



City's Ecological Footprint Report, vol. 1

# Kyoto City's Ecological Footprint



Human well-being depends on natural resources such as water, arable land, fish and wood; and ecosystem services such as pollination, nutrient cycling and erosion control. Our demands on nature are unsustainable and increasing. We all need to play a role in keeping this living planet-with food, water and energy for all, and the vibrant ecosystems that sustain life on Earth. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. We are now in a crucial era where we should connect and take action to protect the future of our one and only planet.

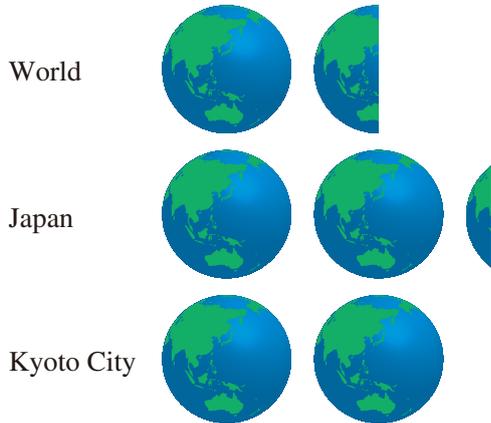
The Ecological Footprint, a resource accounting tool, tells us how much stress our lifestyle places on the environment. Kyoto City has become Japan's first local government to calculate its own Ecological Footprint on an experimental basis. The following is a summary of key findings from the Kyoto City's Ecological Footprint research.

# Results

**If everyone in the world lived the same way as an average Kyoto citizen, we would need 2.0 planets.**

If everyone in the world lived the same way as an average Japanese citizen, we would need 2.2 planets.

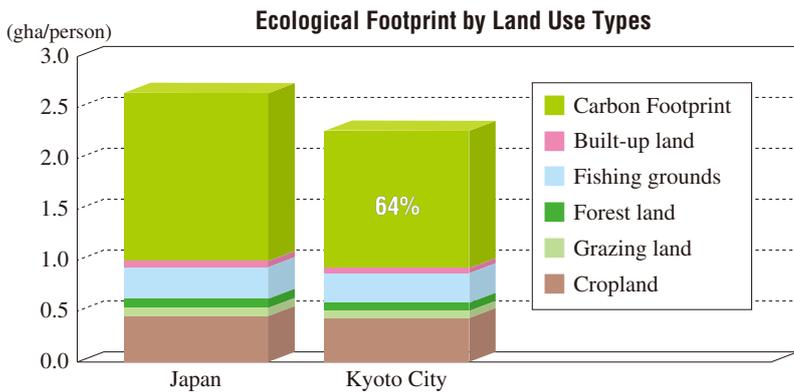
If everyone in the world continues to live the same way as they do now, we would need 1.5 planets.\*



Ecological Footprint in Kyoto City is **30% higher than the global average, 10% lower than the Japan average**

\* This means we are in global ecological overshoot. Overshoot occurs when humanity's demand on nature exceeds the available biological capacity of the planet.

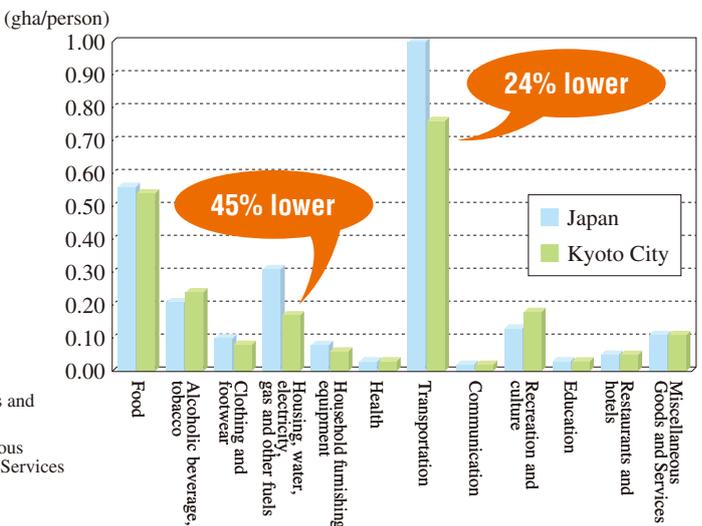
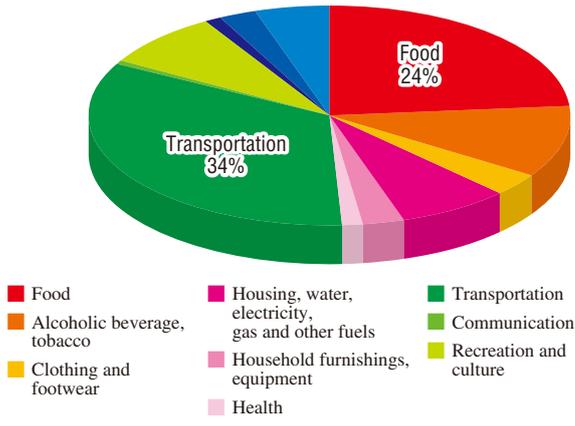
**The carbon component makes up 64% of Kyoto City's Ecological Footprint.**



The carbon Footprint is the largest component of Kyoto City's Footprint, as is also the case with Japan.

**A breakdown of the household component in Kyoto City shows larger portions of "transportation" and "food".**

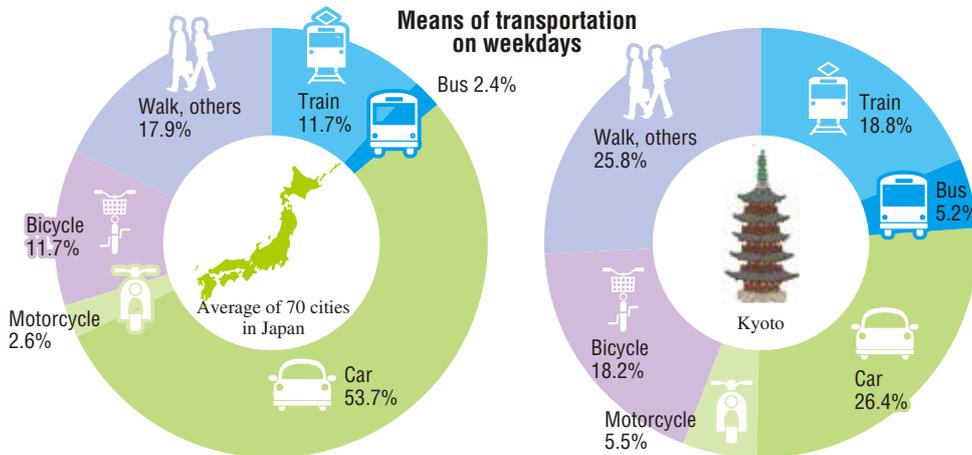
A breakdown of the household component in Kyoto City (2010)



Compared to the Japan average, Kyoto City has lower "transportation" and "housing, water, electricity, gas and other fuels" components.

# Analysis

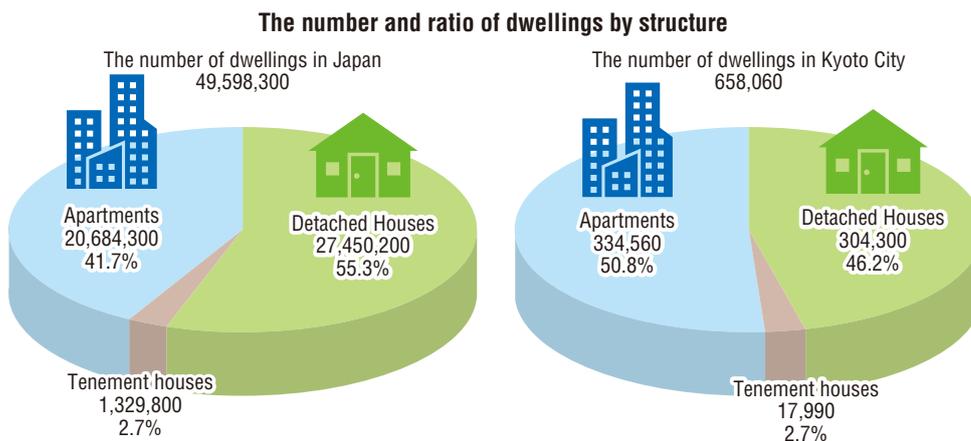
Lower “transportation” can be attributed to developed public transportation infrastructure and their use.



Kyoto citizens use trains and buses more often compared with the average of 70 cities in Japan (7.1 points and 2.8 points higher, respectively). The use of cars is significantly low (27.3 points lower than the average). The ratio of bicycles and walk etc. are also high (6.5 points and 7.9 points higher, respectively).

(source; “National Urban Traffic Characteristics Study 2010.” Ministry of Land, Infrastructure, Transport and Tourism)

It is believed that the lower value for “housing, water, etc.” might be due to the fact that Kyoto City is not situated in a cold region, that the percentage of apartments is 9 points higher than the national average, and that many people use city gas.



In 2010, the percentage of nuclear power generation was high for electricity distributed to Kyoto citizens and offers, low CO2 emissions. This may have contributed to Kyoto City’s lower Ecological Footprint. However, the Footprint of nuclear power generation has yet to be established and is in a development phase.

(source; “Housing and Land Survey 2008.” Ministry of Internal Affairs and Communications)

## What is the Ecological Footprint?

The Ecological Footprint measures ecological assets that a given population requires to produce all the resources it consumes and to absorb the waste it generates, in a given period of time.

## What the Ecological Footprint can and cannot tell us

The Ecological Footprint is comprehensively incorporating forest, the ocean, and environmental impacts such as carbon dioxide. It can provide a “visible” understanding that natural resources are finite. On the other hand, it does not track freshwater intake and consumption of non-renewable resources. It also excludes resources needed by wildlife species.

## Ecological Footprint Calculations

Japan’s Ecological Footprint by land type is converted into a Consumption Land Use Matrix (CLUM) using an Environmentally Extended Multi-Regional Input Output Analysis. By adjusting it with the city’s household spending and energy efficiency data that compare with the national average, Kyoto City’s Ecological Footprint can be obtained. The result reflects the Kyoto citizens’ consumption, excluding tourist’s consumption.

## Kyoto City Profile

- Population: 1,474,015
  - Population density: 1,782 per square kilometer
  - Ordinance-designated city (since 1956)
  - Gross Regional Product (In real terms): 6 trillion 215.3 billion yen.
  - Land area: 827km<sup>2</sup>
- (source; Kyoto City Statistics Portal from Kyoto City Official Website, 2010)



source; “National Footprint Account (NFA),” Consumption Land Use Matrix, Household Expenditure, Consumer Price Index, and carbon emission intensity.

# Summary and Recommendations

## Let's have "one planet lifestyle"

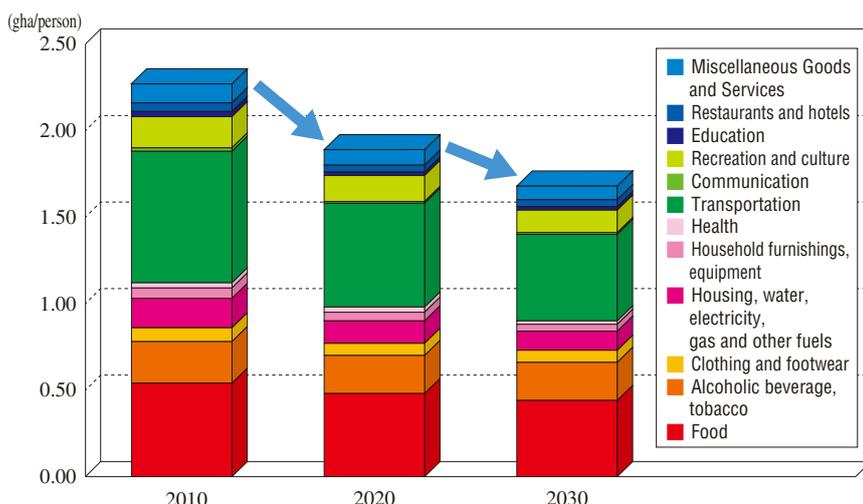
Japanese cities, including Kyoto City, have a bigger impact on the environment compared to the world average. When we achieve a lower impact with sustainable city development, we can serve as a model for other advanced cities in the world. Specifically, it is important to implement our three action guidelines of "Choose ( "Sen" in Japanese), Reduce ( "Gen" ), and Innovate ( "Shin" )" as a lifestyle that takes environmental impact into consideration in every aspect of our life.

Collecting and analyzing statistics data that show local features may explain the reasons why Kyoto City's Ecological Footprint was lower than the national average, and may contribute to the city's policy development and implementation. More research on the food Footprint is needed to identify an effective means to reduce food loss and the overall food Footprint.

## Examples of measures

	Choose (Sen)	Reduce (Gen)	Innovate (Shin)
National and Local government	<ul style="list-style-type: none"> <li>Implement environmental policies to promote sustainable lifestyle (housing/food) that has low-impact on the environment</li> </ul>	<ul style="list-style-type: none"> <li>Set up more ambitious CO<sub>2</sub> reduction targets and implement measures</li> <li>Implement policies to promote waste reduction</li> </ul>	<ul style="list-style-type: none"> <li>Develop renewable energy and expand measures to promote its use</li> <li>Incorporate sustainability index in the basic environmental policy</li> </ul>
Business	<ul style="list-style-type: none"> <li>Set up and implement responsible procurement policies to use sustainable raw materials</li> </ul>	<ul style="list-style-type: none"> <li>Set up and implement CO<sub>2</sub> emission reduction target</li> <li>Reduce impact on the local environment</li> <li>Reduce use of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>Develop or use renewable energy</li> <li>Technological innovation for more efficient use of resources</li> </ul>
Individual	<ul style="list-style-type: none"> <li>Purchase certified items (ex. Marine Stewardship Council : MSC), which assure sustainable production</li> <li>Purchase energy saving products</li> </ul>	<ul style="list-style-type: none"> <li>Set air conditioners to appropriate temperatures and use LED lights to reduce CO<sub>2</sub></li> <li>Reduce food loss</li> </ul>	<ul style="list-style-type: none"> <li>Provide support for users and suppliers of renewable energy</li> </ul>

## How can we reduce the Ecological Footprint?



Kyoto City's greenhouse gas emission reduction target: Reduce CO<sub>2</sub> emissions by 40% by 2030 based on 1990 levels



If this target is achieved globally and everyone in the world lived the same way as the average Kyoto citizen, the Ecological Footprint will decrease by nearly 30 percent and that requires 1.4 planets. (According to GFN estimate.)

This leaflet utilizes joint surveillance reports by Kyoto City, Global Footprint Network, IDEA Consultants, Inc. and WWF Japan. For further information, please visit WWF Japan website. <https://www.wwf.or.jp>

