Improving Energy Efficiency

2015-2019

Toyama City, Japan

A Member of the United Nations

Sustainable Energy for All (SE4ALL) Initiative

1 Introduction

Establishing an Energy Efficiency Program

- Energy Efficiency is essential to protecting the global environment, growing the economy and producing a sustainable and healthy lifestyle.
- In order for Toyama city to establish a sustainable energy system, the city as a whole has to use energy efficiently. Therefore our “Program for Improving Energy Efficiency” was formulated.
- The program, based on Toyama’s compact city policy and our commitment to energy efficient public transportation, can serve as a model for improved energy efficiency.

The Importance of International Policies for Sustainable Energy

- For the United Nations, energy issue is a key to economic growth, social fairness, environmental solutions, and the prosperity of humankind.
- Sustainable Energy for All (SE4ALL) was initiated by UN Secretary General Ban Ki-moon in 2011 who said “Energy is fundamental to progress for all countries.”

■ The Three Objectives of Sustainable Energy for All（SE4ALL）

- ➢ **Ensure universal access to modern energy services**
- ➢ **Double the global rate of improvement in energy efficiency**
- ➢ **Double the share of renewable energy in global energy mix**

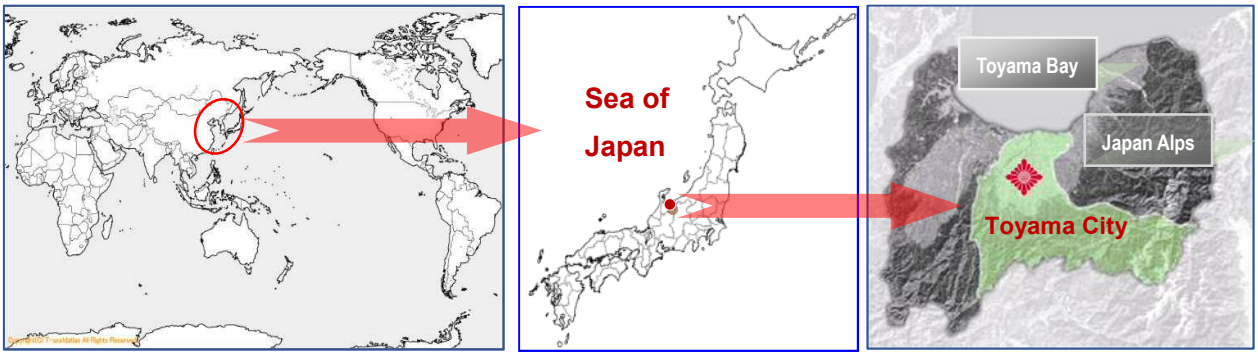
■ Toyama Among Cities Selected for SE4ALL

In September 2014, SE4ALL selected 13 cities and regions as models for achieving the goal of improving energy efficiency.
Toyama, a Japanese National Government designated “Environmental Future City” and “Environmental Model City”, was the only Japanese city selected for its innovative policies and demonstrated success, and for its strong prospects for continuing to improve energy efficiency.

Mayor Mori, SE4ALL Director Yumkella, and Ambassador Horie at the United Nations.

2 Toyama City

- Toyama is the capital city of Toyama Prefecture. Located at the center of the prefecture, it has been designated one of Japan's "Core Cities" and is a leading city on the Sea of Japan.
- Toyama's topograpraphy varies from 0m at sea level to 3,000m at the crest of the Japan Alps.
- The population is about 420,000. The total area is about 1,240 km^2 (479 sq miles).
- Major industries include High Tech, Pharmaceutics, Robotics, Banking and Hydroelectric Power.
- The National Government has designated Toyama an "Environmental Future City" and "Environmental Model City" and it is the only Japanese city selected for the United Nations SE4ALL initiative and the only Japanese city selected by the Rockefeller 100 Resilient Cities program.

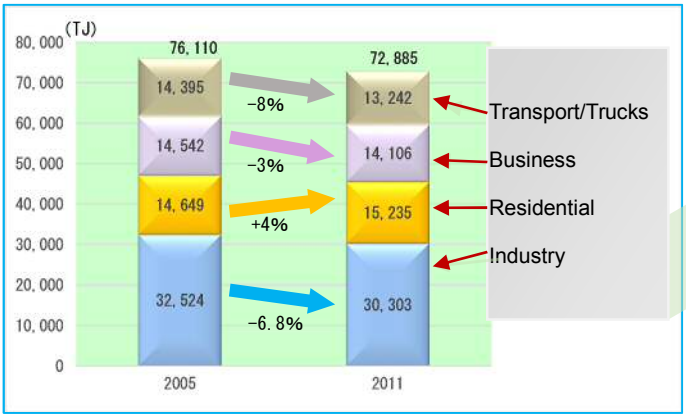


3 Past successes and future strategies

Toyama's Compact City Policy is revitalizing public transportation, concentrating city functions in the city center and along the transportation lines, and promoting energy efficiency and alternative energy sources.

Program	Result
Light Rail network	**Replacing old railway with LRT and creating a city tram loop line; north and south tram lines connected underneath new Shinkansen line**
Encouraging residence in city center and in public transportation corridors	**Subsidies for home construction companies which produce good quality houses and for people who purchase a house in the city center or along the public transportation lines**
Ride-share bicycle system	**Numerous stations have been established around the city center for this eco-friendly bicycle sharing system. More are being added.**
Alternative energy	**Support for solar system and energy saving systems for houses Collaboration between City and industry on mega solar facilities (1MW) Building micro hydro power generation facilities on agricultural canals**

4 Recent changes in energy consumption

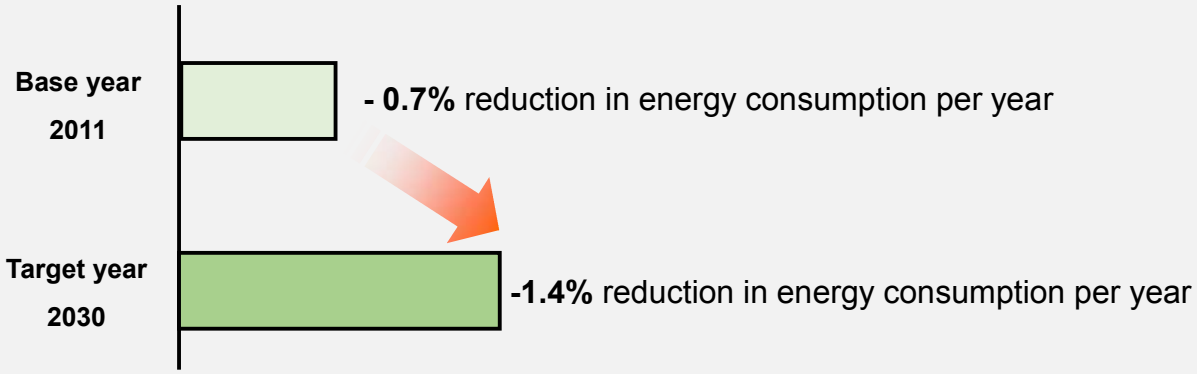


From 2005 to 2011 energy consumption decreased 4%. Industrial energy consumption, including transport and business, decreased significantly. Over the same period, however, residential consumption increased 4%.

5 Energy efficiency goals

Through our energy efficiency programs we can contribute to two SE4ALL objectives:
"To ensure universal access to modern energy services" and
"To double the share of renewable energy in the global energy mix".

Our Goal is to double our energy efficiency between 2011 and 2030



- Consumption of natural gas, electrical power and fuels like gasoline are the main indexes for the program and progress along these indexes is monitored.
- New introductions of renewable energy is also monitored as a reference index.

6 Policies and strategies

Policy 1 To create a compact city focused around public transportation

- To create a seamless mobility environment
- To produce efficient energy systems in the city center and concentrate, commerce, medical, and welfare functions along the transportation lines.
- To improve energy efficiency in residences and concentrate them in the city center and along the transportation lines.

Public Transportation

- ❖ Completing the Light Rail-City Tram-Bus Network
- ❖ Rebuilding the transportation infrastructure around Toyama Station
- ❖ Promoting public transportation with IC cards etc
- ❖ Changing citizen habits of transportation such as introducing bicycle ride-share

Transportation Corridors

- ❖ Encouraging residence in city center and along transportation corridors with building and loan subsidies
- ❖ Revitalizing the city center through urban development projects
- ❖ Developing safe and environmentally friendly hub areas

Policy 2 To utilize energy effectively

- To introduce renewable energy systems, such as solar power
- To build high energy saving functions into new houses and city buildings and to introduce high energy efficiency equipment into existing buildings.

Renewable energy

- ❖ Supporting programs for introducing solar energy to residences
- ❖ Supporting renewable energy for businesses

Increased energy efficiency

- ❖ Supporting energy savings in residences (introducing HEMS)
- ❖ Supporting energy savings in offices (BEMS, cogeneration)
- ❖ Instituting energy savings in municipal offices (LED for security systems)
- ❖ Supporting new generation automobiles with new charging stations
- ❖ Supporting PPPs for energy efficient waste management (EcoTown)

Policy 3 To raise energy efficiency awareness

- To create opportunities and venues to study the environment and energy efficiency
- To promote new business and production methods which reduce environmental impacts

Promoting an eco-friendly lifestyle

- ❖ Raising awareness of an eco-friendly and energy efficient lifestyle through education
- ❖ Promoting waste reduction and recycling (such as food waste and plastic)
- ❖ Supporting energy saving activities by setting targets, having “no private car days”
- ❖ Promoting business waste reduction and recycling

Policy 4 To promote international energy efficiency in developing countries

Energy access

- ❖ Presenting Toyama’s strategies and technologies at international seminars
- ❖ Introducing renewable energy technologies to Bali, Iskandar and others

7 New projects for implementation

#1 Transportation

Connecting the north and south tram lines at the JR station under the new elevated shinkansen (bullet train) line from Tokyo

Completing Toyama's tram/rail/bus transportation network connecting rural and downtown areas

#2 Micro hydroelectric plants

Placing these facilities along agricultural canals to power EVs and create a new model for sustainability

Rejuvenating agricultural areas with their own sources of power for agricultural EVs or to sell

#3 Environmental education

Toyama's "Energy Park of the Next Generation" will help raise environmental awareness in younger generations through opportunities to experience and learn about micro hydropower generation systems, solar panel arrays, and wood biomass fuel generation facilities.

#4 Contributing internationally

Toyama is introducing renewable energy technologies in developing countries. One example is in Bali, Indonesia, where the innovative micro hydropower generation system developed by Toyama companies has been introduced. We are now working on a similar project with Iskandar, Malaysia.

8 Framework for achieving these goals

1. Building an effective municipal structure

- By encouraging collaboration among all city departments concerned with energy efficiency - environment, urban planning, traffic, the compact city revitalization of the city center, agriculture and forests, residence, commerce and industry, welfare, culture, and education - we will establish a flexible, cross-sectional structure for effective energy efficiency strategies.
- Based on the PDCA cycle, we will develop each project and monitor its effectiveness. We will highlight programs which are effective in improving energy efficiency.
- Our policies will be integrated into the “Environmental Future City “and “Environmental Model City Action Plan” planning we have developed for these two National programs.

2. Collaborating with industry, universities and citizens

- We are developing networks among Toyama’s academic institutions, such as the University of Toyama, and local companies in order to maximize the knowledge resources of the local industries, government, and the academy.
- We are establishing structures for collaboration among the Chamber of Commerce, energy businesses, transport businesses and home builders to grow the program.

3. Establishing strong networks with other cities and countries

- We will enhance our work with SE4ALL by collaborating with additional international institutions and networks like OECD and the Rockefeller 100 Resilient Cities Program, to best achieve the three goals of SE4ALL.
- We will support the energy efficiency measures of developing countries, primarily in the Southeast Asia, by introducing our energy efficient technologies and strategies to them both through seminars and the export of Toyama City industry technologies.

Member SE4ALL

SUSTAINABLE ENERGY FOR ALL

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