

Tokyo's urban cap-and-trade program soars past goals

June 23 2016, by Blaine Friedlander

By any measure, Tokyo's plan for reducing greenhouse gas emission and boosting energy saving has been a success.

Cornell and Tokyo governmental researchers have pored over five years of data from the city's cap-and-trade [program](#) – the world's first such program that focused on urban buildings – and found it achieved more than a 20 percent reduction in emissions. The goal for the first phase of the program, 2010 to 2014, was 8 percent emission reduction from its baseline year; in the second phase, from 2015 to 2019, Tokyo's large commercial buildings must achieve an emissions mitigation goal of an additional 17 percent.

Cap-and-trade is an environmental and economical approach to controlling greenhouse gas emissions, a major culprit in global climate change. Caps set emission limits, while trade allows companies to sell and purchase environmental credits, which offset difficulties in reaching goals and promotes cost-effective sustainability efforts.

"The program's design and implementation reflects a clear approach to using environmental policies to increase market payoff, maximize flexibility in compliance and boost the ability to implement new knowledge in buildings – all ways to nurture market success of eco-friendly technology and mitigate carbon emissions," said Ying Hua, associate professor in the College of Human Ecology's Department of Design and Environmental Analysis.

Tokyo's cap-and-trade program affects about 1,300 existing large commercial and industrial buildings, which account for about 20 percent of the city's total carbon emissions.

Stringent policies reduced energy consumption, heightened awareness and drove behavior for further change, said Hua, who has been working for seven years with the Tokyo Metropolitan Government to track the [Tokyo Cap-and-Trade Program](#) – the world's first such measure targeting large urban buildings for emissions mitigation and sustainability. "It's a unique, effective mandatory policy alternate to building codes," said Hua.

The study, "Alternative Building Emission-Reduction Measure: Outcomes From the Tokyo Cap-and-Trade Program," was published in the journal *Building Research & Information* in May. In addition to Hua, authors on the paper included Yuko Nishida and Naomi Okamoto, both of the Tokyo Metropolitan Government's Bureau of Environment.

Hua explains that the launch of Tokyo's program in 2010 had its origins in the country's mandatory Carbon Reduction Reporting Program in 2002. Hua and her colleagues tracked the design and planning process of the Tokyo program, with special interest in how it motivates and engages stakeholders.

Tokyo's program has a strict, accurate third-party verification process, as all emissions data from mandated reduction facilities are accumulated to calculate the total emissions. The mechanism of the collaboration between city government and the private sector is of great reference value for achieving the climate goals defined by the new Paris Agreement.

The paper noted that installation of efficient lighting systems took a drastic jump in 2010, and after 2011 conventional, energy-hog lighting

disappeared. Similarly, as Japan typically uses more energy in the summer to cool buildings, many properties replaced convention chillers with energy-efficient turbo chillers.

An energy crisis resulted in the wake of the March 2011 earthquake and subsequent Fukushima nuclear reactor disaster. The area faced emergency rolling power cuts. In the summer of 2011, many facilities took multiple operational measures quickly and further, resulting in heavy energy savings.

"Most buildings and facilities incorporated energy savings immediately after the incident," said Hua, but she noted that some particularly severe energy-saving measures were discontinued or loosened, due to its burden on users. However, "electricity consumption reductions have remained stable ... [and] data demonstrated the effects of the program on energy use, apart from the impact from energy crisis."

More information: Yuko Nishida et al. Alternative building emission-reduction measure: outcomes from the Tokyo Cap-and-Trade Program, *Building Research & Information* (2016). [DOI: 10.1080/09613218.2016.1169475](https://doi.org/10.1080/09613218.2016.1169475)

Provided by Cornell University

Citation: Tokyo's urban cap-and-trade program soars past goals (2016, June 23) retrieved 26 April 2024 from <https://phys.org/news/2016-06-tokyo-urban-cap-and-trade-soars-goals.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.