



# OSAKA

KANSAI, JAPAN

# EXPO 2025

**Bid Dossier**

## Chapter 9 VENUE CONCEPT

## 9.C Venue Design: Overview and Concept of Facility Arrangement and Installation

## 2) Concept for Facility Set-Up

## b) A Venue in Harmony with the Environment

The venue represents the depth of Japanese architecture, which entices visitors with a glimpse of what is hidden.

**Garden: Expression And Incorporation of Gardening Culture**

Every pavilion will have a courtyard, which combines the gardening culture of Japan and other countries.

**Water Sprinkling: The Wisdom of Traditional Japanese Culture**

The venue demonstrates Japan's culture of sprinkling water—coexistence with the environment—by installing waterways in alleys.

**Alleys: Glimpses of The Hidden Stirs Expectation And Excitement.**

### II) Environment-Friendly Venue (Zero-Emissions Expo)

The EXPO 2025 OSAKA will be administered with careful consideration to the environment, with an eye towards making Yumeshima a new symbol of Osaka as an environmentally advanced city.

The organiser aspires for a zero-emissions Expo by conscientiously introducing the latest technologies and systems in the field of environmental energy, with the objective of defining the World Expo as a showcase of environmental technologies that will help achieve the Sustainable Development Goals (SDGs) adopted by the UN.

#### • Showcase of Environmental Technologies

The venue will utilise numerous cutting-edge green technologies.

Examples:

Net Zero-Energy Pavilion\*

The Thematic Pavilions and so on will be Net Zero-Energy Pavilions by procuring all of their energy

from the mega solar power generation plant.

The Expo will also feature demonstrations of cutting-edge environmental energy technologies such as thermophotovoltaic power generation, thermoacoustic power generation, production of methane via artificial photosynthesis, and more.

\* A pavilion whose net energy consumption approximate zero, simultaneously creating a comfortable indoor environment and a radical cut in energy consumption through the use of highly efficient thermal insulation, facility design, and by generating power from renewable, sustainable sources.

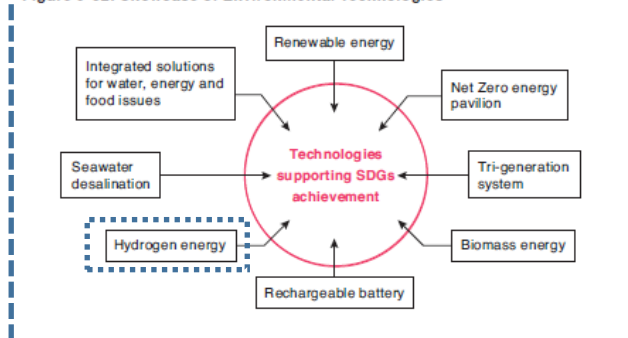
#### • Practical application of large-capacity groundwater and seawater heat utilisation systems

We will apply the natural heat utilisation system to air conditioning of pavilions or other buildings in the venue, and consider introducing Aquifer Thermal Energy Storage system (ATES) while caring

**Yumeshima Island  
- a new symbol of  
Osaka as an environ-  
mentally advanced  
city achieving  
zero-emissions expo.**

**We are planning  
eco-friendly utilities,  
including the solar  
power plant etc.**

Figure 9-32: Showcase of Environmental Technologies



Mega solar power generation plant operating on Yumeshima Island



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the impact on geo-environment (preventing land subsidence etc).

• **Use of Algal Biomass Energy.**

The venue will utilise alcohol fuel and syngas (synthesis gas) produced from algae for transportation both on-site and around the venue.

There is a plan for producing potable water using a seawater desalination system(Details to follow).

• **Energy System that Promotes Sustainable, Emission-Free Local Production for Local Consumption**

The mega solar power generation plant is already operational on Yumeshima Island. This system is a very effective, environmentally friendly energy resource that will help to create an emission-free society on Yumeshima, as the total power that will be generated from the time the host nation is selected until the year 2025 is estimated to be nearly the same as the power consumption required for the Expo. This solar power facility will also serve as a symbol of the EXPO 2025 OSAKA, which aims for a harmonious relationship with nature. Leveraging this valuable environmental energy resource, we will employ the following programs to achieve our goal of a zero-emissions Expo:

- Operation of the most efficient power generation panels available
- Using electricity generated by the mega solar power generation plant for electric vehicles (EVs)
- Production of hydrogen using electricity generated by the mega solar power generation plant for use in fuel cell vehicles (FCVs)

**We will also build a multiplexed infrastructure for energy and ICT, so that lifelines will not be**

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severed in the unlikely event of disaster, to ensure visitors' security.

• **Showcasing Desalination and Other Water-Based Technologies**

Yumeshima is surrounded by the sea, situated at the most downstream area of Lake Biwa and the Yodo River basin, which are the most important water resources in Osaka and the Kansai region. This area has been blessed with water transportation and successful flood control since ancient times. Establishing a sustainable system for the utilisation of water resources is a global issue. Our proposal for using the latest water resource technology on Yumeshima therefore bears great significance to the world. The organiser will consider introducing a seawater desalination system—a technology in which Japan is a world leader—to satisfy the demand for potable water at the Expo.

• **Use of Biomass Plastics**

The Expo will make extensive use of materials made from renewable biomass, including biomass plastics, to improve resource efficiency, reduce carbon emissions, and reduce landfill waste.

**c) Social Demonstrations**

The EXPO 2025 OSAKA is conceived as a laboratory for the development of our future society. Accordingly, we will provide ample opportunity for demonstration of the latest technology and ideas in a variety of facilities throughout the venue.

Examples:

• **Strolls and Personal Mobility Technology that Lead to Exciting New Experiences and Interactions**

The venue will encourage aimless meandering throughout the venue by the use of personal mobility technology to provide visitors, regardless of age or physical condition, with an opportunity to get around freely and safely.

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• **Providing Opportunity for Citizens to Design a Sustainable Society**

The Expo will offer individuals, companies, and all manner of participants the opportunity to collaborate in collecting ideas and developing technologies with the aim of solving global issues such as climate change and poverty before the Expo even starts, and further opportunity to cooperate with one another in demonstrating these concepts at the Expo itself. We will uncover solutions for issues affecting regions throughout the world using an open innovation framework. For example, Asia's issue in optimising urban management to support a large or dense population while providing minimum supply of urban facilities, infrastructure and foods. We will support ideas developed through "ideathons"\* and other procedures via crowdfunding or by providing a plot in the venue.

\*Ideathon: A term coined by combining the words "idea" and "marathon." People from various fields are grouped together and share ideas freely on a specific topic over the course of a few hours or days to generate unprecedented solutions.