Tokyo's Cap-and-Trade and Green Building Program

Reducing CO2 from Building Sector

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1. Cities and Sub-nationals in Climate Change

“Cities will take the lead in overcoming climate change .”
WB President Mr. Robert Zoellick in C40 Sao Paulo Summit

Cities as a Key to Climate Change

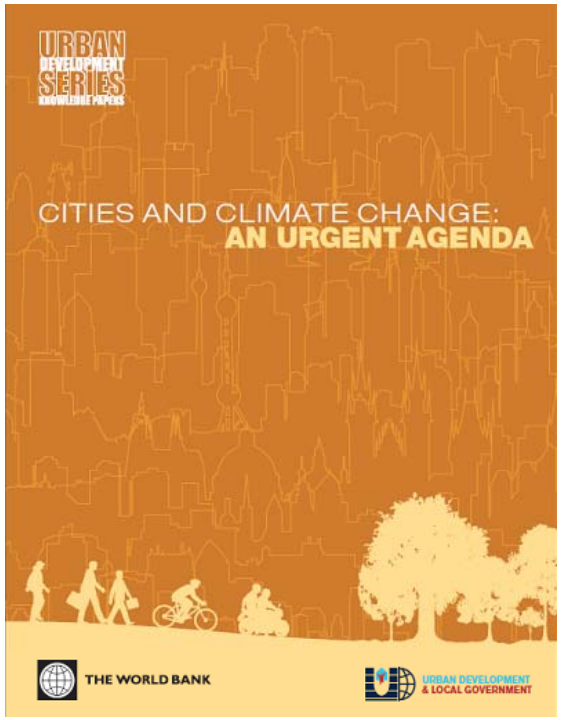
- "Half of the world's **population lives in cities**, a share that is likely to reach

  70 % in 2050"

- Cities account for over **67 %** of **energy-related global greenhouse gases**, which is expected to rise to **74 %** by 2030.
- The world's 50 largest cities generate about

  2.6 billion tCO2e

  annually, next to United States and China.

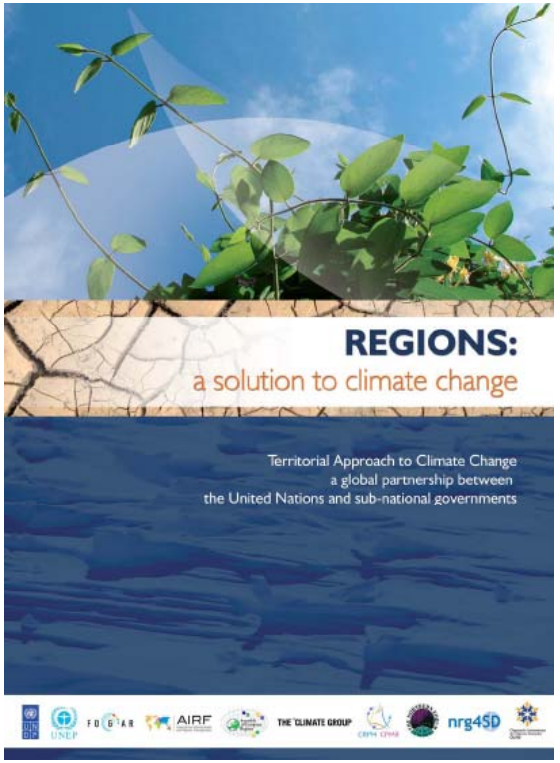


Cities and Climate Change : An Urgent Agenda" The World Bank, 2010

Emerging cities are expanding and constructing city infrastructures and buildings which fix the level of energy efficiency and emission for coming decades.

Collaboration with International Organizations

- Cities : C40 – World Bank
- Sub-nationals: R20 – UNDP



Programs

World Bank:

- Twinning Program
- ECO2 Cities

UNDP:

- TACC (Territorial Approach for Climate Change)

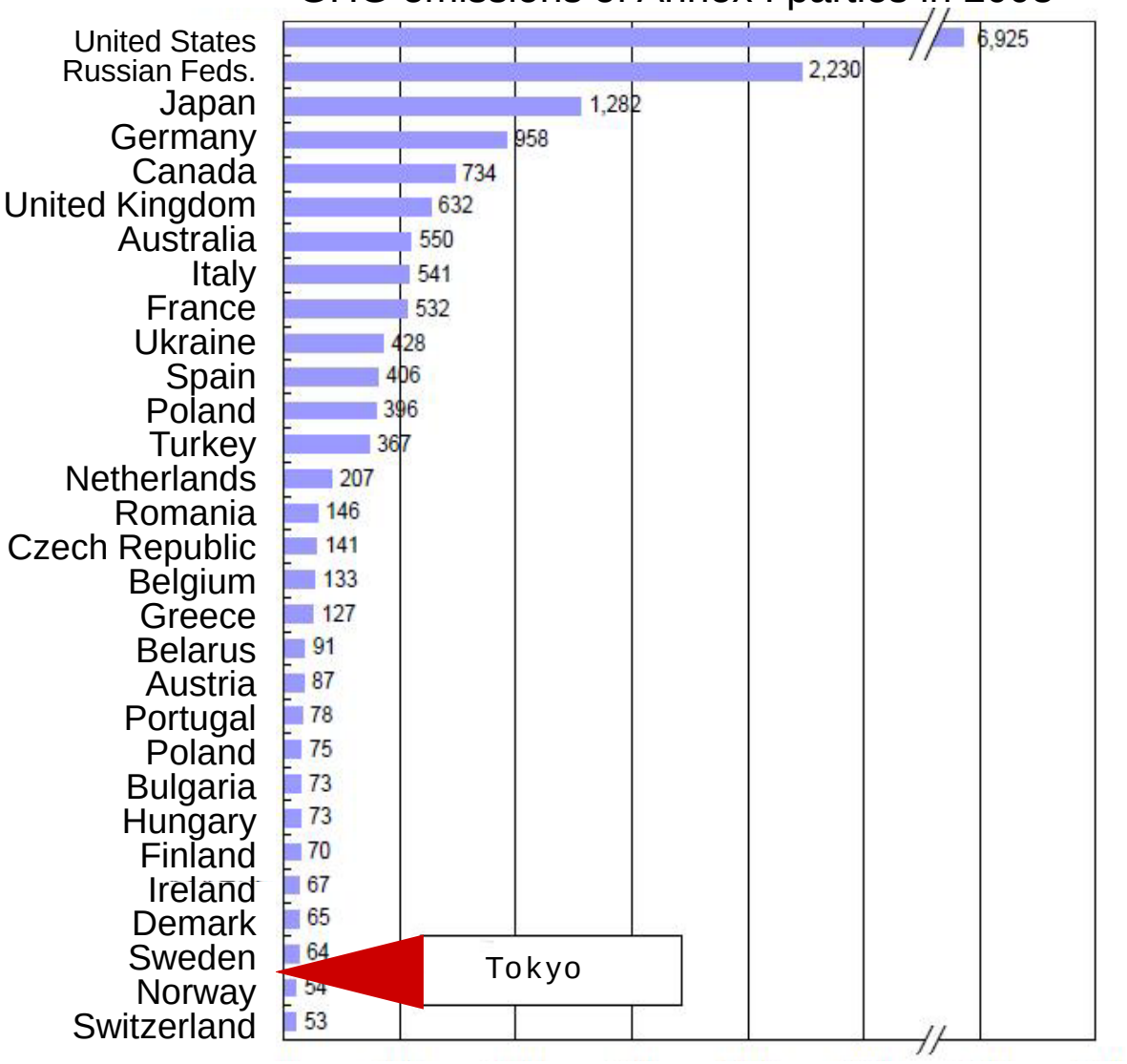
2. Tokyo Climate Change Strategy

http://www.kankyo.metro.tokyo.jp/en/climate/index.html

GHG Emissions in TMG area

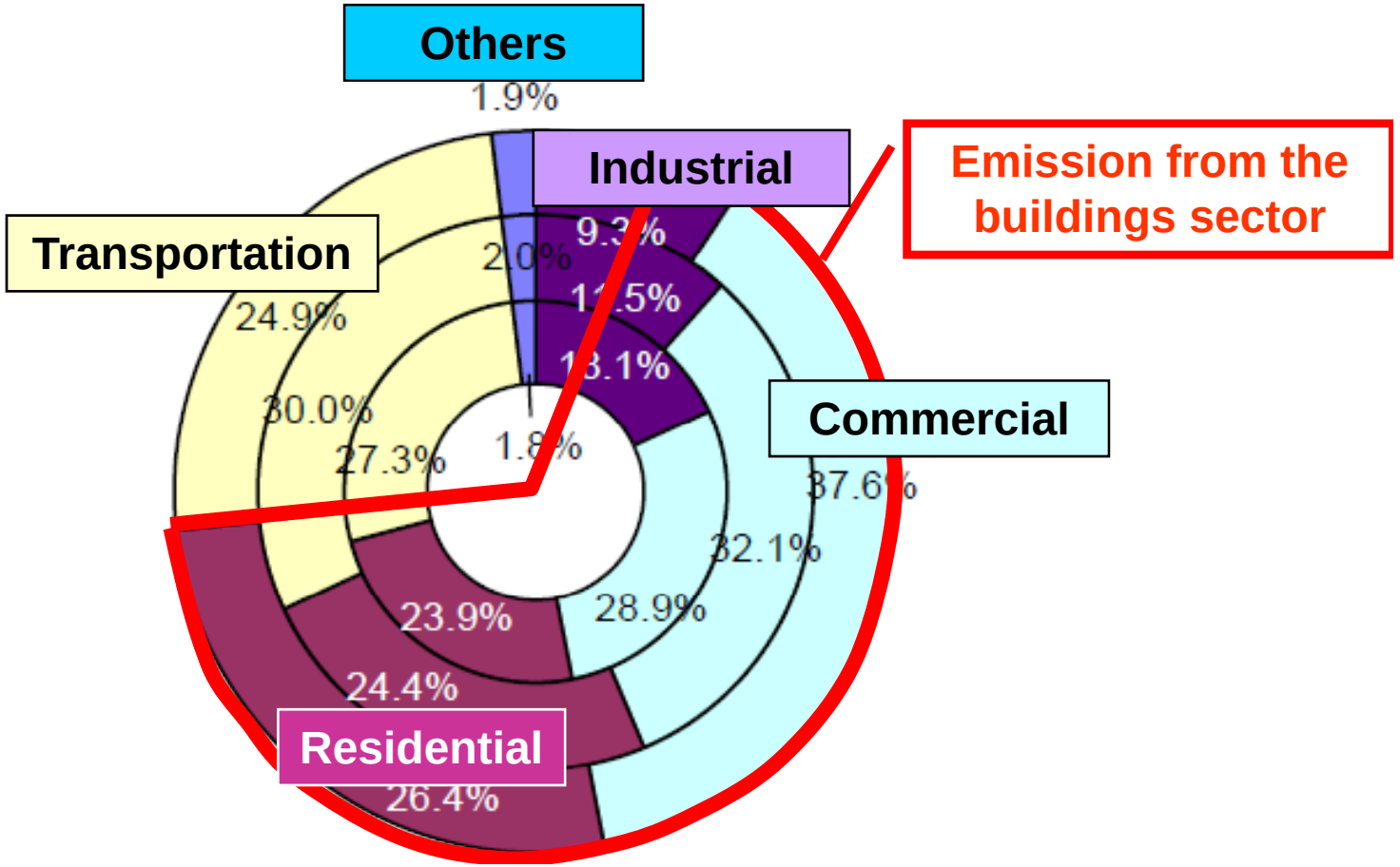
63 million tCO_2 eq (FY2008)

<GHG emissions of Annex I parties in 2008>



Source: UNFCCC, GHG emissions of Annex I parties

Increasing Commercial and Residential Sector = Buildings Sector



CO_2 emissions in TMG area by sector
Inner circle: 1990
Middle circle: 2000
Outer circle: 2007

Tokyo Climate Change Strategy Basic Policy

1 Responsibility as the enormous energy consumer

2 Importance to reduce emissions from urban buildings

Promoting measures in the buildings sector is the key

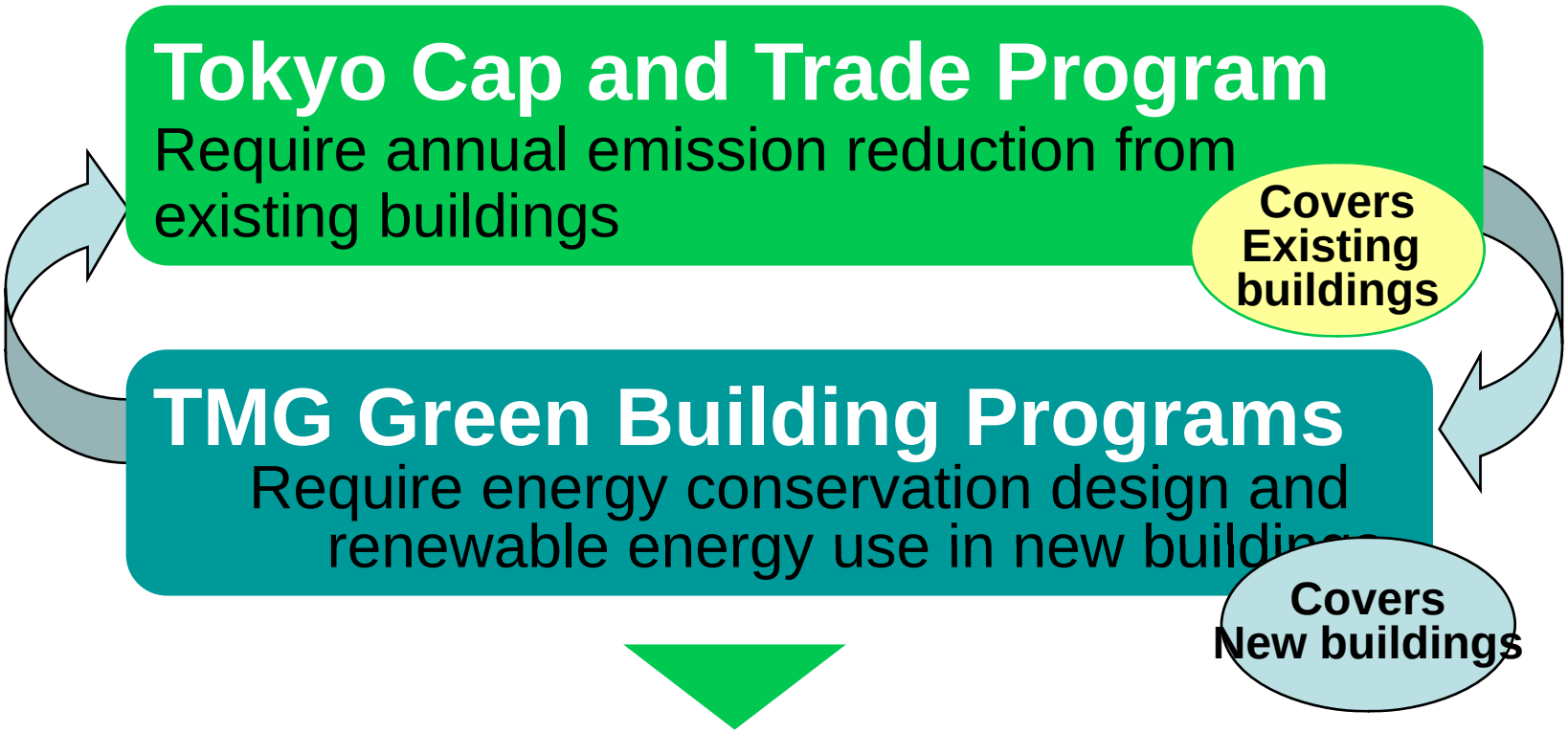
3 Enable Tokyo to grow in the coming carbon restrain age

Taking an advantage of the early shift to a low carbon city to realize sustainable growth of Tokyo

GHG Reduction Goal :

-25% bellow 2000 level by 2020

Framework of Measures for the Buildings Sector



Not aiming to restrain urban business activities and development, but promoting the **shift toward greener, low carbon buildings**

Policy Development

Plans

"Tokyo's Big Change ;The 10-yr plan"
Setting the goal ; -25% by 2020

TMG Environmental Master Plan
Setting sectoral targets & programs

2000 2005 2006 2008 2010

Programs

Climate Change Strategy
Basic policy for the10yr project

Carbon Minus 10yr project
Action plan

CO_2 Emission reduction program

●2002 Start

●2005 Introduce Disclosure system

Tokyo C&T

●2008 Enact

●2010 Start

Green Building Program

●2002 Start

●2005 Reinforce standards in climate change & urban heat areas

●2008 ●2010 Broader coverage Reinforce standards

Green Labeling Program for Condominiums

Low-carbon prerequisite for Large Developments

Portfolio of Tokyo's Climate Change Actions

For details ; **Tokyo Metropolitan Government Environment White Paper**

http://www.kankyo.metro.tokyo.jp/en/documents/white_paper_2010.htm

- **For large facilities in industrial and commercial sector**
  - *Tokyo Cap-and-Trade Program (p48)*
  - *Tokyo CO2 Reduction Program*
- **For small and medium sized facilities in industrial and commercial sector**
  - *Tokyo CO2 Emissions Reporting Program (p51)*
  - *Project to Promote Energy-Saving and Creation of Carbon Credit (p50)*
  - *Eco-finance project (p50)*
  - *Tax reductions for environmentally-friendly Action (p61)*
- **For new buildings and developments**
  - *Tokyo Green Building Program (p54)*

- *Green Labeling Program for Condominiums* *(p54)*
- *Energy Efficiency Certificate Program* *(p54)*
- *Program of Using Energy efficiently in Region* *(p55)*

■ **For residential sector**

- *Energy Efficiency Labeling System for Home Appliance* *(p52)*
- *Project to Promote the Use of Solar Energy* *(p56)*
- *Home Energy Efficiency Advisers*

■ **For Automobiles**

- Obligations on Introduction of Low-emission and fuel-efficient vehicles (p64)
- EV-pHV promoting project (p65)

■ **Others**

- Initiative Actions of TMG (p55)
- Municipalities Supporting Program (p58)
- Environmental Educations (p60)

3. Main Programs

Tokyo Cap& Trade Program

Tokyo Green Building Program

Tokyo Cap & Trade Program

Mandatory emission reductions & Emission trading program

The world's first urban cap and trade program to cover office buildings

Target: 1,300 facilities

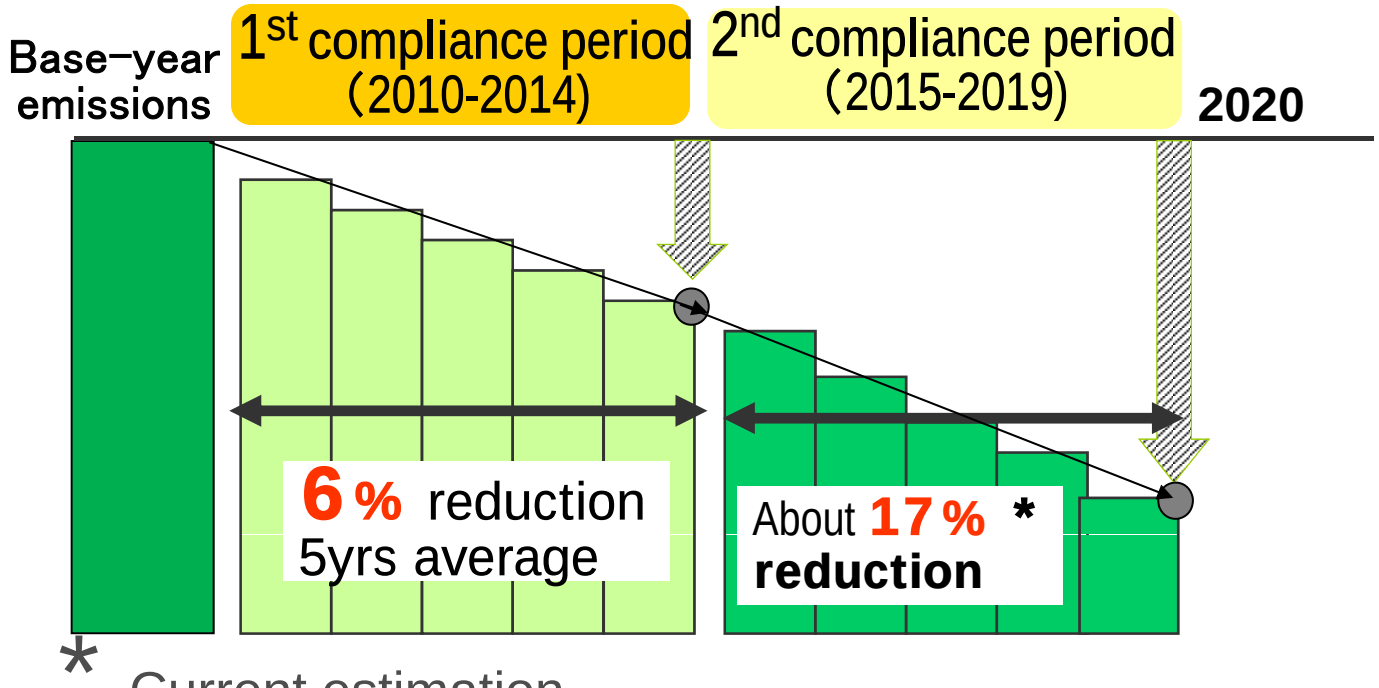
Facilities with annual energy consumption of 1,500 kl or more (crude oil equivalent)

- Approx. 1000 commercial & institutional buildings
- Approx. 300 industrial facilities

Covers approx.40% of commercial & industrial sectors' emissions

Cap Setting

To achieve the Tokyo's emission reduction target " -25% bellow 2000 by 2020", the necessary reduction in industry & commercial sector is 17% reduction



* Current estimation.

The Cap for the 2nd compliance period will be fixed by the end of the 1st compliance period

Allowance allocations

Emission Allowance (5yrs) = (Base-year emissions − Obligation reductions) × 5 years

Obligation reductions = Base-year emissions × Compliance factor

Base-year emissions : Average emissions of three consecutive years between 2002 to 2007

Category		Compliance factor
Ⅰ-1	**Commercial buildings, District cooling & heating facilities (plants)**	**8 %**
Ⅰ-2	**Commercial buildings using EHC**	**6 %**
Ⅱ	**Factories, etc.**	**6 %**
Top level	A facility already achieved high energy efficiency is certified as a: **Top Level / Near-top level Facility**	**½ or ¾ of the compliance factor**

Emission Trading & Offset Credits

Emissions trading	**Trading Amount:** **Reduction exceeding the obligation** Emission reduction exceeding the yearly obligation is allowed to be traded from the 2nd year.
Offsets --Credits	**1. Emission reductions from small and midsize facilities within the Tokyo area** * Emission reduction by energy-saving measures **2. Renewable Energy Certificates** * Solar energy (heat and power), wind energy, etc. **3. Emission reductions outside the Tokyo area** * Sellers will be assumed to be covered under the Tokyo Cap-and-Trade Program, and reduction exceeding the reduction obligation would be counted as offset credit * Can only buy up to 1/3 of base year emissions

Tokyo Green Building Program

Green Building Program

Rating and Disclosure System
To improve environmental performance of new buildings

Covered: Newly planed buildings over 5,000 sq. meters

Purpose: To create a real estate market where greener buildings are valued more

Requirement:
Building owner is required to employ eco-friendly design and to submit a "Building Environmental Plan" outlining the building's environmental performance

Evaluation Items; Energy, Material, Greenery etc.

Rating: three rating grades (1-3)

Disclosure: Plan with ratings are displayed on TMG website

Covers about 40% of new buildings

Tokyo Green Building Program

Green Building Program

Items assessed

Category	Items
Energy	Heat load resistance of the building shell
	Use of renewable energy
	Energy Performance (Shells and equipments)
	Efficient operation systems
Resources, Material	Usage of eco-materials
	Protection of ozone Layers
	Longer building life expectancy
	Hydrological cycle
Natural environment	Greening (vegetation, landscape, etc.)bio-diversity
Heat-Island subject	Atmospheric heat waste
	Surface of ground and buildings
	Wind environment

Disclosure @ TMG website

●Charts display the rated results

●Find buildings from a location map

Tokyo Green Building Program

Green Building Program
Program development

■**Green Labeling Program for Condominiums** (2005-)

■Requirement of higher energy standards for large urban developments (2009～)

■**Requirement of feasibility studies on renewables** (2010～)

■**Energy performance Certificate Program (2010-)**

Energy performance certificate

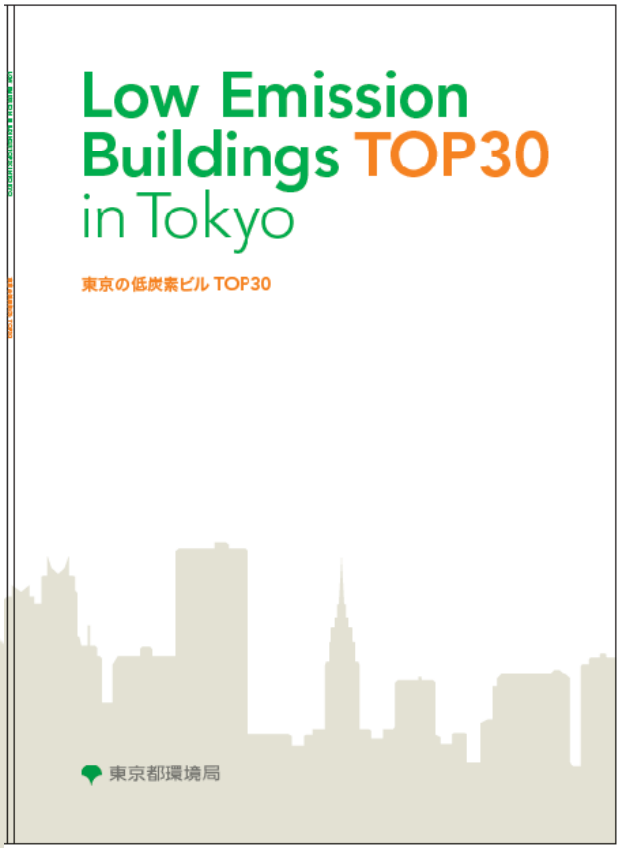
Green Building Era in Tokyo

Low Emission Buildings TOP30

Selection of
Low Emission Buildings TOP30

TMG selected TOP30 low emission buildings based on the policy measures of TMG.

- **Existing buildings section:**
  Top level facilities in the C&T Program
- **New building section:**
  High scored buildings in the Green Building Program



TOP30 Existing Building Section

Top Level Facility Certification
In the Tokyo Cap-and-Trade Program

Assessment category	Required Items	General Items	Extra Items
I. General Management Establishment of cooperative structures for energy conservations, energy management status	23	4	1
II. Energy Performance (building Shells and equipments) Energy efficiency of air conditioning, lighting, and other facilities, equipment efficiency (COP), etc.	26	39	45
III. Operations Indoor temperature and humidity management, facility maintenance and management, etc.	25	56	9
Total	**228 items**		

TOP30 New Building Section

Assessment of Energy Performance In the Tokyo Green Building Program

Assessment category	Criteria
I. Heat load resistance of the shell Heat insulation of walls and windows, measures for shielding them from sunlight, etc.	**20%** or higher reductions from **PAL standard** (the national standard)
II. Energy efficient equipments Introduction of energy saving measures in the facilities (air conditioning, lightings, ventilation, water heating, and elevators)	**30%** or higher **ERR standard** (aggregation of the national standard)
III. Efficient operation systems Measurement and energy management system for optimal operation	**Level 2** or higher Ex; Introduction of certain level of BEMS
IV. Use of renewable energy On-site installation of renewable energy including PV and solar heat system	Amount of renewable energy introduced Ex; **30kW** in the case of **PV**

After 3.11

Tragic disaster….

However, Japan is moving forward.

People's awareness changing

Companies taking action to save energy.

The shift to the low carbon society is being accelarated

Towards a Low Carbon City

Thank you

For your further reference;
http://www.kankyo.metro.tokyo.jp/en/climate/index.html