

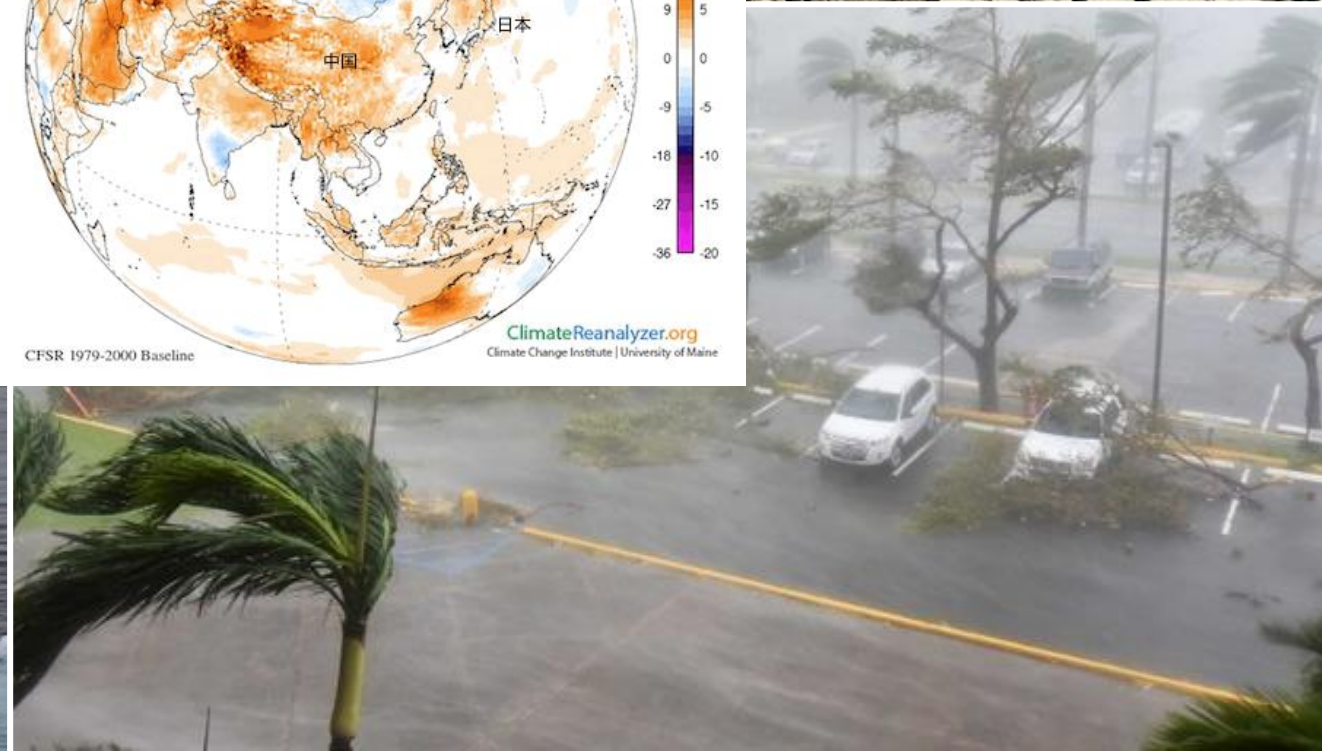
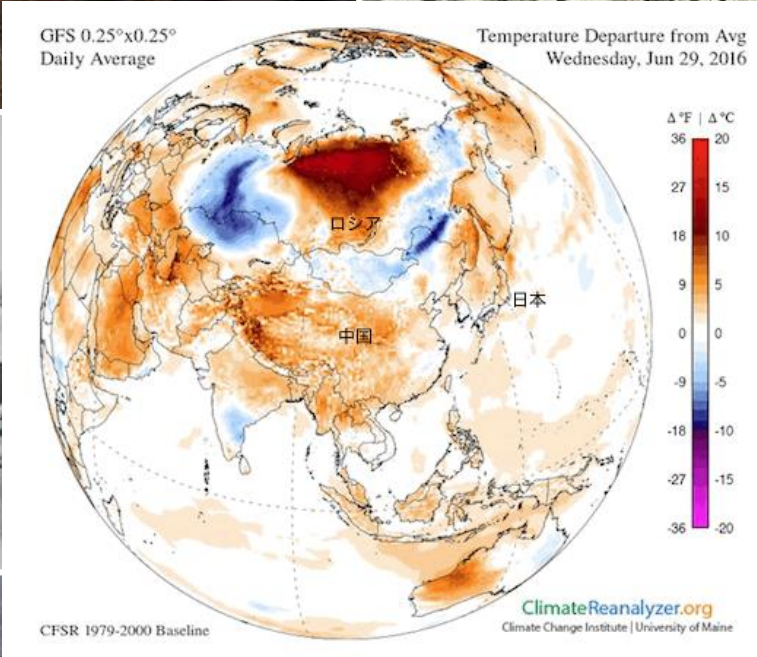
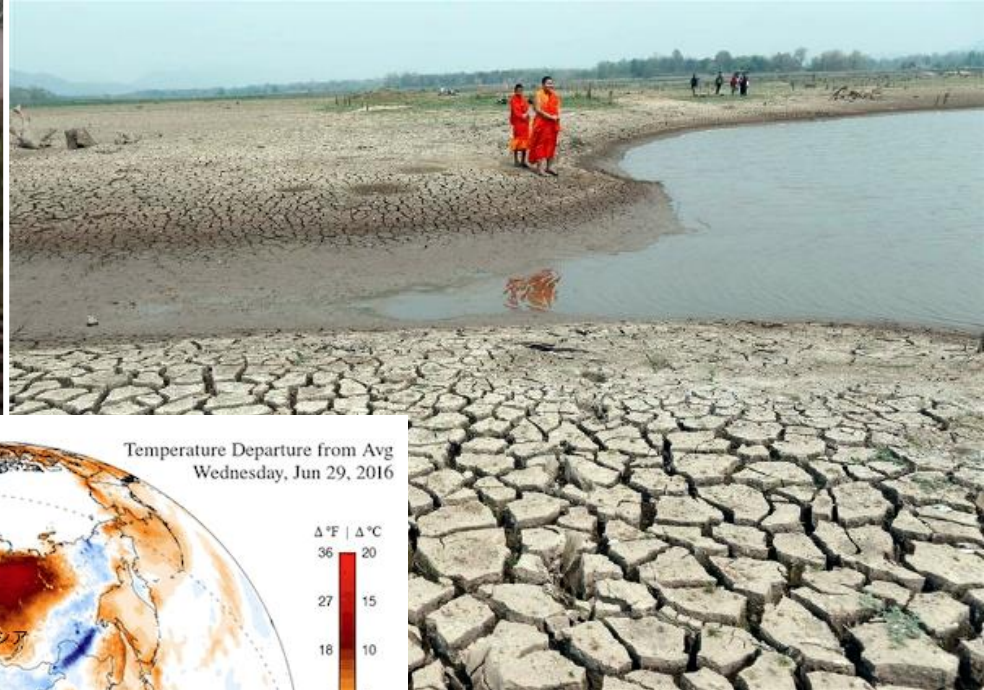
Northeast Asian Mayors' Forum
Ulaanbaatar
June 18, 2018

Tokyo's Low Carbon Initiatives

- Delivering Co-Benefits for Sustainable City -



Naobumi Higashikawa
Bureau of Environment
Tokyo Metropolitan Government





2013 Tokyo



2014 Hiroshima



2015 Miyagi



2017 Fukuoka



2016 Hokkaido



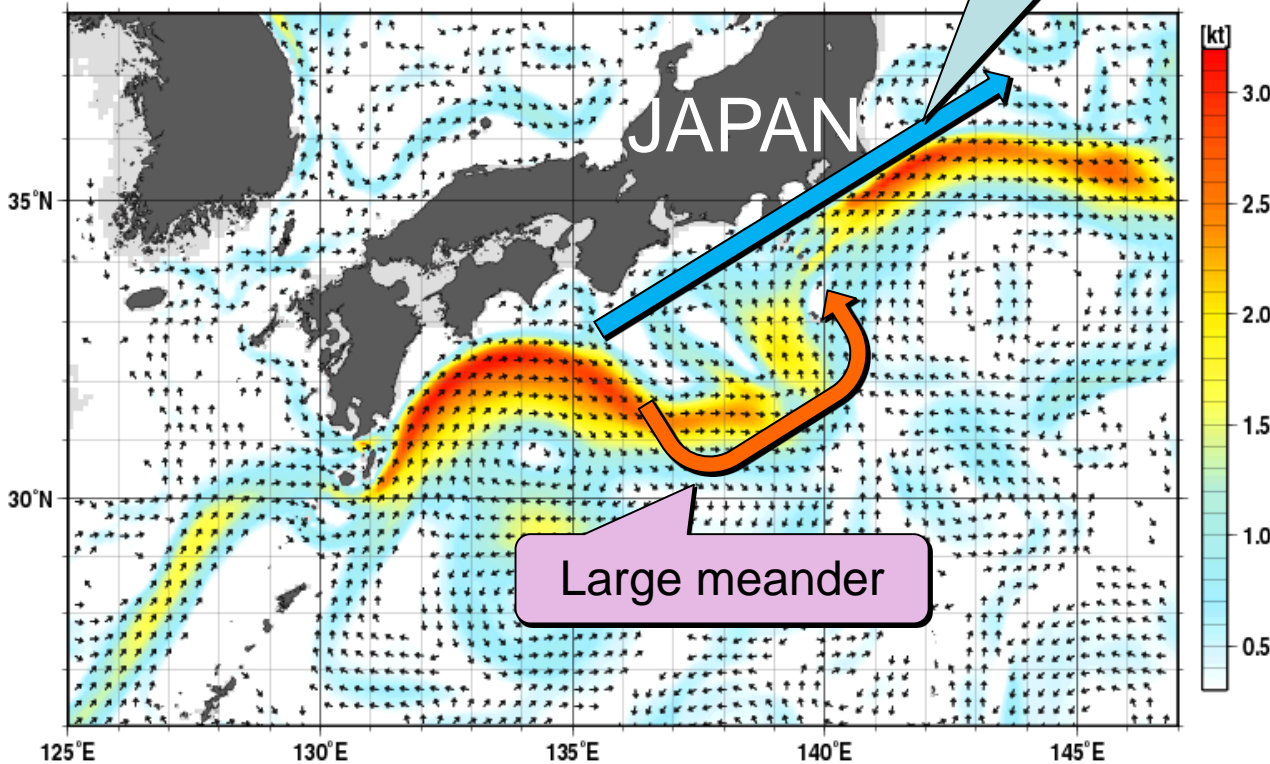
Ocean current
(usual)

Sardine (the catch)

4,400,000 t

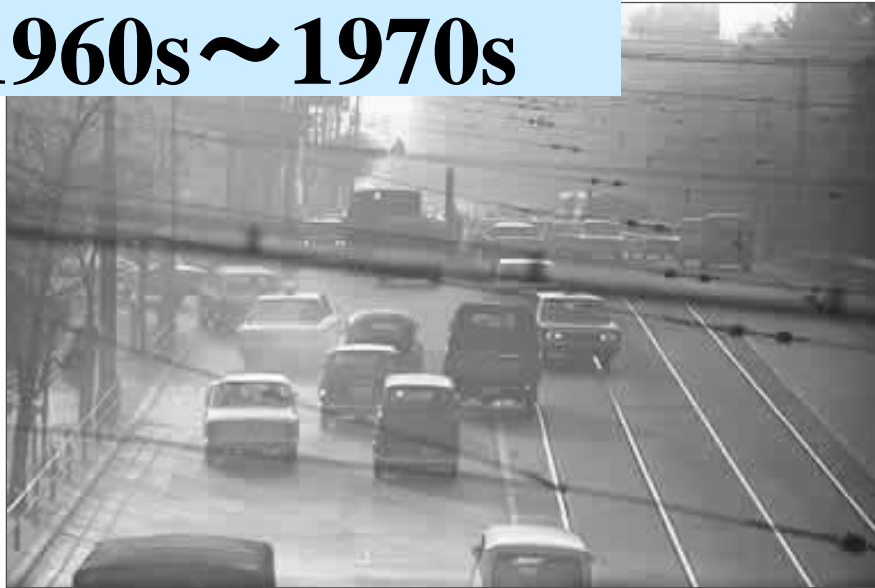


180,000 t



Tokyo

1960s~1970s

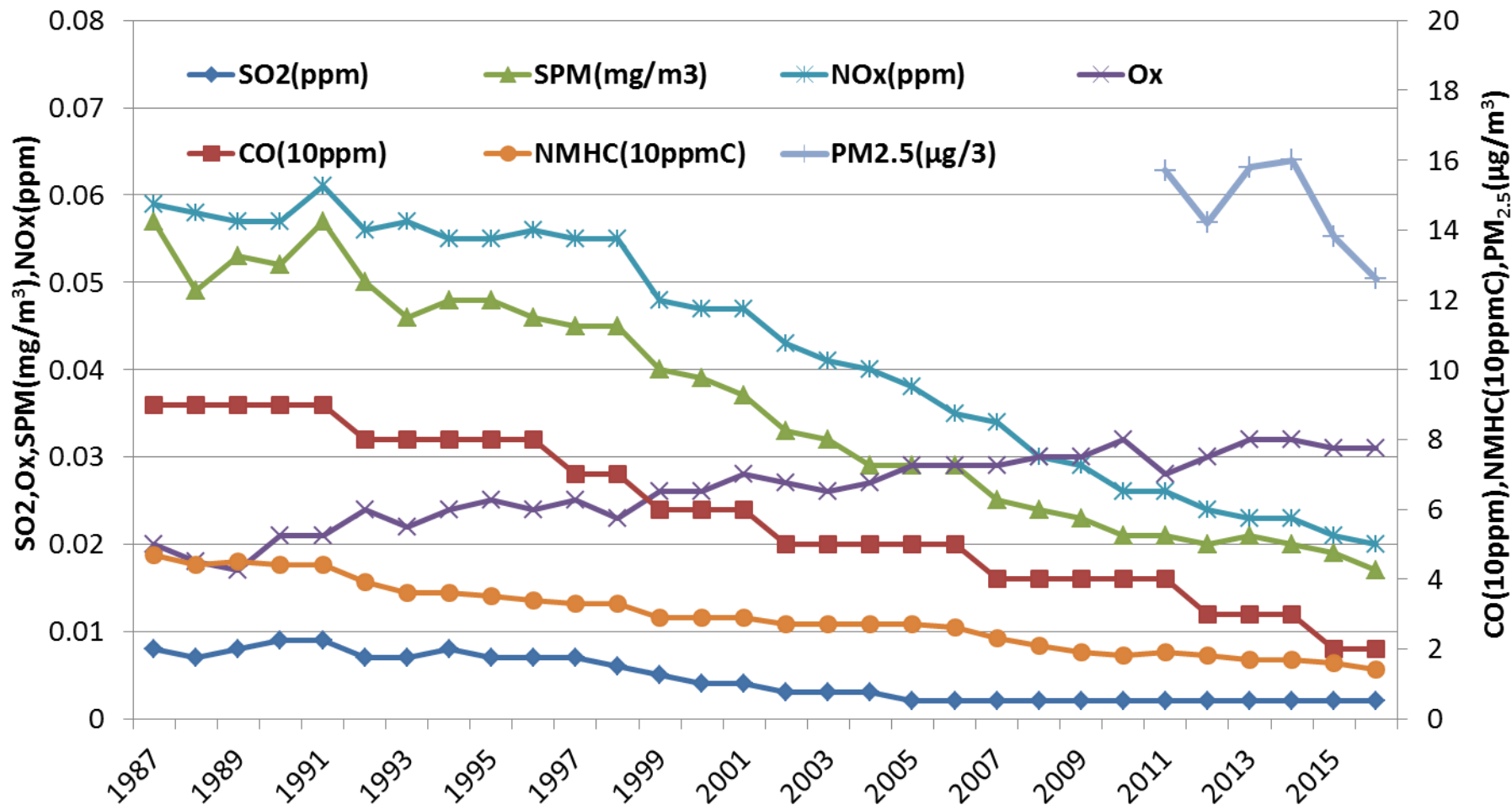


1980s~1990s

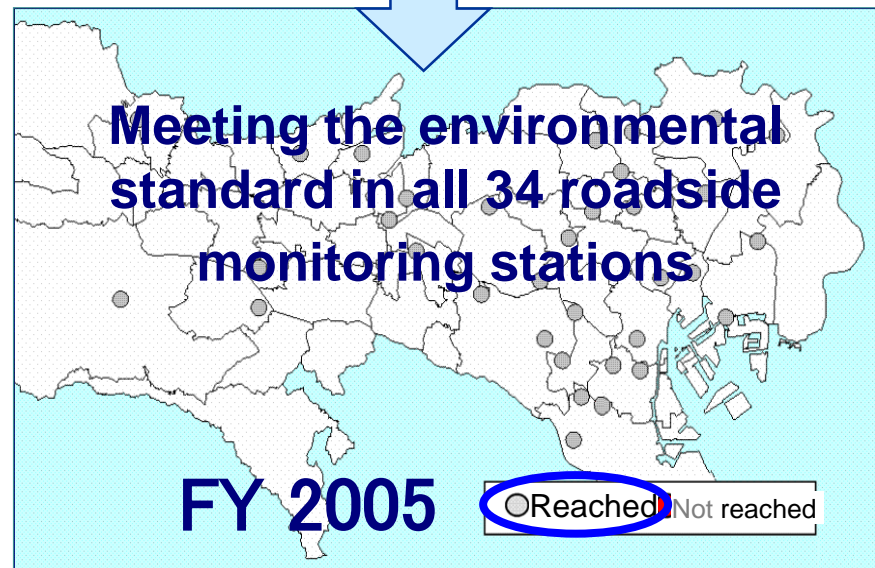
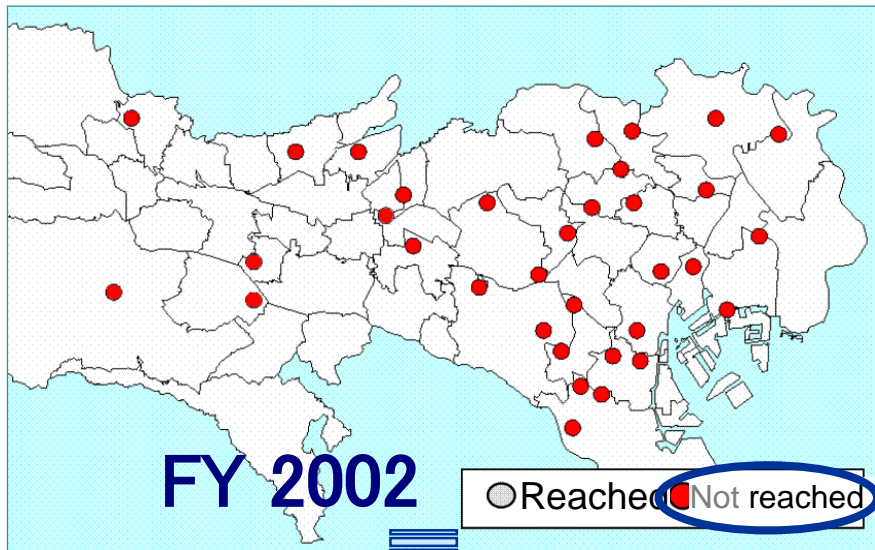


Trends in the Concentration of Air Pollutants

Ambient air monitoring station



Atmospheric concentration of suspended particulate matter (SPM)



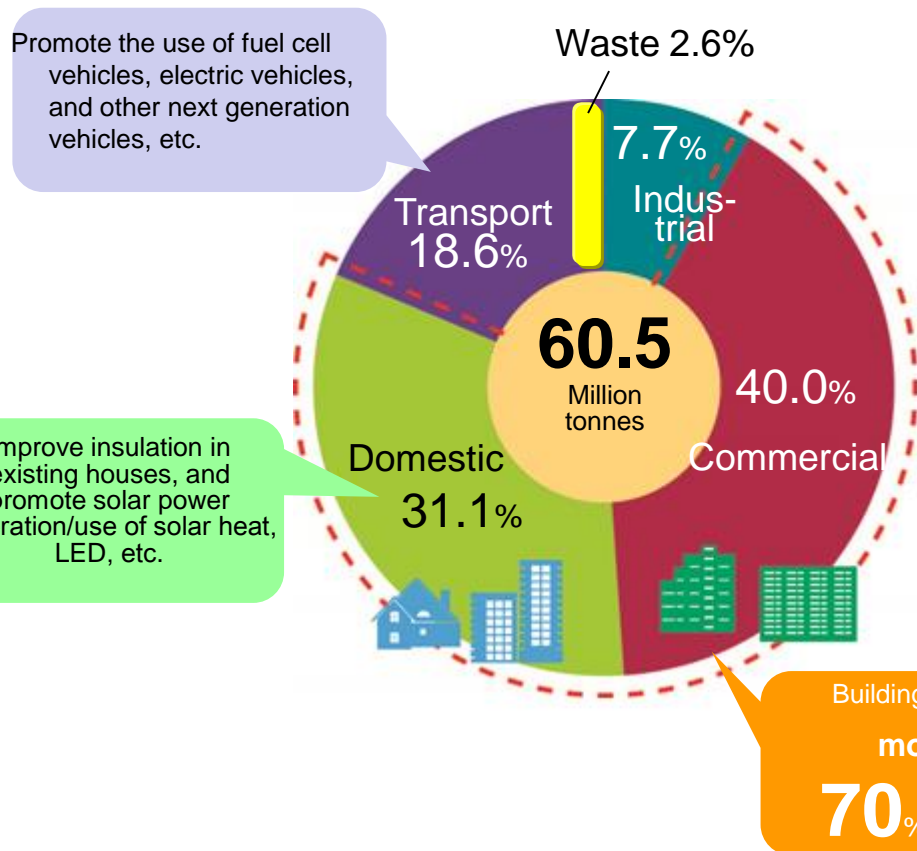
Current view of Tokyo
— Mt. Fuji can be seen clearly



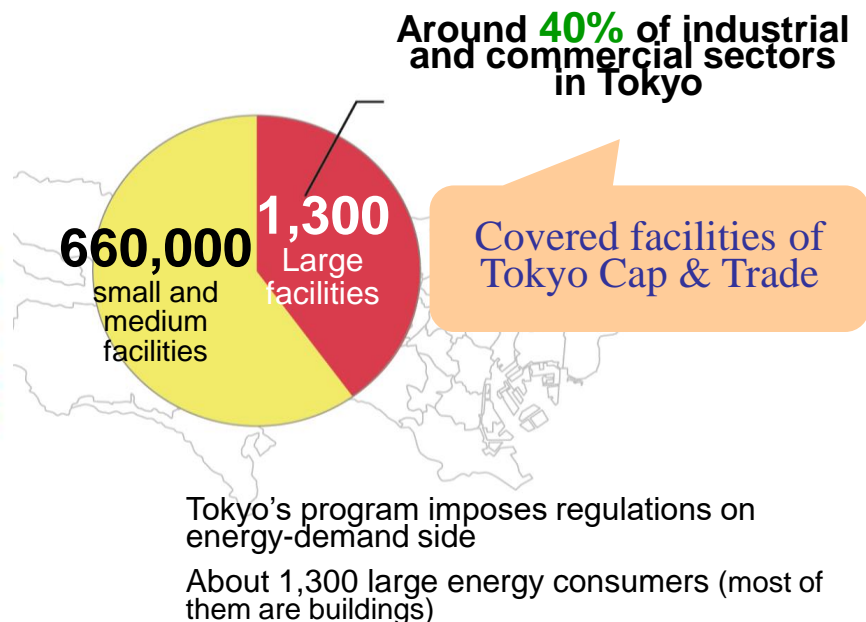
GHG Footprints and Cap & Trade Program

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

Sectoral Breakdown of CO₂ Emissions in Tokyo (FY2015)



Share of CO₂ emissions from industrial and commercial sectors in Tokyo



*Total GHG Emissions; 66 million tCO₂e (FY2015)

Step-by-Step Evolution for Reductions

◎ Improve the Program based on the actual status of facilities

2002 to 2004

HOP

Starting annual reporting program

Reporting program

Voluntary targets

Many facilities unable to draw up effective energy efficiency measures

Many facilities lacking effective promotional system

Disclosure by facilities

2005 to 2009

STEP

Adding evaluation/disclosure mechanism

Reporting program + evaluation/disclosure mechanism

Voluntary targets

TMG proposed basic measures and stepped them up through guidance and advice

Promotional system led by facility managers

Disclosure by facilities and TMG

2010 and beyond

JUMP

Introducing C&T program

Tokyo Cap-and-Trade Program

Mandatory targets

Implementing medium- to long-term energy efficiency measures

Promotional system involving owners, facility managers and tenants

Disclosure by facilities and TMG

Limit of voluntary efforts

Tokyo Cap & Trade Program

C&T scheme: mandatory cuts to greenhouse gas emissions combined with emissions trading scheme

**The world's first urban cap-and-trade program
for large scale facilities (buildings /factories)**

Applies to large scale facilities (buildings / factories) with annual energy consumption of 1,500 kL or more (crude oil equivalent)

Approximately 1,300 facilities in total

- Non-industrial (offices, commercial facilities, universities) = 1,100
- Industrial (typically factories) = 200



These account for around **40%** of industrial and non-industrial emissions in Tokyo

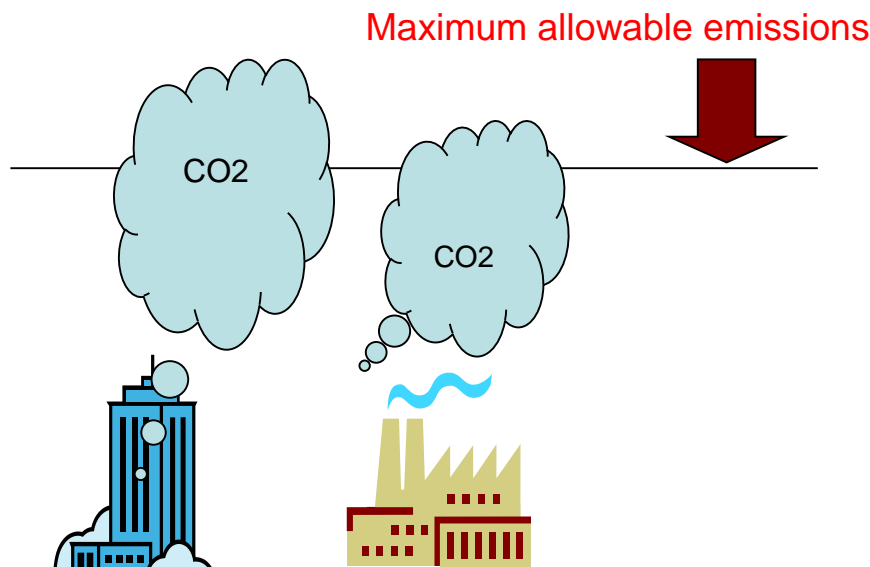
What is a Cap & Trade Program?

1. A ceiling is imposed on the combined CO₂ emissions of all facilities in the scheme.

2. Each facility is assigned a **maximum CO₂ emission level**, known as a **cap**.

3. Facilities are free to use a combination of **energy efficiency strategies** and **emissions trading** to stay under the cap.

Tradable allowances are limited to the excess reductions over compliance obligations



100 Top-level Facilities Certified

Tokyo Cap & Trade Program certifies facilities with excellence in promotional systems as well as in equipment introduction, use and management as top-level or near-top-level facilities.

Top Level Facility : 1/2 of the compliance factor

Near-top level Facility : 3/4 of the compliance factor

- Incentive for further reduction
- Long term strategy by developers
- There is a movement in the building Industry—new buildings are designed to satisfy the requirements for top-level facility certification.



Mori Building
always pursues
“Environment &
Greenery”



Case of co-benefit



Shinagawa Season Terrace



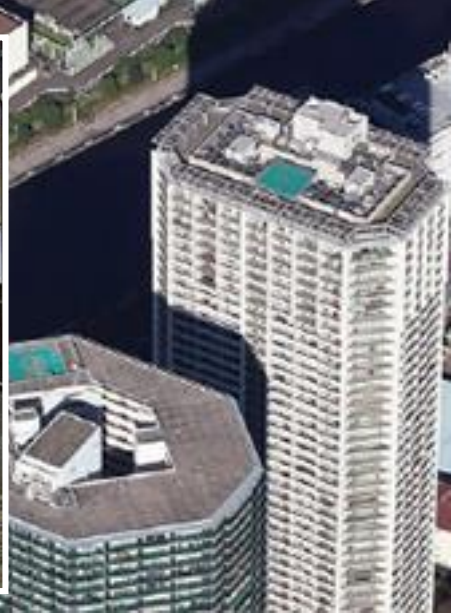
Wastewater heat
Utilize as room heating source

Recycled water
Utilize for flushing toilets

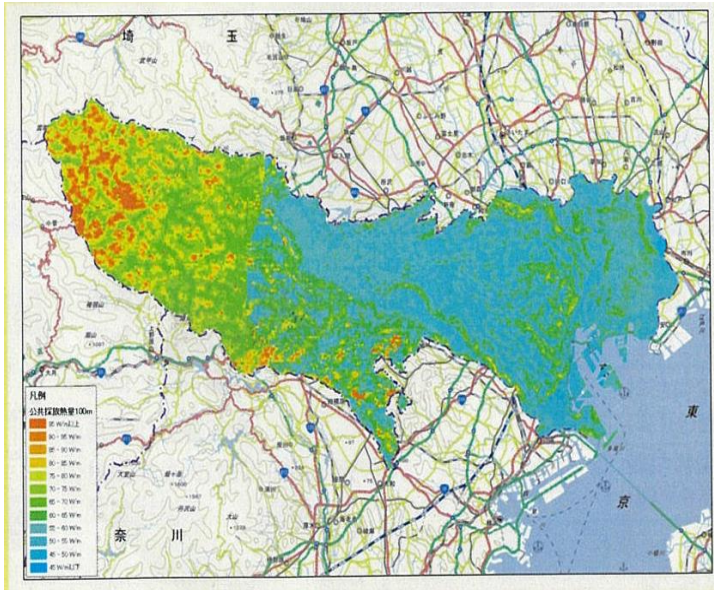
Facilities for storage of storm water (76,000 t)



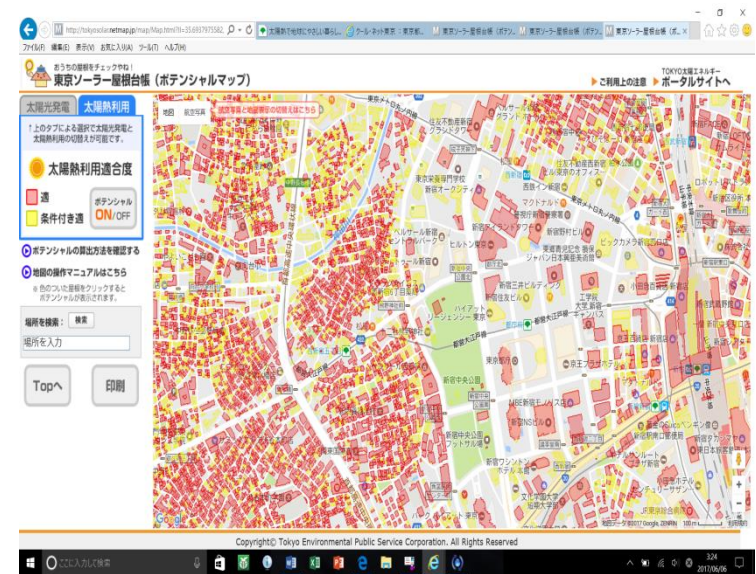
Sewerage facility (underground)



Expansion of Renewable Energy Use



“Online information on the introduction potential of geothermal heat”



“Tokyo Rooftop Solar Register (potential map)”



“City Charge”

Solar charging stand to easily charge smartphones with power from solar panels.

Tokyo Solar Rooftop Register

- Map of Tokyo showing suitability of buildings for rooftop solar power and solar thermal energy systems
- Based on roof inclination and availability of sunlight
- Simple to navigate, includes search by address feature

おうちの屋根をチェックやね!
東京ソーラー屋根台帳 (ポテンシャルマップ)

太陽光発電 太陽熱利用

↑上のタブによる選択で太陽光発電と太陽熱利用の切替えが可能です。

太陽光発電適合度

■ 適
■ 条件付き適

ポテンシャル ON/OFF

ポテンシャルの算出方法を確認する
地図の操作マニュアルはこちら
※色のついた屋根をクリックするとポテンシャルが表示されます。

場所を検索: 検索

場所を入力

Topへ 印刷

Copyright© Tokyo Environmental Public Service Corporation. All rights reserved.

Click on building to display information on solar potential

≪日当たりの良さ≫
適合度(年間予測日射量) 適 (1300 kWh/m²・年)

≪ポテンシャル≫

太陽光発電システム	設置可能システム容量(推定)	4.0 kW
	年間予測発電量	3978 kWh/年
	一般家庭の電力需要量換算	0.7 世帯分
	年間予測CO2削減量	1.5 tCO ₂ /年

≪建物データ≫

建物ID	00000	算出対象屋根面積	40.0 m ²
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注: 上記のデータは、シミュレーションに基づく理論値であり、実際に導入した時の設置効果を保証するものではありません。設置をご検討の際は、設置に適した屋根面や設置方法等について、設置事業者等にご相談ください。

太陽熱利用システムは太陽光発電システムよりも小さい屋根面積でも設置可能です。

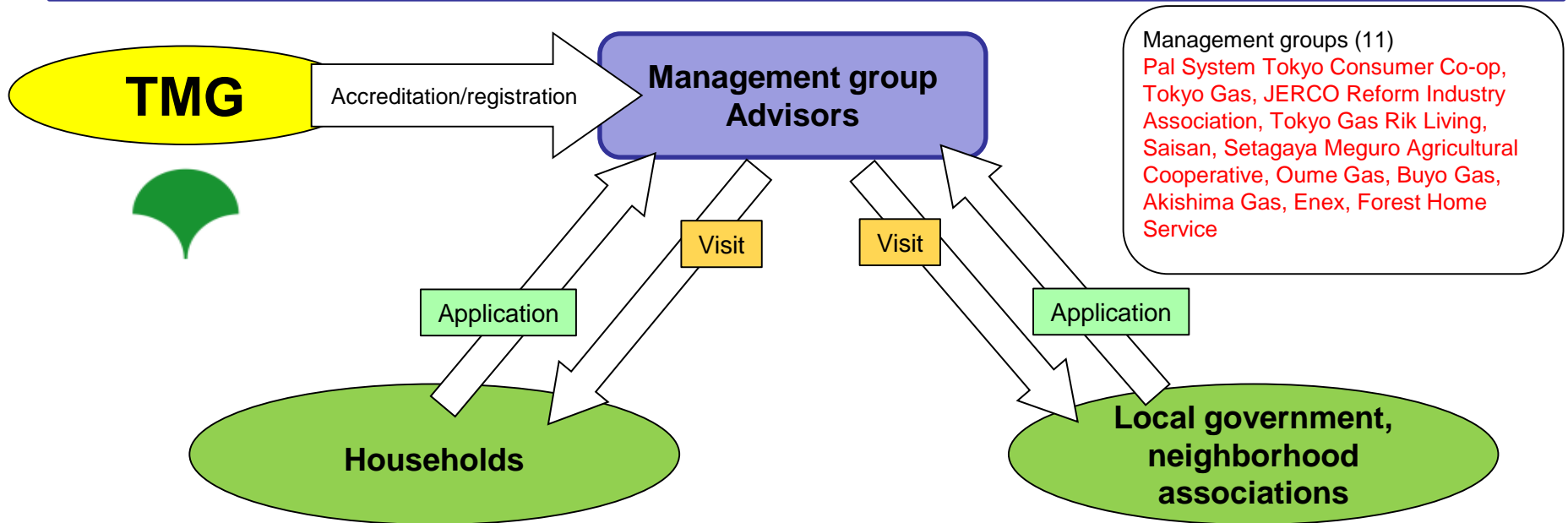
太陽熱利用ポテンシャルもご確認下さい。

Available on the Tokyo Solar Energy Portal Site www.tokysolar.jp/

Households : Home Energy Advisor Scheme

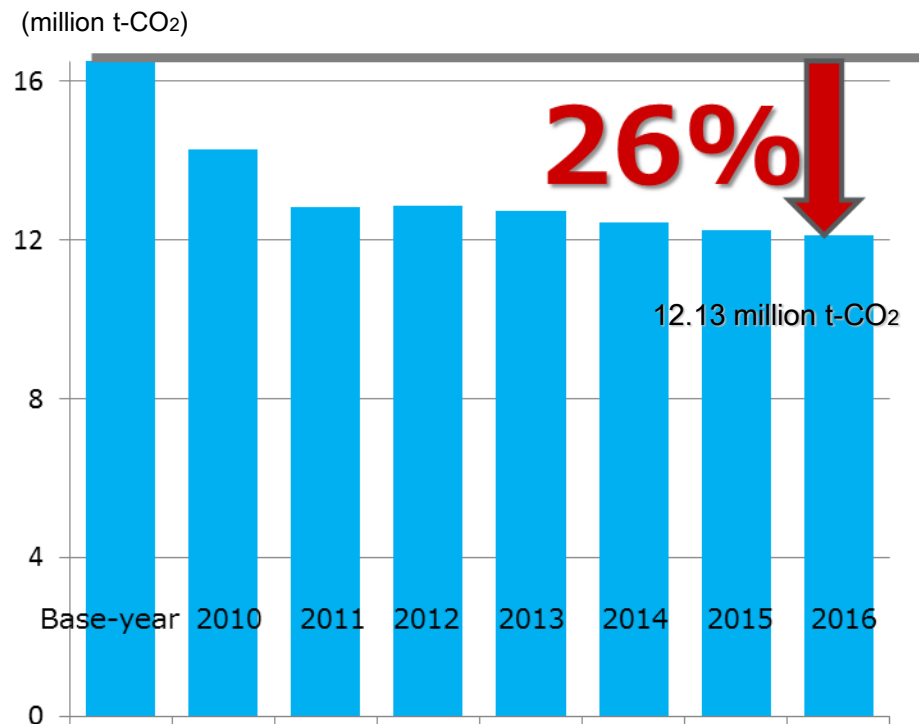
Outline

- Home Energy Advisor training courses are developed in conjunction with industry and interest groups.
- Registered Home Energy Advisors visit homes to dispense free advice on how to reduce energy consumption and design energy-saving strategies for each household.
- The aim is to **encourage people to reduce energy consumption in the home.**

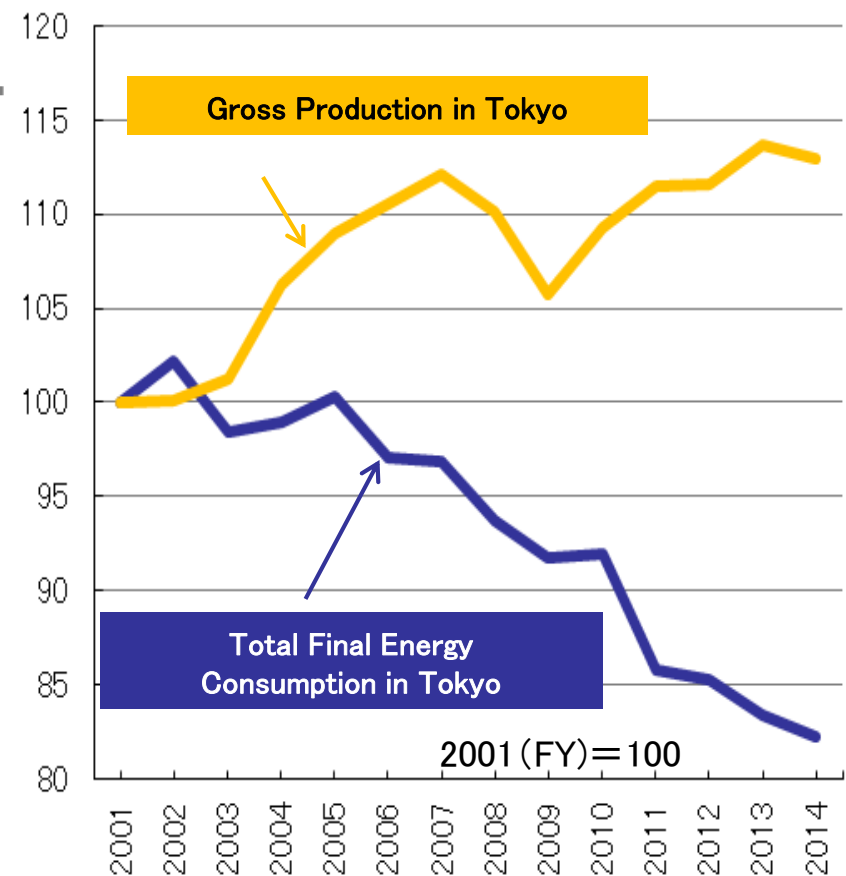


Tokyo Cap & Trade : Remarkable results

Total CO2 Emission Reduction through Tokyo Cap & Trade Program



“Decoupled” energy consumption and economic growth in Tokyo

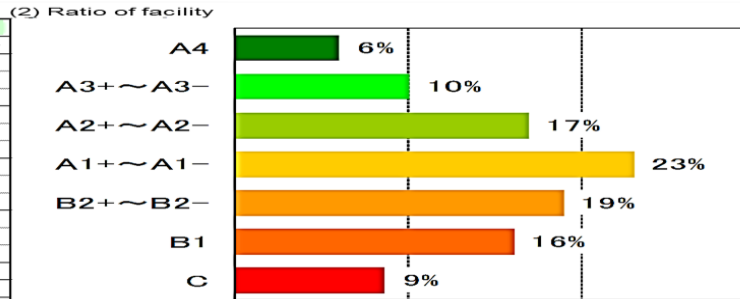


Carbon Reporting Program

- **Requirement:** Mandatory reporting
 - Annual CO2 emissions and plan for reductions
 - Disclose on TMG website
- **CO2 Emission Benchmarking:** 30 sec. 7 grade and 15 ranges

(1) Benchmark

Range	Range of CO ₂ emission intensity (kg-CO ₂ /m ²)	
A4	A4	32.9 or below
A3	A3+	Over 32.9
	A3	Over 35.9
A2	A3-	Over 38.9
	A2+	Over 41.8
A1	A2	Over 44.8
	A2-	Over 47.8
B2+	A1+	Over 50.8
	A1	Over 53.8
	A1-	Over 56.8 (Average value) 59.7 or below
B2	B2+	Over 59.7 (Average value) 62.7 or below
	B2	Over 62.7
B1	B2-	Over 65.7
	B1	Over 68.7
C	C	Over 89.6
Average intensity		59.7 kg-CO ₂ /m ²



◆ Malaysian Cities and Local Government

- Iskandar Regional Development Agency
- Putrajaya

◆ Ho Chi Minh City



• I.C.L.E.I Local Governments for Sustainability



Tokyo Forum for Clean City & Clear Sky



Date; May 22-23,

Venue; Hilton Tokyo Hotel

Theme;

Clean City & Clear Sky

- Waste management

- Sustainable resource management

- Air pollution

70 participants from 22 cities



TOKYO's 2030 GOALS

Tokyo Metropolitan Environmental Master Plan (set in March, 2016)

GHG Emissions : **30%** below 2000 levels

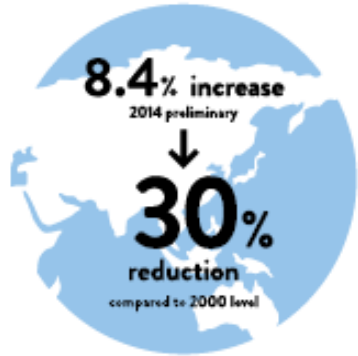
Energy Consumption: **38%** below 2000 levels

Renewable Energy Target for Electricity Use

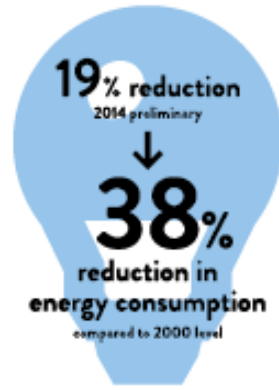
: about **30%**

2030 GOALS

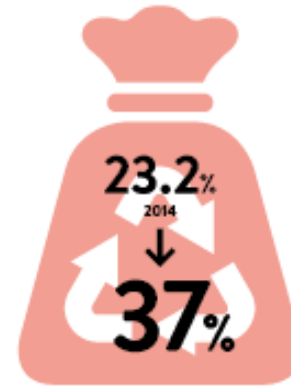
Tokyo will leap to be a sustainable city taking advantage of the Tokyo 2020 Games.



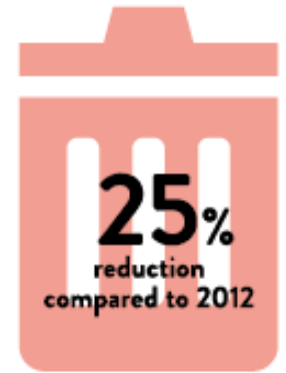
▶ Greenhouse Gas Emissions ◀



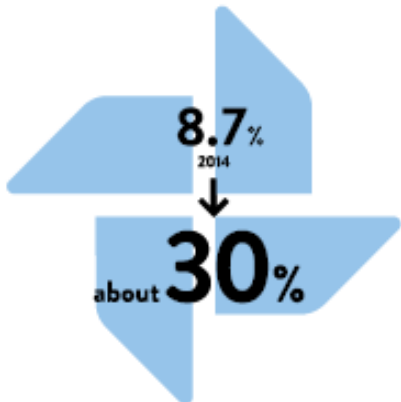
▶ Energy Efficiency ◀



▶ Recycling Rate of Municipal Solid Waste ◀



▶ Final Disposal Amount of Waste ◀



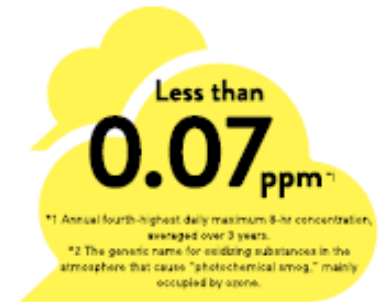
▶ Renewable Energy Target for Electricity Use ◀



▶ Hydrogen Energy ◀



▶ Number of Participants in Field Work Programs ◀



*1 Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years.
*2 The generic name for oxidizing substances in the atmosphere that cause "photochemical smog," mainly occupied by ozone.

▶ Photochemical Oxidant Concentration in All Monitoring Stations ◀

Key Message from Tokyo

◎ **Step-by-step introduction of the Program**

◎ **Understanding of facilities**

◎ **Bold CO₂ reduction targets and powerful measures with mixture of regulatory methods and the market mechanism**

Toward “Zero Emission Tokyo”

References

TMG Website

www.kankyo.metro.tokyo.jp/en/

TMG Facebook

<http://www.facebook.com/Environment.TMG>

