complex, medium-sized)	174.8	118	5,687
	Buildings for Rent (commercial or complex, semi-large-sized)	124.1	40	13,470
5	Convenience Stores	585.4	3,646	142
6	Drug Stores	295.4	312	341
7	General Merchandise Stores / Department Stores	259.7	423	3,999
8	Fresh Foods Retailers	387.0	694	1,772
9	Food Manufacture Retailers	765.3	355	81
10	Clothing and Accessories Shops	124.8	168	958
11	New Car Shops	63.4	267	1,668
12	Restaurants	596.6	1,569	240
13	Bars / Taverns	365.1	1,127	280
14	Hamburger Shops	733.4	413	220
15	Cafes	414.1	394	139
16	Barbecue Restaurants	561.9	119	184
17	Chinese Foods Restaurants / Ramen Shops	985.1	183	106
18	Other Eating Places	718.7	437	145
19	Inns / Hotels	125.2	158	4,311
20	Schools / Educational Facilities	23.4	1,781	7,339
21	Hospitals / Clinics	106.0	48	5,213
22	Nurseries	57.1	241	960
23	Health / Nursing Care Facilities	72.6	422	2,332
24	Fitness Clubs	203.5	146	3,248
25	Pachinko Parlors	287.1	89	1,068
26	Karaoke Boxes	252.1	168	635
27	Game Centers	333.9	50	905
28	Libraries	64.3	149	1,981
29	Museums	69.3	64	2,717
30	City Halls	54.6	62	7,778