

February 2013

# Policy and Programs for Energy Efficient Houses and Buildings

---

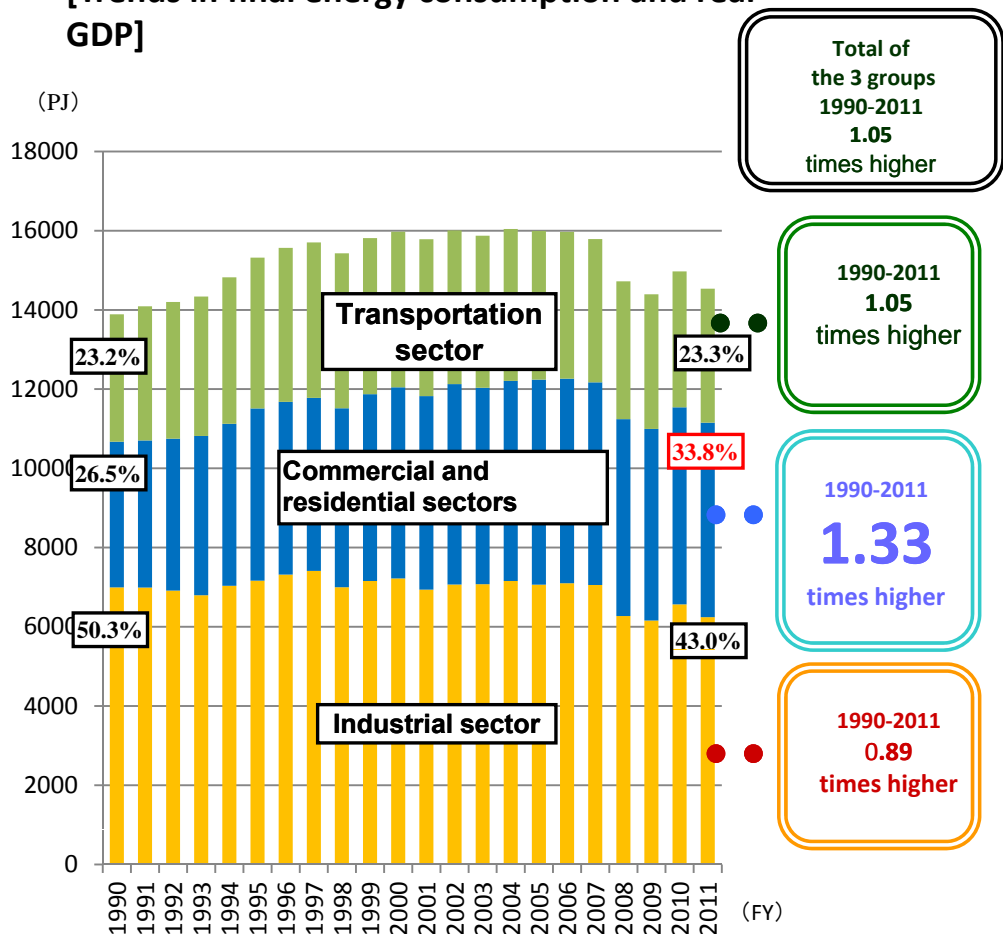
Kimihiro Hashimoto

Deputy Director-General, Housing Bureau,  
Ministry of Land, Infrastructure, Transport and Tourism

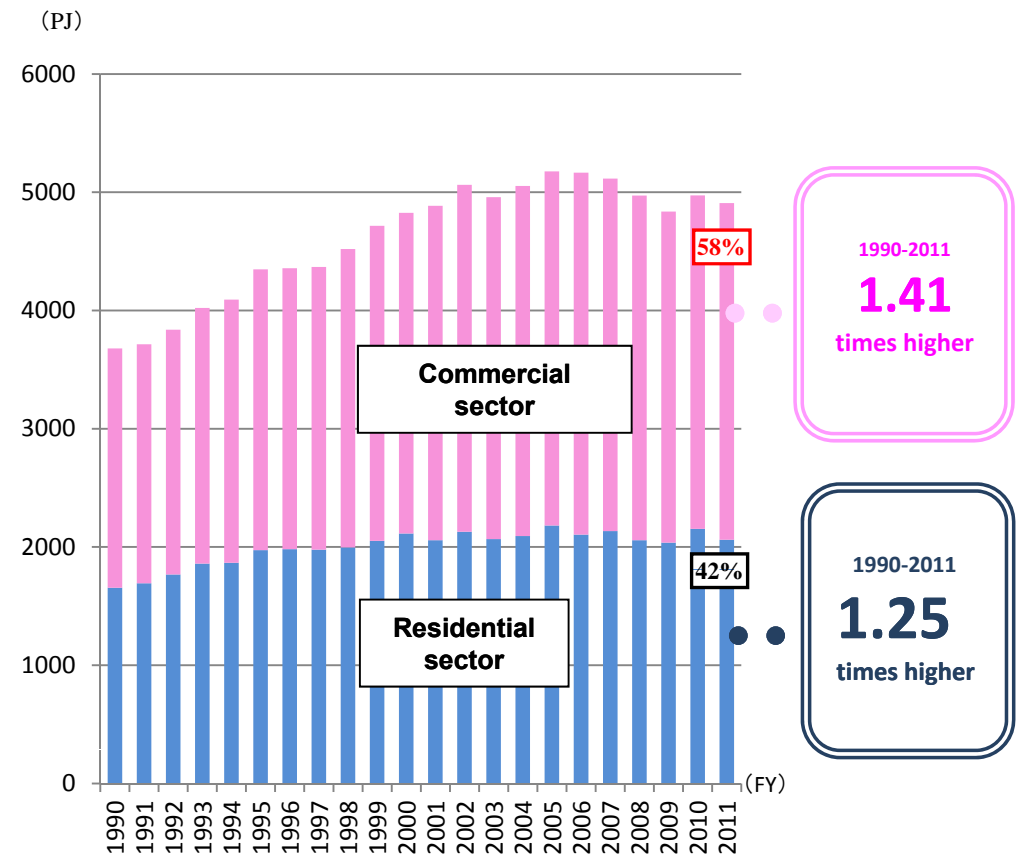


● When we consider transition of Final Energy Consumption, the commercial and residential sectors account for over 30% of final energy consumption in Japan. The graph on the left shows that these sectors have seen a more significant increase than the transportation and industrial sectors. Therefore, **strengthened energy efficiency measures are called for mostly in the commercial and residential sectors.**

[Trends in final energy consumption and real GDP]



[Energy consumption in the commercial and residential sectors]

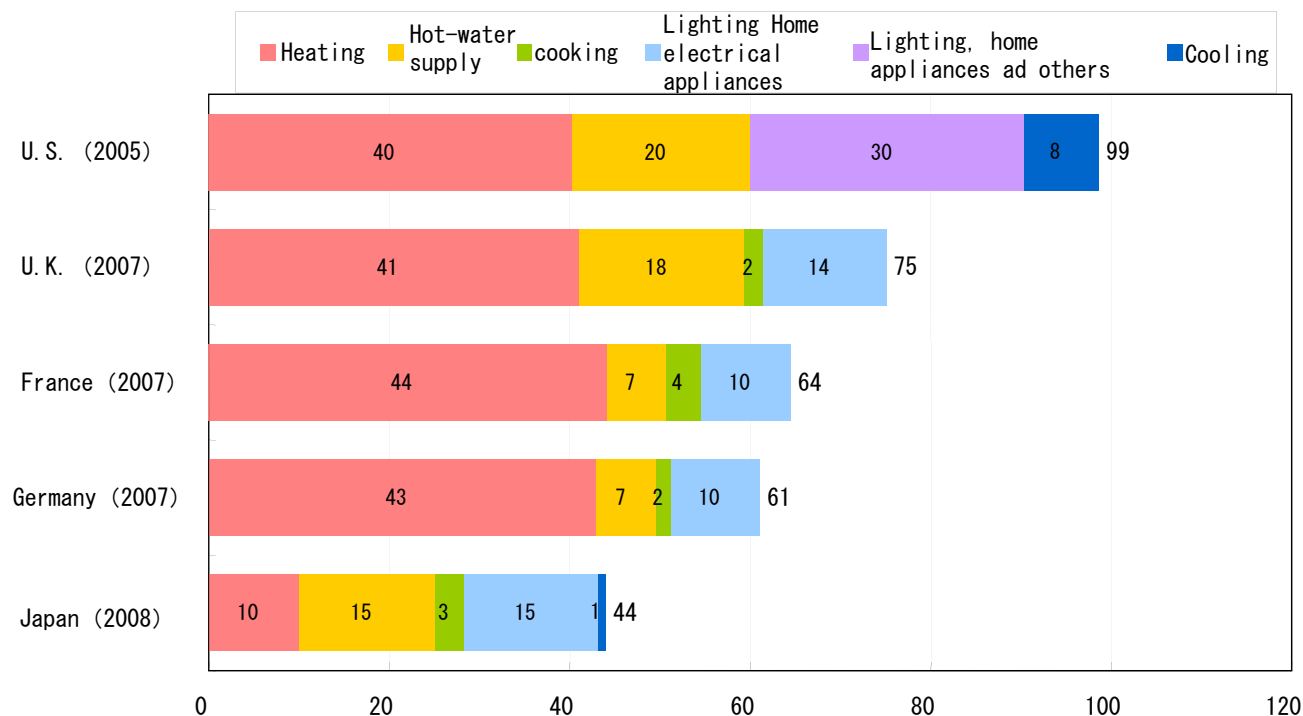


Sources: Agency for Natural Resources and Energy (ANRE), 2011 Energy Supply and Demand

# International comparison of per-household energy consumption and its cause

- Compared with North America and European countries where heating accounts for a very large portion of household energy consumption, that of Japan is very small. On the other hand, hot-water supply, lighting and home electrical appliances accounts for a large portion of household energy consumption in Japan.
- It is necessary to take measures to save energy based on the climate condition, lifestyle habit and energy consumption structure of each country and area.

Energy consumption per household (GJ/household/year)



For example, as for Japan, compared with France,

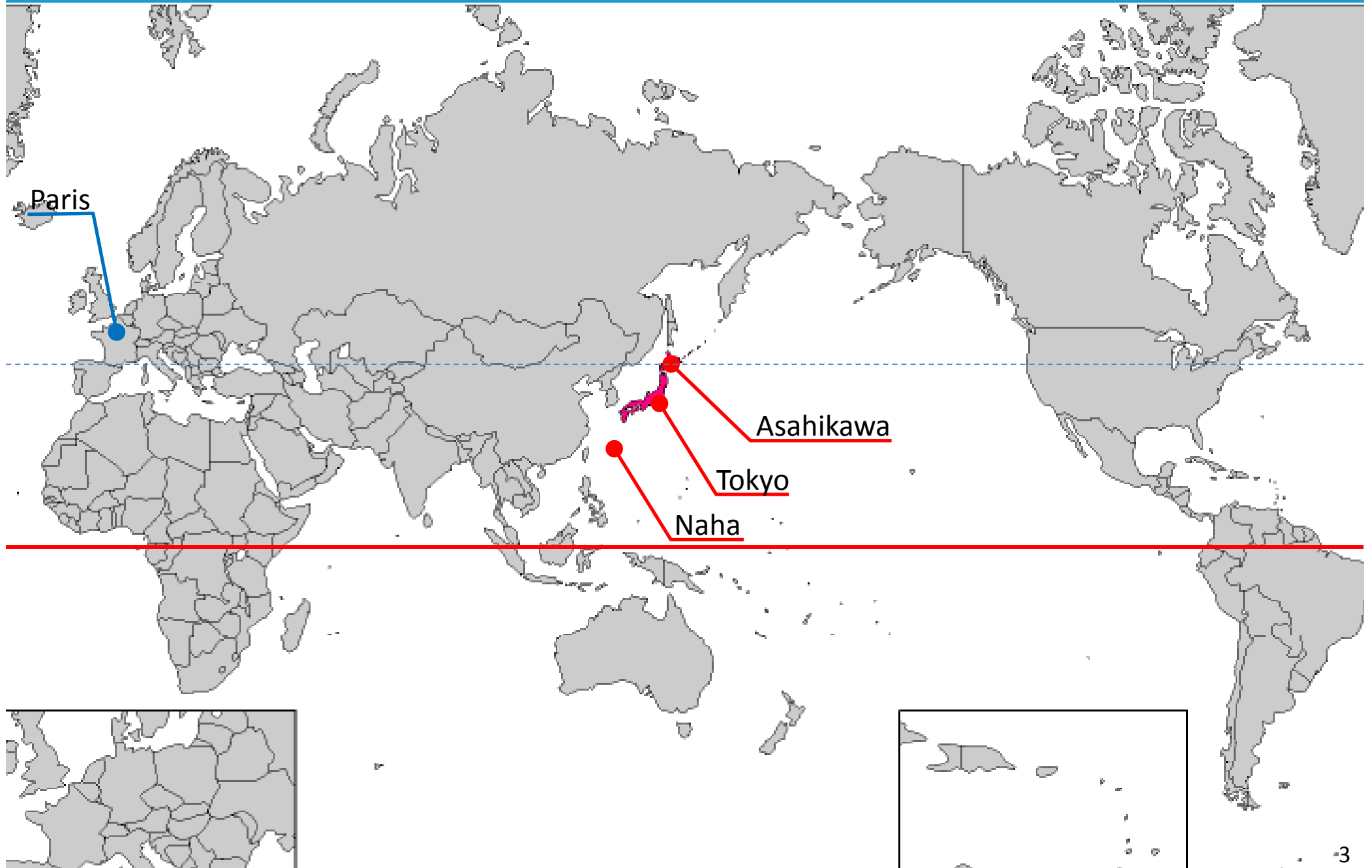
- Heating energy is one-quarter.
- Energy for hot-water supply and lighting/home electrical appliances are consumed 1.5 times to twice as much.

※Source : Jyukankyo Research Institute, Inc. (Produced based on statistics data of each nation) ・ 2010/9

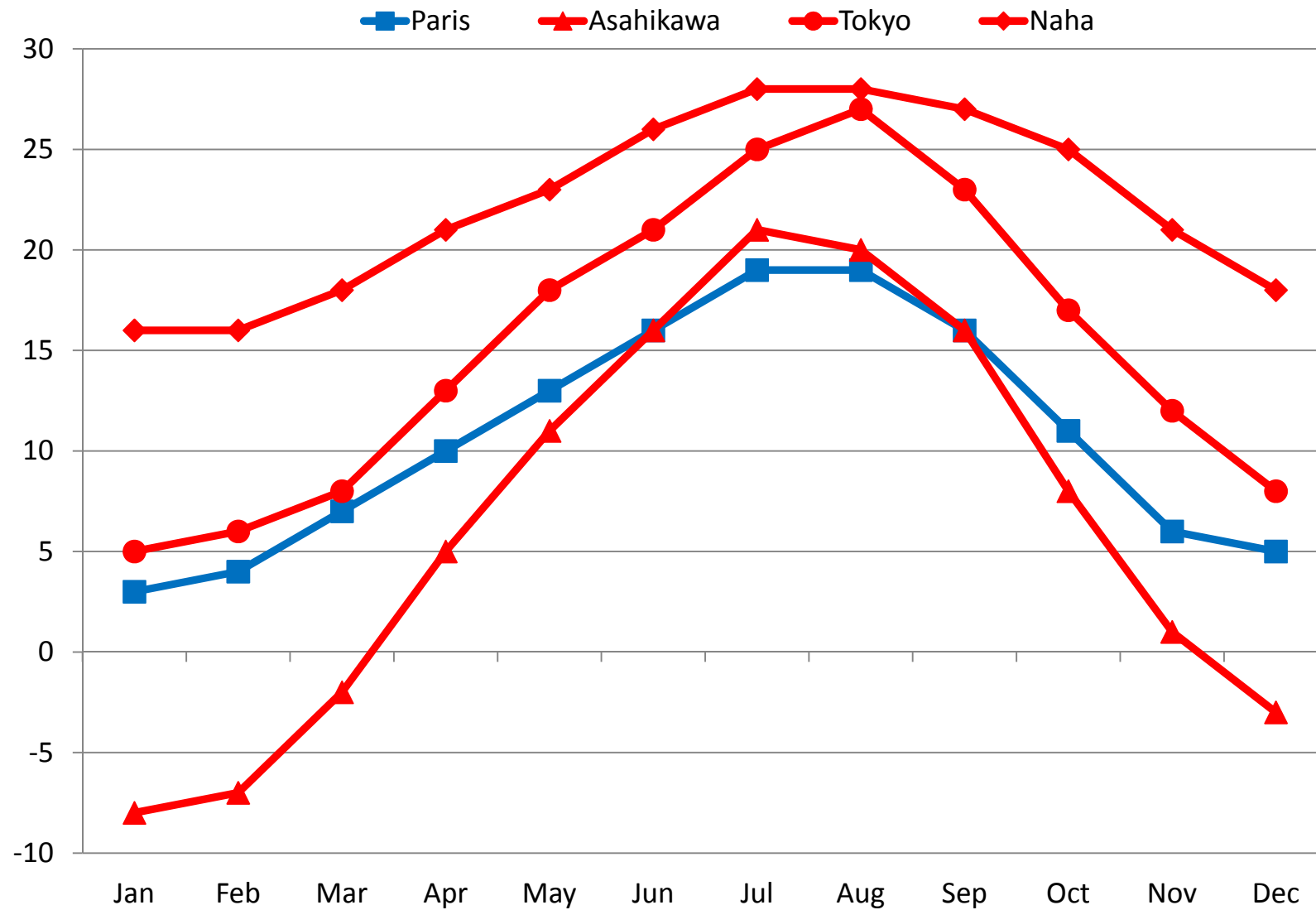
※Note : Number in brackets is the latest data year of each nation.

- Cooking in the U.S. is included in lighting, home electrical appliances and others.
- As for Japan, household means family with more than 1 person. Cooking in Japan means gas and LPG other than heating and hot-water supply, and it doesn't include electricity for cooking.
- Cooling data for European nations are not included.

# Japan's location in the world



# Comparison of the temperature of the world and Japan



Average Monthly Temperature in the world

Source: Weather base

① Regulations based on the Energy Conservation Law

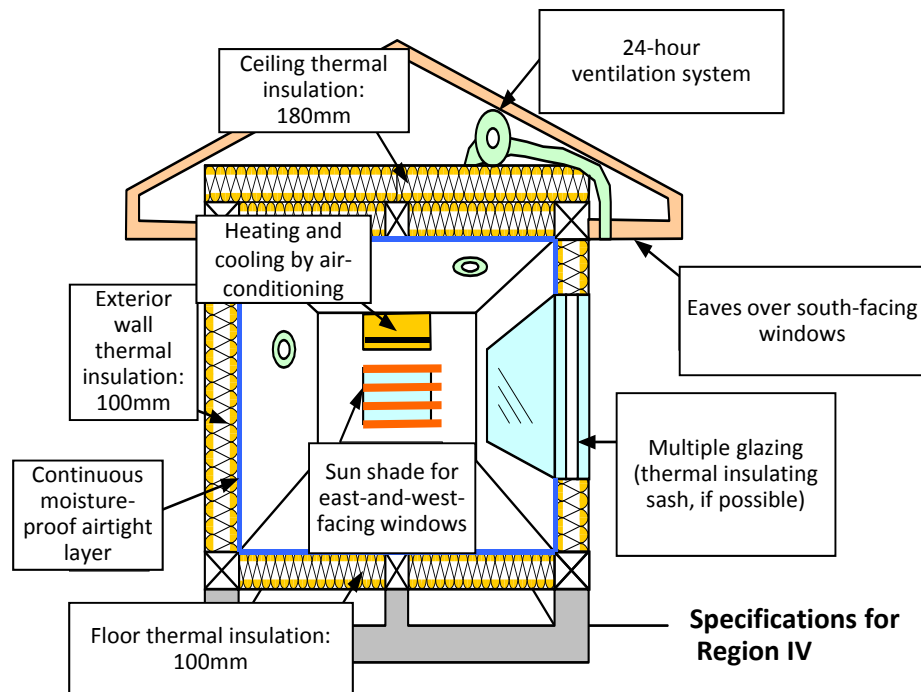
② Labeling and Information provision of energy efficiency performance

③ Incentives

## 【Strengthen the Housing Energy Efficiency Standard】

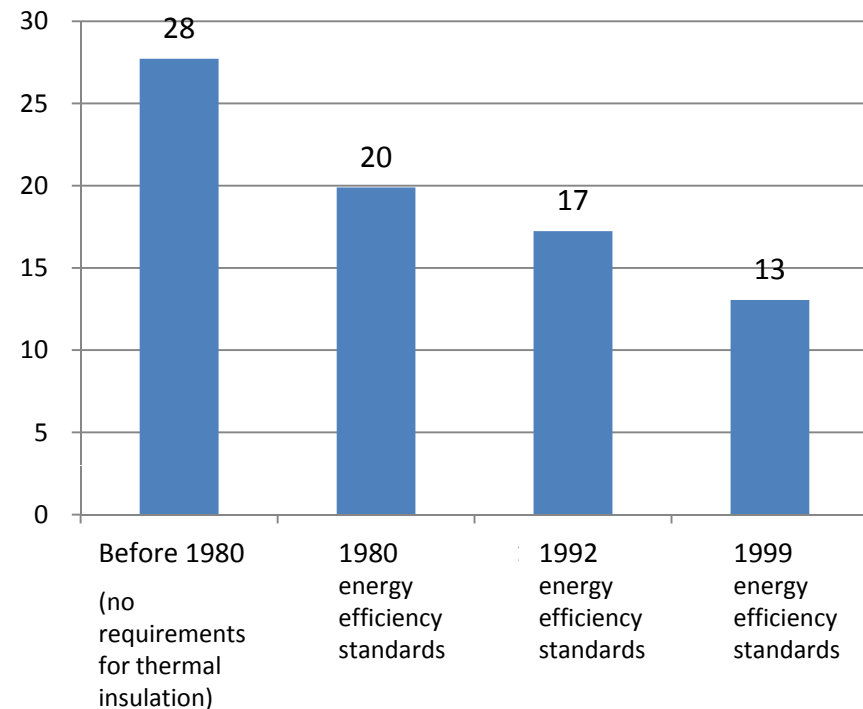
- The nation was divided into 6 regions in order to establish standards for thermal insulation, sun-light shading and other items for each region.
- The Housing Energy Efficiency Standard was enacted in 1980, and strengthened in 1992 and again in 1999.

### ● Thermal insulation for wooden housing



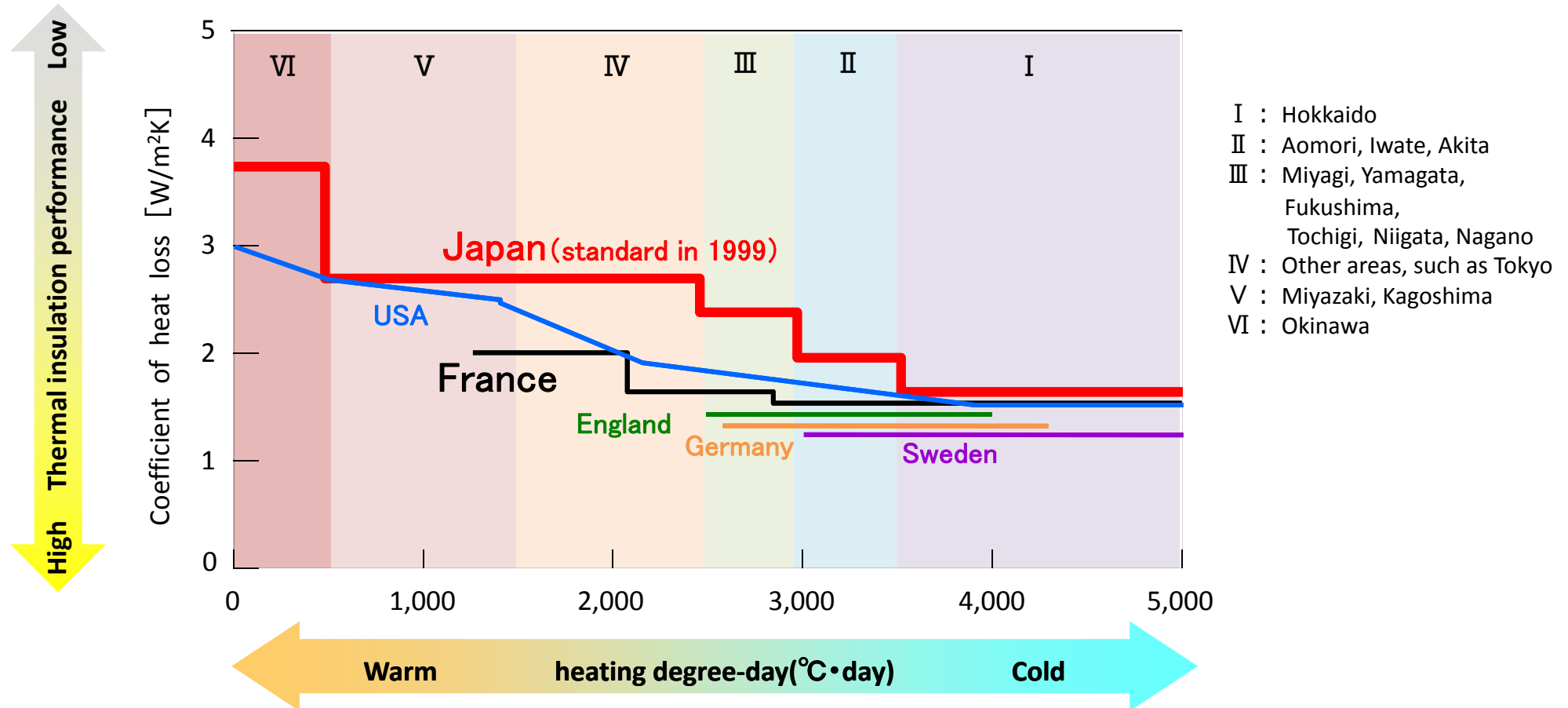
### ▶ Comparison of energy consumption for heating and cooling in houses that conform to the Housing Energy Efficiency Standard in each period.

(GJ/year, housing unit)



# ①-2 Housing Energy Efficiency standard in Japan (International comparison)

● Housing Energy Efficiency standard of the European and American is higher than Japanese one.



※ Indicators used in calculating the quantity of heat required for heating in housing.  
 Integration of the difference between the average outside air temperature and heating temperature during the period which needs heating

( Source : Documentation of Kinki University Professor Atsushi Iwamae)

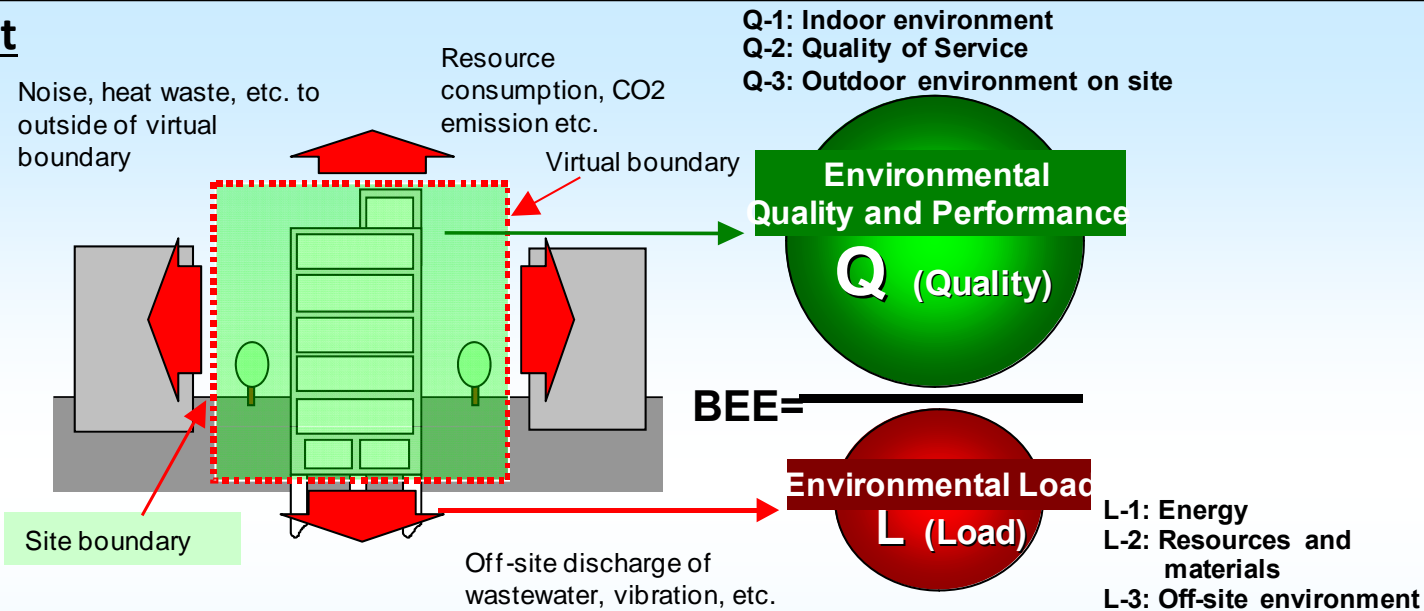
## ② Labeling and Information Provision of Building Energy Efficiency Performance

- Both Housing Performance Indication System and Comprehensive Assessment of Building Environmental Efficiency can evaluate and label the energy efficiency performance of newly built houses and buildings.
- At present, no standardized methods exist, which can evaluate and label the energy efficiency performance of existing houses and buildings.

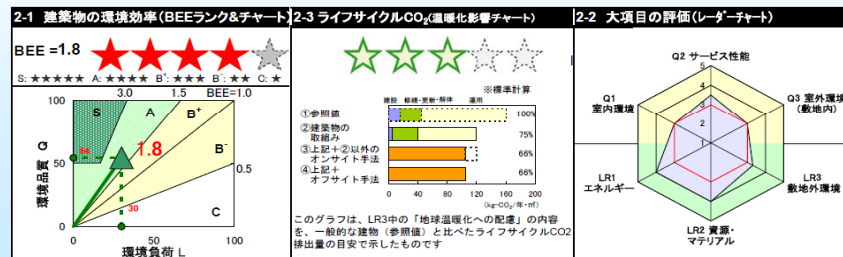
### Comprehensive Assessment of Building Environmental Efficiency (2001~)

A system that architects, independent evaluators, or others use to conduct a comprehensive assessment of the environmental performance and improvement of housing, buildings, and community developments.

#### CASBEE Concept



#### Assessment Results



○ The notification system by Local governments

- 24 local governments use CASBEE for mandatory reporting and publication of assessment results

● Buildings evaluated by the system (FY2010): 1,759

(Based on the records collected through the notification system of local governments)

# ③ Incentives

In order to revitalize the housing market, to improve energy efficiency, and to support the reconstruction from the Great East Japan Earthquake, the Japanese government reopened the Housing Eco-Points program (\*), which had ended in July, 2011.

(\*) Housing Eco-Points is the grant providing points which can be used for a variety of goods and services, for construction of energy-efficient houses and improvements of energy efficiency of houses.

## Contents of operation

### ■ Housing eligible for eco-points \* Since Jan.25, 2012, application / acceptance was started.

#### New construction of eco-housing

(which began between Oct. 21, 2011 and Oct. 31, 2012)

<Construction contents>

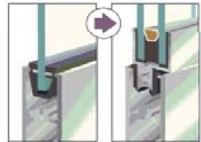
- ① With its energy-efficiency level equivalent to the Top Runner Standard for housing, based on the Energy Conservation Act.
- ② Wooden housing that conforms to the 1999 energy efficiency standard (The number of points is added in the case of setting solar energy system.)

#### Eco-renovations and-replacement work on existing housing (which began between Nov. 21, 2011 and Oct. 31, 2012)

- Energy-efficient windows (double glazing by installing a second glass pane on the interior side [double sash], or replacement of glass [multiple glazing])
- Insulation in exterior walls, roof, ceilings and floors

\* Additional points are awarded when the following works are carried out with Eco-renovations or replacement work

<Eco-renovations>



Double-glazing



Insulation in roofs



- Renovations for barrier-free
- Energy-efficient facility
- Seismic upgrading
- Insurance for renovation defects

### ■ Number of points awarded

#### New construction of eco-housing

Affected areas: 300,000 points per unit

Other areas: 150,000 points per unit

※20,000 points added for solar heat utilization.

#### Eco-renovations and replacement work

##### Eco-renovations and replacement work

2,000 to 100,000 points depending on type of work

**Renovations for barrier-free** (max. 50,000 points)  
5000 to 25,000 points depending on type of work

**Energy-efficient equipment**  
20,000 points

**Insurance for renovation defects**  
20,000 points

**Seismic upgrading**  
150,000 points

At maximum,  
300,000  
points per  
unit

Additional

### ■ Goods and services exchangeable for eco-points

- ◆ More than half of awarded points should be exchanged for specialties of affected areas or other good or services related to affected areas.
- ◆ Remaining points can be exchanged for energy-efficient and eco-friendly products, such as energy-efficient air-conditioning equipment, prepaid cards for mass transportation and products made by eco-friendly firms, additional work, and donation to groups working in environmental conservation.

## Direction of future measure to improve Energy Efficiency in Housing and Buildings

Joint establishment of the “**Committee for the Promotion of Housing and Lifestyles Contributing to the Creation of a Low Carbon Society**” by METI, MLIT and MOE with experts and practitioners in housing, energy and environmental areas, discuss promotion policy of Energy Efficiency / CO2 Efficiency concerning manner of housing and lifestyles.

### Energy Efficiency of Housing and Buildings

- Discussion to mandate compliance with the energy efficiency standards until 2020 and its process
- Revision of method to evaluate energy saving performance of new residential housing
- Promotion to prevail Zero-Energy Housing and Buildings
- Establishing certification of Low-Carbon Buildings

### Measure to existing stock

- Promotion of Energy Efficiency and Reform by subsidiary and taxation system, etc.,

### Installing renewable energy

- Promotion to install solar energy generation, solar thermal, earth thermal which have large room for utilization in housing and buildings field.

### Reducing CO2 emissions through lifecycle in total

- By prevailing LCCM (Lifecycle-Carbon-Minus) housing, and so on, reduce CO2 emissions through lifecycle from construction to maintenance control, abolishment and recycle, etc.,

→ **Concerning future basic direction and its procedure, Mid-term summary (Draft) and Progress schedule (Draft) will be presented.**



# LCCM(Lifecycle carbon minus)housing (in Tsukuba, Japan)

● By reducing CO2 emissions in stages of production of building materials, construction, and operation, and by improving durability, one can make life-cycle CO2 emissions from housing less than zero. Developing and promoting Life-Cycle Carbon Minus Housing will lead to the progress of fight against global warming.

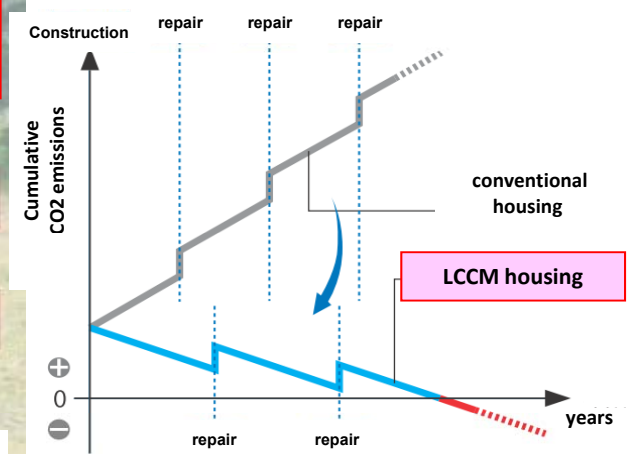
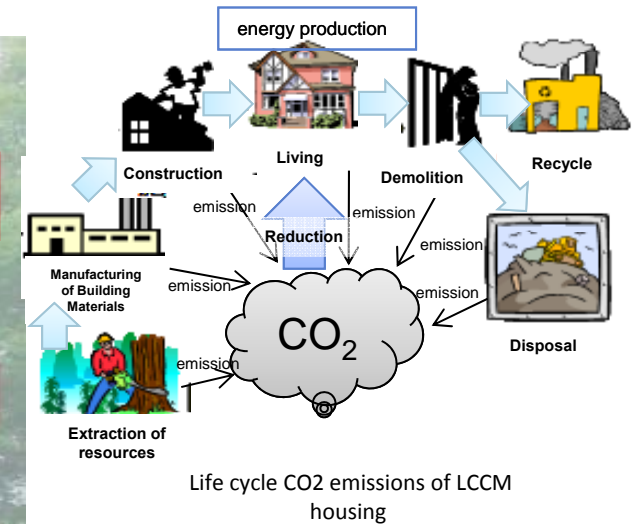
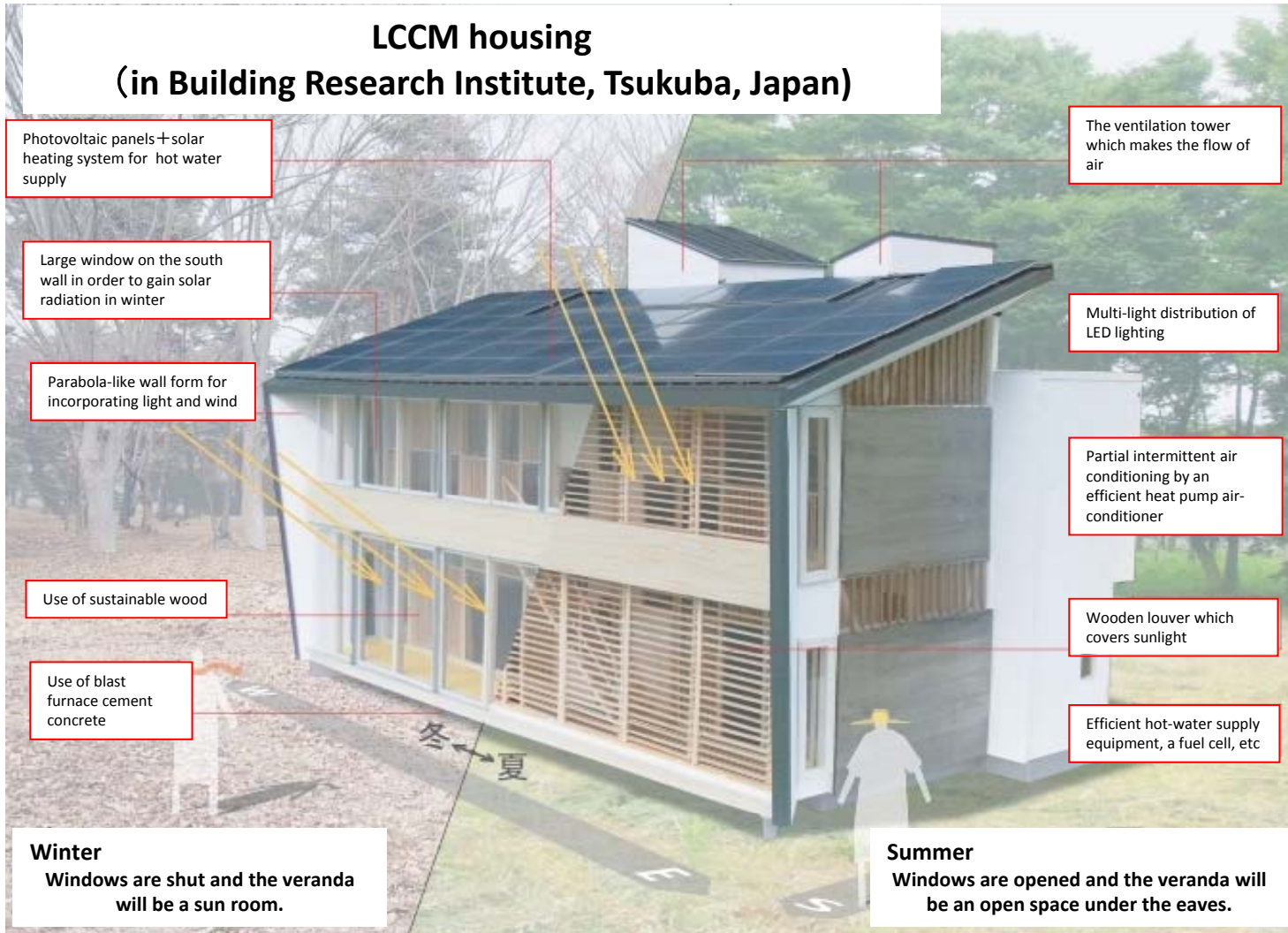


Image of Cumulative CO2 emissions through a life cycle of a house