G7 Science Ministers' Meeting in Tsukuba, Ibaraki Prefecture

(Publicity)

The vanguard of science, technology and innovation

The city of Tsukuba in Ibaraki Prefecture has been the foremost science city in Japan, leading efforts on industrial innovation and pioneering elementary school education with the use of information and communications technology (ICT).

Located about 50 kilometers northeast of Tokyo, Tsukuba is home to a number of top research institutions, making the city one of the largest science and technology sites in Japan. Statistics from 2013 showed that there were more than 16,000 researchers working in Tsukuba and there were more than 110 research institutes in the city.

With a population of 220,000, Tsukuba features not only an excellent urban environment, but also lush nature, highlighted by the famous Mount Tsukuba. The city in southwestern Ibaraki Prefecture is aiming to become what it calls a "Smart Garden City," taking advantage of its unique combination of urban and rural environments.

Legacy dates to 1960s

Tsukuba's history as a science technology accumulation site started in 1963 when the Cabinet approved the construction of Tsukuba Science City. In 1973, the University of Tsukuba was established, the forerunner of which was Tokyo University of Education that was founded in 1949.

By 1980, 43 national institutes selected by the government had completed relocation to Tsukuba, forming the backbone of the current city.

It was the Tsukuba-hosted International Exposition on science and technology in 1985 that put the city on the global map. The expo featured exhibitions from 48 countries, including Japan, as well as 37 international organizations, attracting 20.3 million visitors between March 17 and Sept. 16.

Successful G7 meeting

Fittingly for such a science-driven city, Tsukuba recently garnered further attention when it hosted the G7 Science and Technology Ministers' Meeting from May 15 through May 17 at the Tsukuba International Congress Center.

The ministers, including meeting chair Aiko Shimajiri, state minister in charge of science and technology policy, issued a document titled the "Tsukuba Communique." It said they recognized that "science, technology and innovation (STI) are essential for social and economic development, and for addressing global challenges such as health, energy, agriculture and the environment."

On May 16, the ministers had the opportunity to visit some of the leading projects and research facilities in Tsukuba, where they expressed their admiration and provided words of encouragement to researchers.

Cutting-edge tech, delicious food

At the National Institute of Advanced Industrial Science and Technology (AIST), the ministers were given presentations on humanoid robots at a robotics laboratory, jointly operated by the institute and France's Centre National de la Recherche Scientifique.

One of the largest public research organizations in Japan, AIST strives to bridge the gap between "innovative technological seeds" and "commercialization," creating and achieving the practical use of technologies.

Boasting about 2,300 researchers, the institute is made up of five departments and two centers. These include areas dedicated to energy and the environment, life sciences and biotechnology, information technology and human factors, as well as the Geological Survey of Japan and the National Metrology Institute of Japan.

The ministers also visited the National Institute for Materials Science (NIMS), which is tasked with conducting fundamental research, as well as generic and infrastructural technology research and development, in materials science.

They observed the International Center for Materials Nanoarchitectonics, one of the nine World Premier International Research Center Initiative Programs under the Ministry of Education, Culture, Sports, Science and Technology.

They attended a lecture on its cutting-edge research such as the atomic switch, a recently developed nanoscale circuit element, and nanomechanical sensors that mechanically detect target substances.

At NIMS, the ministers also interacted with its researchers from the world, including those from the U.K., U.S., China, Greece, Germany, Canada, France and Nepal.

The ministers concluded their tour by test-driving micromobility single-passenger vehicles at the Japan Automobile Research Institute (JARI).

After the tour, Shimajiri told reporters that the ministers were very much pleased with the dishes made with local ingredients and sake served at a reception the day before.

"I'd like to thank the officials from Ibaraki Prefecture and the city of Tsukuba for their efforts" to welcome the ministers, Shimajiri said. "I'm delighted that the ministers said the dishes and sake were excellent."

At the reception, the ministers were served with wide variety of food using ingredients from all 44 municipalities in the prefecture. They were also served with dinners made with local ingredients such as Hitachi Beef and melon at the banquet on May 16.

Supporting robot research

To create "a society in which humans and robots live together in harmony," Tsukuba has supported robotics institutes and firms in their research activities.

In March 2011, the city was designated by the government as the Tsukuba Mobility Robot Experimental Zone, which allows for robotic experiments on public roads. Thanks to the designation, the nation's first, pedestrians could come across a sign saying, "You may encounter robots on this road."

Using Segway two-wheeled self-balancing electric vehicles, patrols, commuting and sightseeing tours are conducted on an experimental basis in the city.

Many institutions have developed and produced various types of robots.

A noteworthy one is the Robot Suit HAL by Cyberdyne, Inc. that helps patients who have difficulty walking due to diseases of the cerebral, nervous and muscular systems, by aiding the motion of their lower limbs according to their intended movements.

Developed by AIST, the Paro, designed to look like a baby seal, has gained recognition as having therapeutic effects and has been recognized as the "World's Most Therapeutic Robot" by Guinness World Records. AIST has also developed the humanoid HRP-4C Mimu robot.

Established by the New Energy and Industrial Technology Development Organization, AIST and JARI, the Robot Safety Center conducts verification experiments on the safety of androids, with an eye toward assisting those engaged in caregiving or housework in an aging society.

Life, environmental innovation

The city was also designated as the Tsukuba International Strategic Zone by the government. Through deregulation and tax incentives, the designation aims to promote "life innovation" for achieving a healthy aging society and "green innovation" for realizing a low-carbon society.

Led by the Tsukuba Global Innovation Promotion Agency, parties involved in the initiative have embarked on five projects concerning life innovation, including the development and application of next-generation cancer treatment and the creation of the global hub of innovative medical robots and medical devices.

They have also engaged in three other projects on green innovation such as practical use of algal biomass energy, creating a global hub of nanotechnology and practical development of a recycling system for strategic urban mines.

International city

The international aspect is something that should not be forgotten when considering Tsukuba.

Thanks to hosting many research and higher educational institutions attracting overseas talent, Tsukuba has about 7,400 foreign residents as of Oct. 1, 2014, from a whopping 132 countries, accounting for around three percent of city's population.

Tsukuba thus has worked on initiatives to make itself more attractive and comfortable to foreign citizens. To that end, the city pursues multilingual initiatives, which include issuing public relations publications in six foreign languages — English, Chinese, Korean, Thai, Portuguese and Spanish — and a website offering information in two foreign languages — English and Chinese.

The city's cosmopolitan character can also be felt in the classroom as about 250 students from about 40 countries study at elementary and junior high schools in Tsukuba. Furthermore, English-based education is offered at the Tsukuba International School, which is an authorized International Baccalaureate World School.

Innovative classroom efforts

On the educational front, Tsukuba aims to offer the best education in Japan. One of the city's initiatives was the introduction of unified nine-year education with a comprehensive curriculum at all elementary and junior high schools from the 2012 academic year, a departure from the conventional division of six years of elementary school and three years of junior high school.

The city launched a project-based subject, "Tsukuba Style" in the 2012 academic year by combining studies of the environment, careers, history and culture, health and safety, science and technology, welfare, the heart and mind and international understanding.

Furthermore, Tsukuba has been committed to promoting education utilizing ICT since 1977 when it became the first Japanese city to incorporate computers into classrooms. The city recently introduced tablets in classrooms, further promoting innovation in learning.

Through these novel initiatives, Tsukuba looks to nurture global talent with what it calls Tsukuba next-generation skills who could lead the future of the city.

A host of science museums

In a sense, children growing up in Tsukuba have been blessed with an environment where they are close to the nation's leading science technologies. The city is home to a number of museums where children, as well as adults, can enjoy advanced science and technology.

These include the Japan Aerospace Exploration Agency's Tsukuba Space Center, which sits on a spacious 530,000-sq.-meter site and serves Japan's space projects, including the development and operation of satellites, astronaut training and the promotion of manned space activities.

In addition to its mission, the exhibition hall Space Dome allows visitors to see real rocket engines, full-scale satellite models and a life-size model of the Kibo, the Japanese experiment module for the International Space Station.

At the Science Square Tsukuba, visitors can get hands-on experience of robots and future technology, while the Geological Museum features earth science and the Tsukuba Botanical Garden has about 5,000 examples of domestic and exotic plants.

For those who want to visit several museums in the city, a Science Tour Bus is operated on Saturdays, Sundays and national holidays.

Nobel laureates, higher education

Under the motto "Imagine the Future," the University of Tsukuba strives to "establish free exchange and close relationships in both basic and applied sciences with educational and research organizations and academic communities in Japan and overseas."

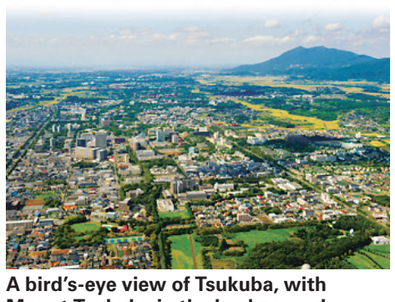
There are four Nobel laureates associated with Tsukuba. They are Shin-Itiro Tomonaga, professor emeritus of Tokyo University of Education who received the Nobel Prize in physics in 1965; Leo Esaki, former president of the University of Tsukuba, who was awarded the 1973 Nobel physics prize; Hideki Shirakawa, professor emeritus of the University of Tsukuba who was the winner of the chemistry prize in 2000; and Makoto Kobayashi, professor emeritus at the High Energy Accelerator Research Organization in the city, and recipient of the 2008 physics prize.

Meanwhile, the national Tsukuba University of Technology is the nation's sole higher educational institution for hearing and visually impaired students, while the private Tsukuba Gakuin University aims to nurture skilled and active members of the globalized information society.

Attendees of the G7 Science and Technology Ministers' Meeting pose for a photo on Honda's personal mobility devices at the Tsukuba International Congress Center on May 16. MASAAKI KAMEDA

At the Japan Aerospace Exploration Agency's Tsukuba Space Center, visitors can observe various space-related exhibits. MASAAKI KAMEDA

A man uses the Robot Suit HAL developed by Cyberdyne Inc. for rehabilitation in Germany. PROF. SANKAI, UNIVERSITY OF TSUKUBA/CYBERDYNE INC.

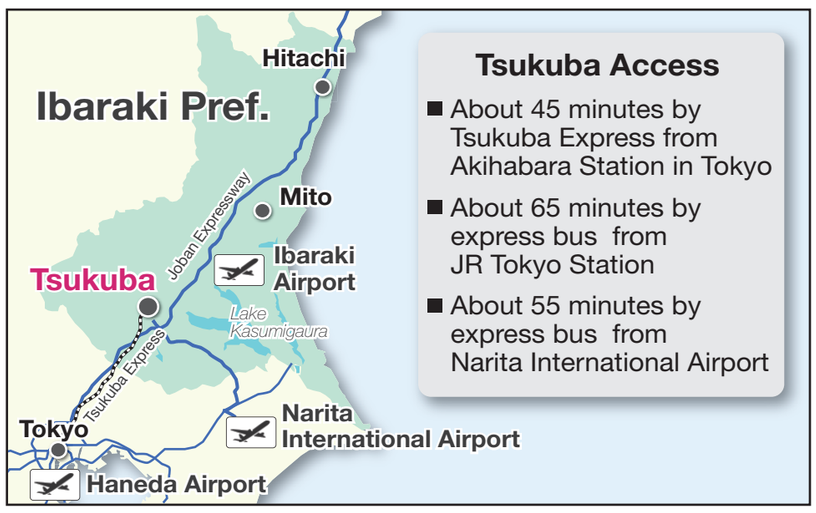


A bird's-eye view of Tsukuba, with Mount Tsukuba in the background
CITY OF TSUKUBA

The lunches served to the ministers attending the meeting on May 16 were made using local ingredients. IBARAKI PREFECTURE

Fifth-grade students use tablets in their science class at Takezono Higashi Elementary School. MASAAKI KAMEDA

Foreign residents make up of about three percent of Tsukuba's population.
CITY OF TSUKUBA



Visitors enticed by attractions, nature

The city of Tsukuba and the surrounding areas have a lot to offer in terms of sightseeing.

An icon of Ibaraki Prefecture and one of the "100 Mountains of Japan," Mount Tsukuba has an elegant appearance and is referenced in the saying, "Mount Fuji in the west, Mount Tsukuba in the east" since the 877-meter mountain is sometimes considered equivalent to the country's tallest mountain.

There are many routes to the top of the mountain that is situated in one of the city's suburbs. From the summit, climbers can enjoy panoramic views of the vast Kanto plain.

Meanwhile, another interesting and unique place to visit is the Warp Station Edo in the city of Tsukubamirai, where visitors can experience the atmosphere of the Edo Period thanks to replicas of traditional buildings and towns.

Although the facility is run by NHK Enterprises Inc. for the filming of period dramas, it is open to the public.

Furthermore, there is the 120-meter bronze Ushiku Daibutsu statue of Buddha in the city of Ushiku. Visitors can take an elevator inside the statue to an 85-meter-high observatory.

Visitors can get a taste of the Edo Period at Warp Station Edo in Tsukubamirai. IBARAKI PREFECTURE