

Becoming a net-zero emissions city through transformative changes in lifestyle, work-style and urban infrastructure

Kyoto is one of the world's most unique historical cities: one that has developed over the millennia without disruption to its urban function and culture. Although a large city with a population over one million, forests cover three-fourths of the municipal area. Surrounded by these blessings from the earth, Kyoto has cultivated its culture in co-existence with nature striving towards a city that places no burden on the natural environment.

It is also the city that set the stage for the dawn of the Kyoto Protocol, the first international convention in human history on climate change and the newest challenge shared by the human race. Through the cooperation of a diverse set of stakeholders, including residents, businesses, and civic groups, Kyoto has promoted breakthrough initiatives with a sense of pride and mission as the birthplace of the Kyoto Protocol.

As a result of these actions, greenhouse gas emissions have peaked out, and global warming countermeasures are being further promoted with a focus on the "Road to Zero Project", a strategy that aims to achieve net-zero greenhouse gas emissions.

In December 2017, we took a look back on the 20 years since the breakthrough of the Kyoto Protocol on the international scene and renewed our determination to promote climate change measures through city-to-city collaboration with the announcement of the "Kyoto Declaration for Cultivating a Culture of Sustainable Cities" in collaboration with cities around the world, including Paris: the stage for the Paris Agreement.

We will join the Talanoa dialogues from our stance as a local government, so that we can strive to achieve even higher reduction targets by overcoming various conflicts of interest and friction between nations, as we move towards the achievement of the "2°C target" and the "net-zero greenhouse gas emissions," as outlined in the Paris Agreement, marking a tremendous leap forward from the Kyoto Protocol.

1 History of Global Warming Measures in Kyoto City

The "Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP3)" was held in December 1997, where the Kyoto Protocol, the first international agreement on global warming countermeasures in human history, was adopted. Kyoto City has promoted various advanced initiatives in cooperation with a multitude of diverse stakeholders, maintaining a sense of pride and vocation as the birthplace of this Protocol.

Kyoto City developments related to global warming countermeasures

1997	COP3 held, "Program of Global Warming Countermeasures" formulated
2004	"Code of Global Warming Countermeasures" enacted
2009	Selected as an Eco-model city by the Japanese government
2010	New decision to aim for the creation of a low-carbon society that reduces GHG emissions by at least 80%, and comprehensive revision of the "Code of Global Warming Countermeasures"
2011	Formulated a new version of the "Program of Global Warming Countermeasures" as an action plan for achieving the reduction targets set forth in the comprehensively revised code
2013	Formulation of energy strategies
2015	Establishment of the "Shimatsu no Kokoro Code (Kyoto Waste Reduction and Appropriate

First code ever in Japan exclusively focusing on global warming countermeasures

2016	Disposal Code)” that aims to reduce the amount of waste by half
2017	Selected as one of the “100 Resilient Cities” by the Rockefeller Foundation
2019	Revision of plans (shaping adaptation measures, the “Road to Zero Project”, current plans) Organization of the “Kyoto Conference on the Global Environment 2017 (KYOTO+20)” to commemorate the 20th anniversary of the Kyoto Protocol
2019	Organization of the 49th General Session of the IPCC

2 Where are we?

(1) Reduction Targets

The following three reduction targets have been set for greenhouse gas emissions in the “Kyoto City Global Warming Countermeasure Code”, Japan’s first code dedicated to measures to counter the issue of global warming.

- (1) Reduction of at least 80%
- (2) 25% below those levels by 2020
- (3) 40% below those levels by 2030

from the levels in 1990

(2) Features of Global Warming Countermeasures in Kyoto City

Kyoto City promotes action that unifies all parties, such as civic society and the private sector, by considering global warming countermeasures to be an issue that applies both to ourselves and those around us, not simply as a problem that should be solved by others. This spirit can be found throughout all areas, such as the promotion of energy conservation under the slogan, “DO YOU KYOTO?”, which means “Are you doing something good for the environment?”, the expanded application of renewable energy through solar power generation projects with investment from residents, reduction of waste under the pillars of “promoting the 2Rs” and “mandatory separation”, and the "Pedestrian first" strategy that prioritizes people and public transport.

Following the adoption of the "Resolution on the Shift to Energy Policies with Reduced Dependency on Nuclear Power and the Wider Spread of Renewable Energy" at the Kyoto City Assembly in March 2012, Kyoto City has been working on promoting thorough energy conservation, dramatically expanding the introduction of renewable energy, and promoting environment- and energy-related projects while encouraging innovation.

【Promotion of Energy Conservation】

<Municipal Energy Consumption>



<Leading Initiatives>

o Eco-Friendly Districts

In order to reduce greenhouse gas emissions from the residential sector, school districts that play a central role in community activities are working to changeover to environmentally-friendly lifestyles and improve community potential



with the involvement of the entire community.

Currently, all 222 school districts in the city have become Eco-School Districts and are carrying out various eco-activities. Each district conducts such activities with a bit of unique ingenuity, such as promoting energy conservation using communities to resemble “energy management systems” and “free flea markets” where used articles are traded free of charge.

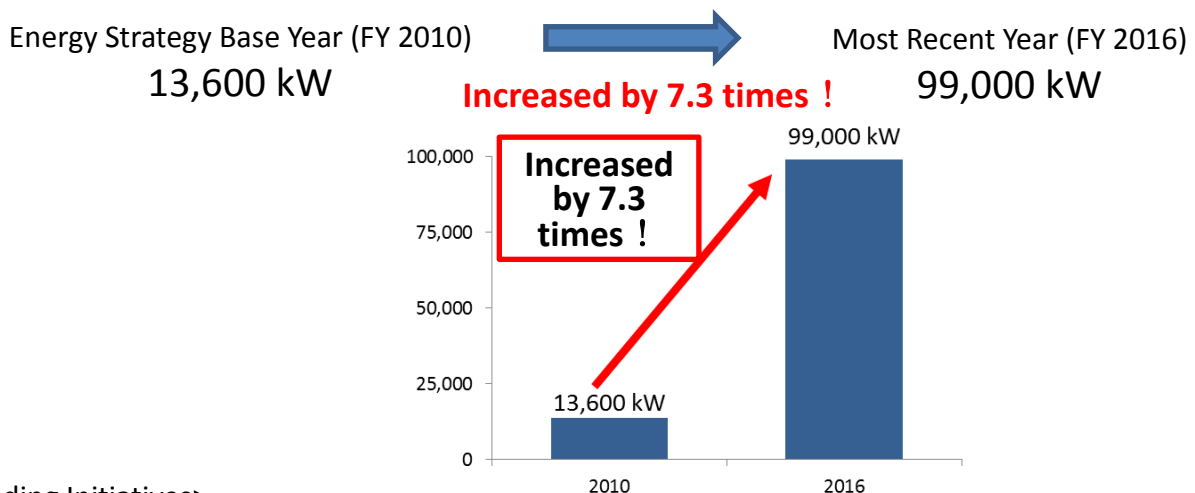
o Children Eco-Life Challenge

Using the “Children Eco-Life Challenge Workbook,” environmental education is offered to children in the upper grades at all Kyoto municipal elementary schools to help them deeply consider their lifestyles and practice global warming countermeasures from a child’s perspective. This initiative is spreading both throughout Japan and abroad and is also being implemented at all elementary schools in the Iskandar Development Region of Malaysia. Kyoto City is supporting and collaborating with Iskandar in the implementation of this project.



【Expanded Introduction of Renewable Energy】

<The amount of power generated from photovoltaic power generation systems in Kyoto City>



<Leading Initiatives>

o Citizen's Joint Power Station System

Photovoltaic power generation facilities are being installed by renting out the roofs of city-owned facilities with funds procured from residents and businesses themselves in a system where all residents can be directly involved in the spread of renewable energy.

o Production of Biodiesel Fuel

Since the launch of the Kyoto Protocol in 1997, food waste oil collected in communities has been converted into biodiesel fuel for use by garbage collection trucks and city buses.

Currently, about one million liters of biodiesel fuel are produced each year and are used to power 136 garbage trucks and 104 city buses.

【Promotion of Environment- and Energy-related projects and Encouraging Innovation】

o Cellulose Nanofiber (CNF) Project

The Kyoto Municipal Institute of Industrial Technology and Culture and Kyoto University are

jointly promoting initiatives on cellulose nanofibers (CNF), which is attracting attention as a new plant-derived material. This includes the development of the “Kyoto Process”, a manufacturing method that produces resin with increased strength using CNF at low costs.

○ Support for Entry of Local Kyoto Businesses into the Green Innovation Market

Support is offered to companies in Kyoto wishing to enter the market in order to develop as leading industries which can respond to the modern needs of today’s society. This support is made possible through the application of an “All-Kyoto” system involving Kyoto City along with Kyoto Prefecture and its corresponding industrial systems, which uses development and commercialization of business models that can contribute to eco- and energy-related industries.

○ Kyoto Green Chemical Network

In order to promote environment- and energy-related industries in Kyoto, the city has established green technologies focusing on research and development through the collaboration of industries, academia, government, and civic society in the field of chemical technology, one of Kyoto’s strengths. It supports the creation of new business based on these achievements.

【Waste Reduction】

<Amount of Waste>

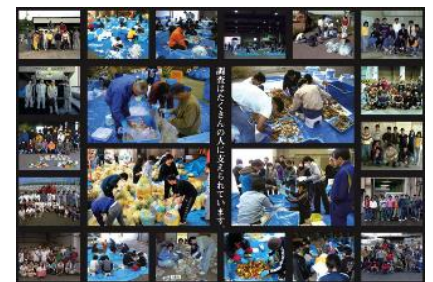


Through this waste reduction, Kyoto was able to additionally reduce the number of waste incineration plants from five to three as well as mitigate greenhouse gas emissions by 45% and annual costs by ¥15.4 billion respectively.

<Leading Initiatives>

○ Waste Composition Analysis

For nearly 40 years since fiscal 1980, Kyoto has been studying the composition of waste in cooperation with Kyoto University, utilizing the city’s strength as a “City of Universities and Students”. The results of surveys are used in planning and developing proposals for waste reduction measures and raising the awareness of residents and businesses.



○ Formulation of the “New Kyoto City Plan for Reducing Waste by Half”

In addition to its major targets for reducing the volume of waste to less than half (FY 2020: 390,000 tons) from the peak year (FY 2000: 820,000 tons), Kyoto City is the first municipality in the nation to set numerical targets to reduce food loss and drive forward initiatives under two pillars: separation and recycling and the promotion of the 2 Rs, reduce and reuse.

○ Gion Festival Zero-Waste Project

Since 2014, reusable dishes have been introduced in stalls at the Gion Festival, which is registered

as an Intangible Cultural Heritage with UNESCO. With the collection of dishes and separation of waste, Kyoto City has achieved waste reduction of 25% compared to the amount of waste generated before the implementation of this project.

o Incorporation of Biomass Polyethylene into Garbage Bags

Kyoto is the first code-designated city in the nation to work on reducing greenhouse gas emissions and improving the environmental awareness of all residents by incorporating biomass polyethylene produced from the non-edible parts of sugar cane into all chargeable household waste bags.

【Promotion of “Pedestrian-Friendly City Kyoto”】

<Proportion of People Visiting Kyoto by Car>



<Automobile Allotment Rate>



<Leading Initiatives>

o Sidewalk Expansion Project on Shijo Street

On Shijo Street, the main street in Kyoto City, space has been secured where everyone can safely, securely and comfortably walk by way of initiatives such as reducing the number of vehicle lanes from four to two and, at maximum, doubling the width of sidewalks. As a result, the number of pedestrians per day has increased by about 10% and the volume of traffic has decreased by about 40%.



(3) Developments in Greenhouse Gas Emissions

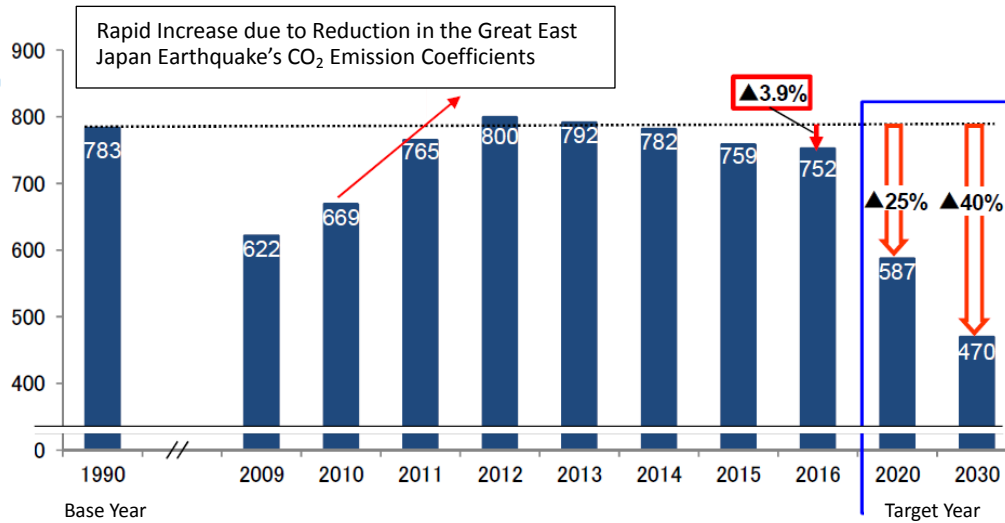
As of FY 2010, we have reduced greenhouse gas emissions by 15% from the level in 1990. However, the CO₂ emission factor for electricity, which accounts for more than half of greenhouse gas emissions, rose due to a significant increase in the use of thermal power since the Great East Japan Earthquake in March 2011. This has resulted in a sharp increase in greenhouse gas emissions.

However, due to initiatives in energy power saving by residents and businesses, total energy consumption is 27.2% lower than figures at peak times (FY 1997) and 22.1% lower than the base year (FY 1990). Greenhouse gas emissions have decreased 3.9% from the base year (FY 1990) and in recent years, has been on a downward trend due to additional energy and power saving efforts.

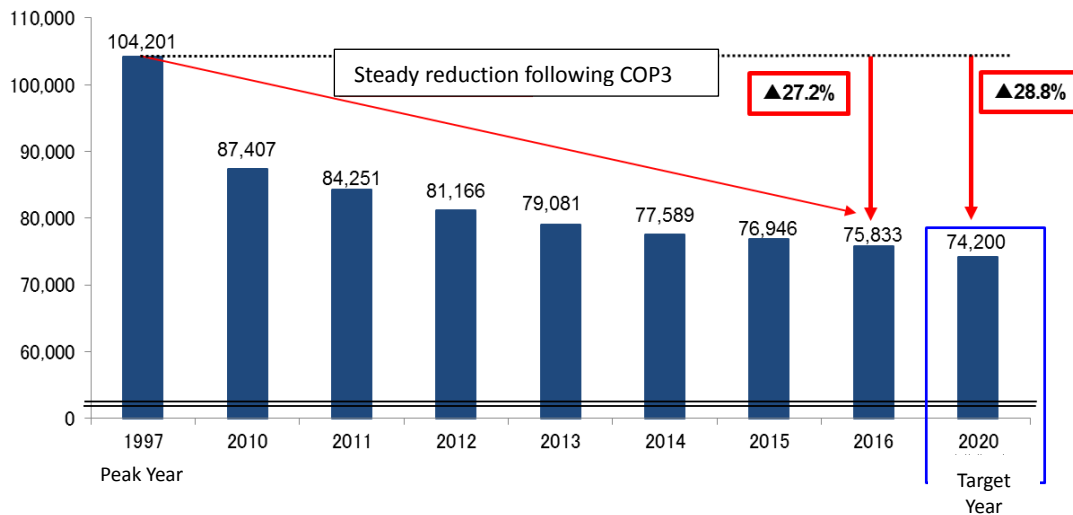
<Greenhouse Gas Emissions>



General Greenhouse Gas Emissions of the Municipality



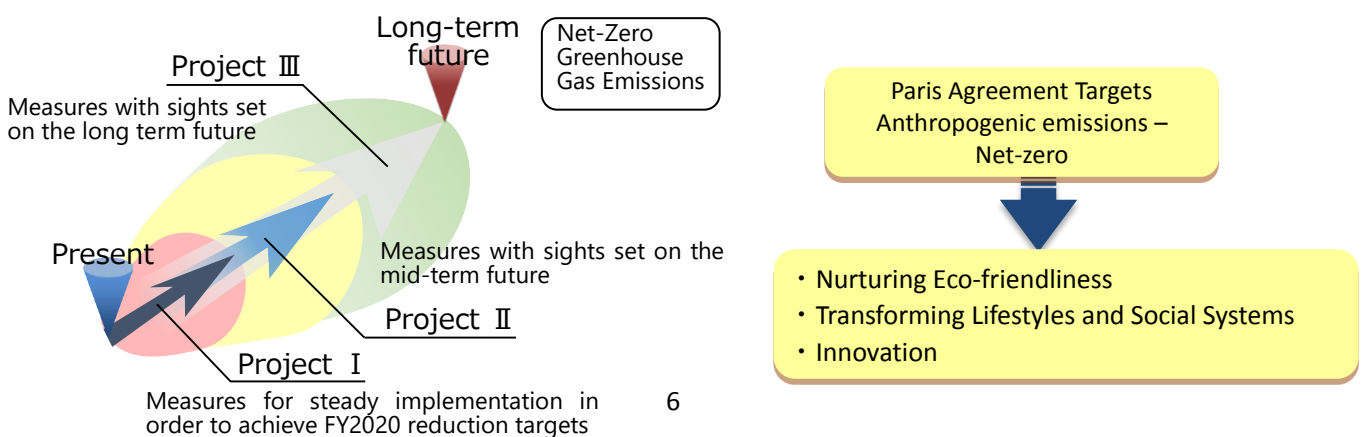
Municipal Energy Consumption



3 “Where do we want to go?” and “How do we get there?”

(1) Kyoto City on the “Road to Zero Project”

Kyoto is aiming to achieve greenhouse gas reduction targets set forth in the code, such as the following: (1) reduction over the long term by at least 80% from levels in 1990 and (2) 40% below those levels by 2030, and is the first local government in Japan to formulate the “Road to Zero Project”, a strategy stipulating the net-zero greenhouse gas emissions. In the future, Kyoto will pursue its plans and continue its progress towards net-zero greenhouse gas emissions by transforming lifestyles, work-styles and urban infrastructure.



(2) To “Cultivate a Culture of Sustainable Cities” in Collaboration with Cities and Local Governments Around the World

In December 2017, Kyoto City organized the “Kyoto Conference on the Global Environment 2017 (KYOTO+20)” to commemorate the 20 years since the birth of the Kyoto Protocol, where the “Kyoto Declaration for Cultivating a Culture of Sustainable Cities” was announced, illustrating the obligations of cities—including Paris—that are a major source of global greenhouse gas emissions. In the coming years, we will take concrete measures towards decarbonization in Kyoto based on the philosophy of the Kyoto Protocol. These measures include coexistence with nature, transition to values and lifestyles through the reconstruction of daily life and culture, finding balance between reducing environmental impacts and convenience through the development of advanced urban transportation systems, and developing leaders who can create innovation while building sustainable societies which include scientific technologies and urban management that can contribute to decarbonization. In addition, we will disseminate this information globally and lead the promotion of global warming countermeasures through city-to-city collaboration, including sharing of policies and success stories in cities around the world.

“Road to Zero Project”

Project I

Measures for steady implementation in order to achieve FY2020 reduction targets.

○Steadily implement measures listed in the current Plan for Global Warming Countermeasures

Project II

Measures to pursue in the present with sights set on the mid-term future.

○Environmental education and public awareness in order to learn about global environmental issues such as global warming, to more deeply understand the rich natural environment, history and culture of Kyoto City, and to think about these problems as something that applies both to ourselves and to those around us

○Creation and promotion of superior, environmentally-friendly products and services as well as environment- and energy-related industries.

Project III

Measures aimed at a societal shift away from the use of fossil fuels with sights set on the long term future.

○Measures to be immediately considered in order to create a sustainable society, integrating both the supply and demand of energy and the aspects of material-cycle and natural symbiosis societies by fundamentally changing the way we live and work.

○Research and development on energy conservation and energy creation technologies that are essential for these changes

Structure of Support System and Mechanisms

To change the way city planning is done there is a need to create a forum for all related entities to hold discussions, and also build support systems and mechanisms, so that citizens and businesses can change the way they live and work independently.

Examples of measures to be considered

- Create mechanisms to promote energy-saving renovations of residences in partnership with private businesses
- Create energy consumption standards for each industry (benchmarks) according to the characteristics of Kyoto City

Changing the way people live and work

Each and every person needs to change the way they live and work, such as changing from gas powered cars to next-generation cars powered by electricity or fuel cells, and by sharing items and services

Examples of measures to be considered

- Measures to promote "adjacent housing" that generate secondary effects for mitigating population decreases and welfare for the elderly
- 100% adoption of next-generation cars, and restrict access of other types of cars from being used in the city.
- Promote cooperative delivery systems to keep freight vehicles from being used on smaller streets, etc.

Changing city planning

Fundamental changes in city planning are required, with citizens, businesses, and all entities involved having a shared vision of how city planning should be, including urban infrastructure and for how energy should be supplied

Examples of measures to be considered

- Build a "green infrastructure" aimed at a shift to city planning that utilizes the functions of nature
- Implementing new ways to use renewable energy, such as "solar roads", streets that generate solar power
- Full use of thermal energy on a regional level
- Measures to promote the spread of Net Zero Energy Buildings (ZEB)*
- Promote services that utilize the transport capabilities of transportation businesses in locations with poor transport connections, such as combined passenger-freight transport

Promoting technological development

Requiring the spread and innovation of energy conservation and creation technologies which are essential to transforming city planning and the way people live

As indicated by the "Road to Zero Project", Kyoto City is leading the world in building a carbon-neutral, sustainable city by establishing support systems, transforming lifestyles, work styles, and urban infrastructure, as well as encouraging technological development.



Kyoto Declaration

for Cultivating a Culture of Sustainable Cities

1. The significance of the Kyoto Protocol and the Paris Agreement

The Kyoto Protocol is a momentous accord in the history of humankind, established for the purpose of passing on a healthy and productive global environment to future generations. Adopted in December 1997, it represents the cornerstone of a post-Cold War, new world order full of hope, that addresses global security and peaceful prosperity through multilateral cooperation. Citizens played a significant role in fostering momentum toward this international agreement, and Kyoto's unique urban environment and local culture that have coexisted with nature for more than 1,000 years contributed to the consensus building.

In December 2015, the Kyoto Protocol made a significant leap forward to the Paris Agreement, making climate change a matter for people all over the world and committing nations to achieve carbon neutrality in the second half of this century.

To encourage the adoption of the Paris Agreement, leaders of cities and regions around the globe gathered at Paris City Hall and pledged to strengthen their climate actions alongside with nations, which led to the unanimous endorsement of the Paris City Hall Declaration.

2. The state of cities around the world

Cities today account for only 2% of the planet's land area, but are home to about half the world's population. They account for 60-80% of global energy consumption and three quarters of carbon emissions. With further urbanization, projections indicate that people living in urban areas will account for two thirds of the world's population by 2050.

As can be seen in the ever-growing megacities in Asia, for instance, where environmental pollution, traffic problems, poverty and disparity are often considered more urgent issues than global warming, cities face different policy issues depending on characteristics such as their size and stage of economic development. Therefore, priorities given to global warming can vary from city to city. However, urban activity is a major cause of global warming, and cities are suffering enormously from its consequences, such as sea level rise and frequent disasters caused by extreme weather.

Furthermore, in today's world where signs of national particularism can be observed and can pose challenges in cooperation among states, collaboration between cities is becoming ever more important.

3. Our commitment towards a culture of sustainable cities

Taking into account the Paris Agreement and the Paris City Hall Declaration, we believe that cities play an important role in cultivating a culture of sustainable cities that is in balance with the environment to achieve carbon neutrality in the second half of this century. To achieve this, we recognize that cities need to realize the “**Vision for cities of the world in 2050**” by strengthening cooperation with one another and performing their fullest potential. We believe that in today’s world, it is our duty to make this commitment.

To this end, we believe that rather than merely leaving it to nations and market principles, cities, which are directly involved in the lives of its citizens and governed by their proactive participation, have the vital role of leading the way by appropriately delivering authority and financial resources.

We recognize that it is essential that cities strengthen city-to-city collaboration and also build mechanisms capable of resolving various problems, through the sharing of goals and the dissemination of policies, best practice and know-how.

Vision for cities of the world in 2050

- Coexistence with nature is realized, acknowledging its function as a source of life and carbon sink.
- Change in people’s values and lifestyle is advanced, by revisiting the culture of daily life that admires the mindful and wise use of goods based on the spirit of “*mottainai*” (regretting wastefulness) and “*shimatsu*” (being frugal; making full use of things).
- Leaders for building a sustainable society are nurtured through promotion of environmental education and learning. The leaders are able to perceive various problems as their own and act proactively.
- Strategies for adapting to the impacts of climate change are in place, in parallel with technological innovation for decarbonization.
- Resource-efficient and circular economy is realized, for example by utilizing urban mines, recovering useful metals and other resources contained in waste.
- Energy autonomy of cities is realized, through the promotion of energy savings and the use of renewable energy.
- Urban mobility with low environmental impact is achieved through advancement of urban transport systems.
- Peaceful resolution of social problems, such as poverty and disparity, is well advanced, through efforts to shift to a sustainable society.

We declare that we will implement efforts according to our respective positions and encourage cities around the world to join us in cultivating a culture of sustainable cities that is in balance with the local and global environment.

December 10, 2017

City of Kyoto
Research Institute for Humanity and Nature (RIHN)
ICLEI – Local Governments for Sustainability, Japan Office
Kyoto Environmental Activities Association (KEAA)

