

## **Tokyo's Cap-and-Trade and Green Building Program ; Reducing CO<sub>2</sub> emission from building sector – the major infrastructure in a city**

### **Cities: The Key to Tackling Climate Change**

The role of cities in dealing with climate change is becoming increasingly important. Cities already account for 67% of global energy consumption and 71% of global energy-related carbon dioxide (CO<sub>2</sub>) emissions,<sup>1</sup> and their share continues to grow. The urban population was half the global population in 2010 and is expected to reach 70% by 2050.<sup>2</sup> In short, the role of cities cannot be ignored because of their large and growing share of the world's energy consumption.

Cities contain a high concentration of buildings and facilities as well as the infrastructure for dynamic societies. Most energy is eventually consumed in cities, therefore, cities can contribute to demand-side measures to reduce overall energy consumption. Especially, the buildings are major energy consumer. In emerging megacities in Asia, massive construction of buildings are going and the emission would be set at present level if the energy efficiency is not improved at those buildings. Accordingly reducing emission from buildings in cities is a key challenge for immediate solution.

Tokyo is a megacity, with energy consumption resulting in annual CO<sub>2</sub> emissions 63 million tons that , comparable to emissions from a Nordic country like Denmark and Sweden. 49% of this emission comes from commercial and industrial sector and 28% comes from residential sector and the major portion of them are the emission from buildings. Therefore buildings have been the main target of Tokyo's climate change policies.

TMG have actively tackling climate change for more than a decade and there have been 2 major programs for addressing to reduce emissions from buildings. Tokyo Cap-and-Trade Program is the one which aims to reduce emissions from existing buildings and Tokyo Green Building Program is the another which promotes energy efficiency and emission reduction of new buildings.

### **World's First Urban Cap-and-Trade Program**

**The Tokyo Cap-and-Trade Program**, launched on April 1, 2010, is the world's first urban cap-and-trade program targeting office buildings and commercial buildings in a city. Focusing on end users of energy, it covers large CO<sub>2</sub>-emitting facilities that consume energy in the amount of more than 1,500 kiloliters (crude oil equivalent) per year. So far this program has been applied to about 1,300 facilities: in the commercial sector, about 1,000 office buildings, public buildings, and commercial facilities; in the industrial sector, about 300 factories and other facilities. The total emissions from targeted facilities account for 40% of all CO<sub>2</sub> emissions from the commercial and industrial sectors in the Tokyo area.

The total cap on the targeted sector was set at -6% from base-year emissions for the first compliance period (2010–2014), based on Tokyo's emissions reduction goal (-25% from 2000 level by 2020). The cap for the second period (2015–2019) is expected to be -17%. We already announced this expecting targeted facility owner to plan long-term investments.

During the first period, targeted office buildings and other facilities are required to reduce their energy-related CO<sub>2</sub> emissions by 8%, and factories by 6%, from their base-year emissions. They are allowed to select the average of any three consecutive years from 2002 to 2007 as their own base year

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<sup>1</sup> IEA (International Energy Agency), *World Energy Outlook 2008*

<sup>2</sup> UN, *World Urbanization Prospects: The 2007 Revision*

emissions, an approach that allows flexibility and fairness based on their differing business conditions. A facility that has already achieved high energy efficiency can be certified as a “Top Level Facility.” For such a facility, the mandatory reduction target rate is reduced to half or three-quarters of the normal rate, depending on a detailed review.

The targeted facility owners are required to meet their emission reduction targets through on-sight energy efficient measures or emission trading scheme. They can purchase excess reductions from other facilities, as well as 3 types of offset credit; 1)Emission reductions from small and midsize facilities in Tokyo, 2)Renewable energy credits, 3)Emission reductions outside Tokyo area.

### **Tokyo Green Building Program**

Every plan to construct a new large building (over 5,000 square meters in total floor area) within Tokyo is subject to the **Tokyo Green Building Program**. Before applying for a building permit, building owners are required to submit a “Building Environmental Plan” outlining the proposed building’s environmental performance (covering 12 components, including environmental performance rating). The plans, along with rated performance results, are then published on the TMG website. Since 2002, more than 1,300 buildings have disclosed their “green specs” under this program, accounting for about 40% of total floor area of newly constructed buildings in Tokyo. Through its rating and reporting scheme, this program aims to create a real estate market in which “greener” buildings are valued.

In progress of this program, some “sister programs” have been developed based on its rating system and information disclosure.

#### **■ Green Labeling Program for Condominiums (since 2005)**

Condominiums larger than 10,000 square meters (5,000 square meters since 2010) in total floor area were required to display a “green label” showing their “green” ratings in sales on their sales and rental advertising materials.

#### **■ Energy Performance Certificate Program (since 2010)**

A labeling system on energy performance for non-residential buildings also began in 2010. Building owners are required to present an energy performance certificate when conducting transactions and leasing.

#### **■ Requirement of higher energy standards for large urban developments (since 2009)**

A developer of large-scale buildings who want to utilize urban planning systems that include bonuses—such as increasing the permitted total floor area ratio to site area (FAR)—is required to meet higher environmental performance standards. Related to climate change, a rating of grade 2 or higher under the Green Building Program is required.

### **Toward a Green Economy: Promoting a Low-Carbon Economy**

These programs are driving demand and investment toward green businesses that contribute to lower carbon emissions. Green technology innovations are also promoted through these efforts. The world’s leading high-performance green buildings are now being built, and innovative green technologies and business models are emerging. I will introduce TOP30 low emission buildings in Tokyo in session 2 of Day 2 in LCS-Rnet meeting in Paris.