

# Kansai Business Sector's Contribution to Climate Change Mitigation and Adaptation



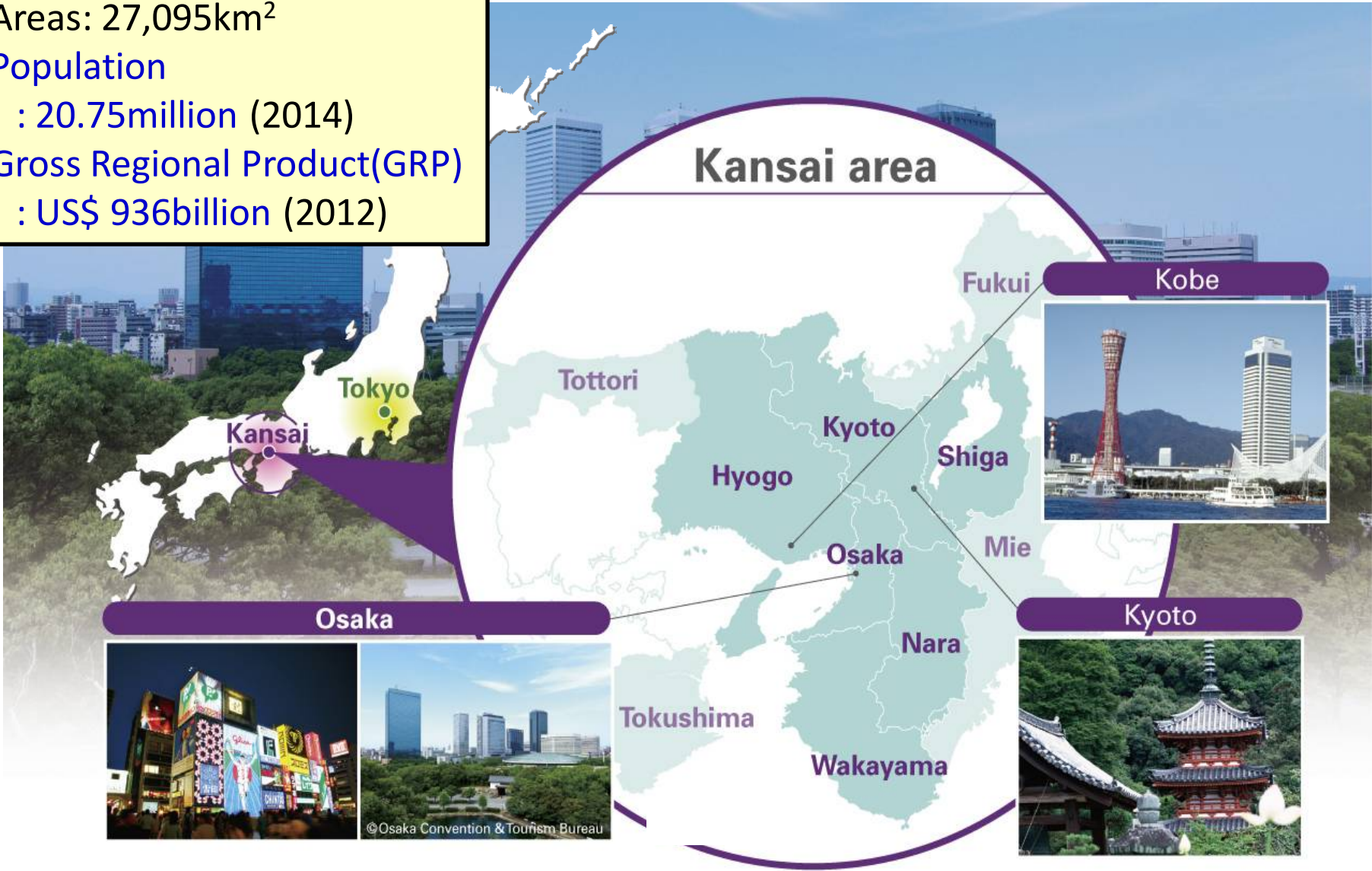
December 7, 2015

**Minoru FURUKAWA**

Chairman of the Global Environment and Energy Committee, Kansai Economic Federation  
Chairman & CEO, Hitachi Zosen Corporation (Hitz)

# 1.Profile of KANSAI,JAPAN

Composed of 6 prefectures  
Areas: 27,095km<sup>2</sup>  
Population  
: 20.75million (2014)  
Gross Regional Product(GRP)  
: US\$ 936billion (2012)



©Osaka Convention & Tourism Bureau



## 2.The Kansai Business Sector's Contribution to Climate Change

### Kansai - an environmentally advanced region

#### Experiences



Serious environmental pollution occurred in Kansai (1960s and 1970s) in conjunction with economic growth

Residents, local governments, private companies and research institutes have worked hard to improve the environment.

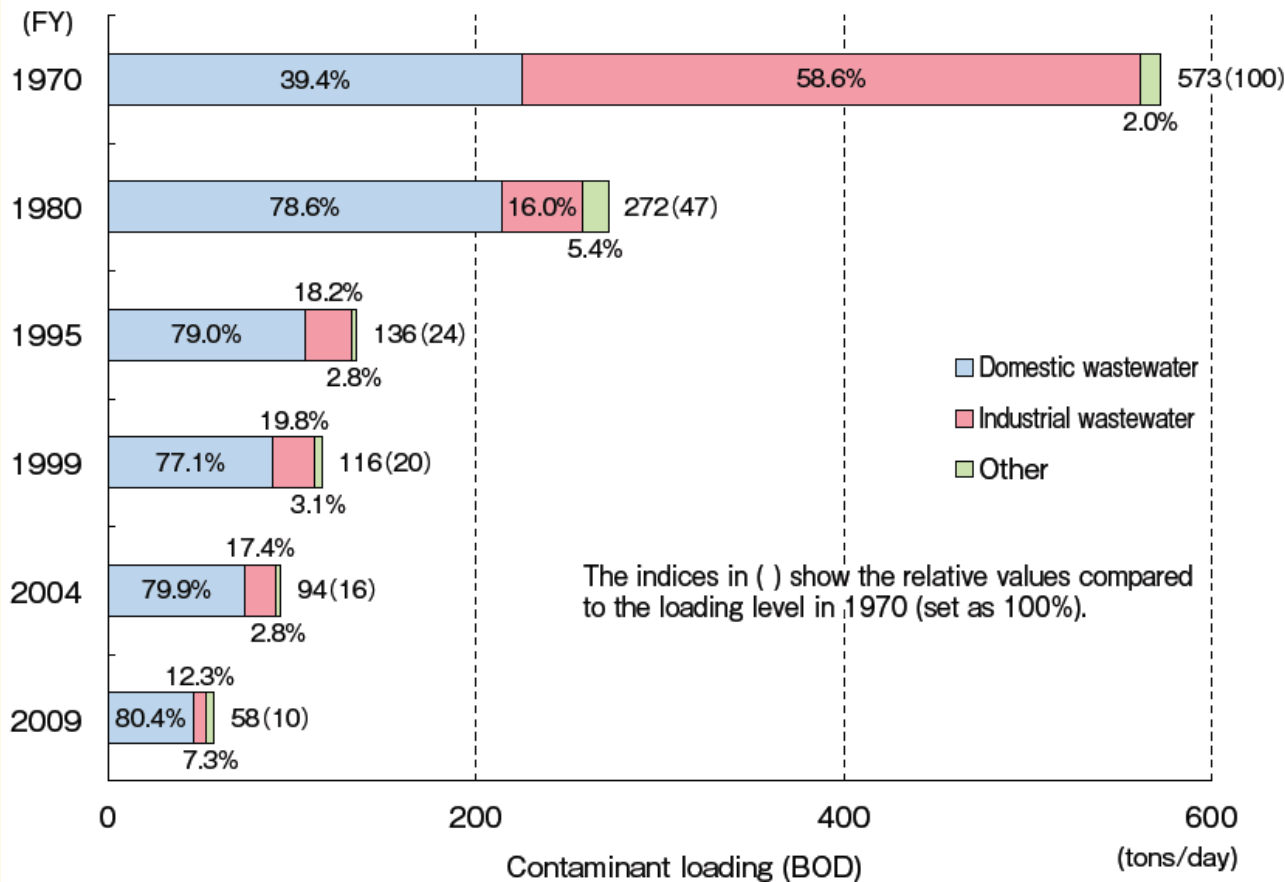
#### Today

- Measurement technology for accurate **monitoring air and water contamination**
- Advanced technology for **reducing greenhouse-gas emissions**
- **Water purification** technology for wastewater recycling
- Systems for appropriate **disposal and effective use of municipal garbage**
- **Administrative know-how** for utilizing the above technologies to allow the next generation to live safe, secure, healthy, and culturally rich lives etc.

# 2.The Kansai Business Sector's Contribution to Climate Change

## Cases of water quality improvement in Kansai

Transition of the contaminant (BOD) loading levels of the rivers in Osaka prefecture



1960s



Present

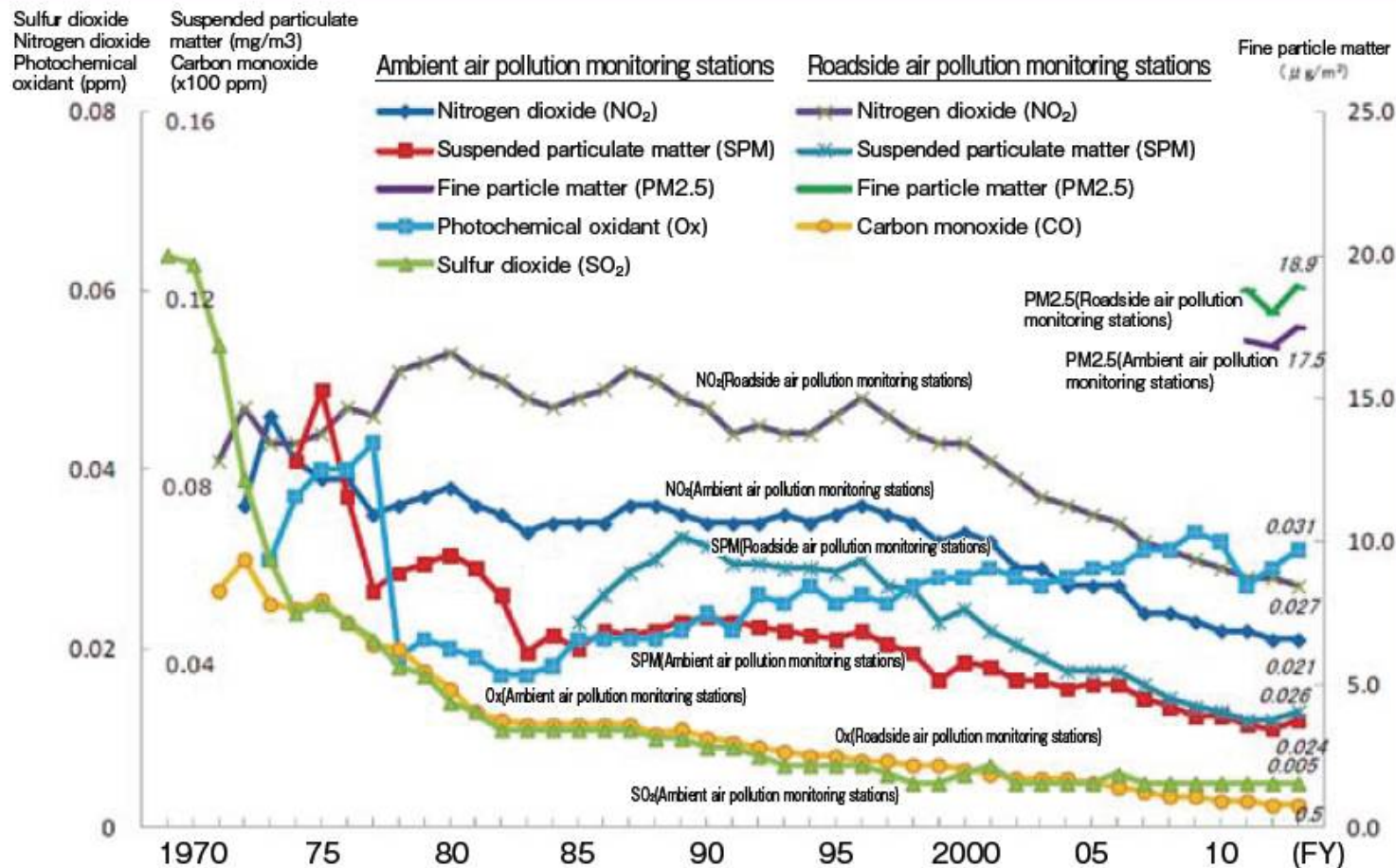


Rivers in Osaka

# 2.The Kansai Business Sector's Contribution to Climate Change

## Cases of air pollution improvement in Kansai

Transition of the levels of major air pollutants in Osaka city



1960s



Present



Atmosphere around Osaka Castle

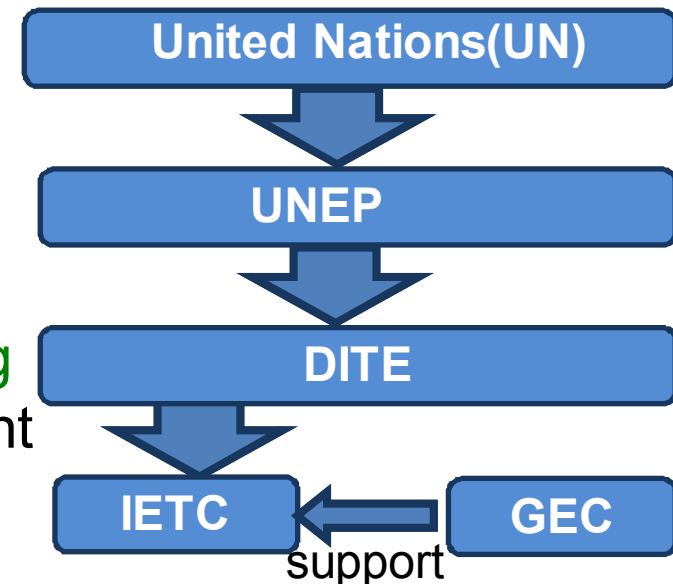
## 2.The Kansai Business Sector's Contribution to Climate Change

### UNEP IETC



### United Nations Environment Programme International Environmental Technology Centre

- Established in Osaka, Japan in 1992.
- A branch of the United Nations Environment Programme (UNEP) / Division of Technology, Industry and Economics (DTIE)
- Promotes the use of environmentally sound technologies, particularly in developing countries and countries with economies in transition.
- Kansai business sector will promote the measures to cope with global warming in cooperation with the Global Environment Centre Foundation (GEC) launched as a UNEP-IETC support entity.



## 2.The Kansai Business Sector's Contribution to Climate Change

### Kansai - a community resilient against natural disasters

#### Experiences

Flood in 1997  
at Neyagawa  
Osaka



The Great  
Hanshin  
Earthquake  
in 1995

Residents, local governments, private companies and research institutes have worked hard to reduce damages of disasters.

#### Today

- Technology and Know-how have accumulated in the fields of **prediction, simulation, and prevention of disasters** in order to reduce damage.
- **Administrative operations** have been developed.
- Efforts to improve **awareness of inhabitants towards disaster prevention** have been maintained through public – private cooperation.

## 2.The Kansai Business Sector's Contribution to Climate Change

### Technologies and Products in the Environmental and Energy Sector

Aiming at widely publicizing superb environmental and energy-related technologies in the Kansai region, we prepare the leaflets and website forms introducing more than 150 cases.

**visit our website at:**  
<http://www.kankeiren.or.jp/en>



Title	Corporate Name
Membrane Dehydration System	Hitachi Zosen Corporation
New Energy-saving and Eco-friendly Colorant	Matsui Shikiso Chemical Co., Ltd.
TW5 - Ion Water-Cleaning System	Takahashi Metal Industries Co., Ltd.
Halfow Fiber Reverse Osmosis Membrane for Seawater Desalination	Toyobo Co., Ltd.
Advanced Wastewater Treatment by Micro-bubble Aerator	Suzuki Sangyo Co., Ltd.
Organic Excess Sludge Reduction System	Kuraray Aqua Co., Ltd.
MSABP™ Multi-Stage Activated Biological Process	Teijin Limited
High-Intensity, High-efficient Sunshine LED	IDEC
OLED Lighting	Konica Minolta, Inc.
SUND Series Environment-friendly Next Generation LED Lighting Equipment	Sun Electronics Industry Ltd.
Water Culture Plant with LED	Synergy Tech Co., Ltd.
UV-LED H5372L-ERLM	NITROIDE SEMICONDUCTORS Co., Ltd.
Special LED Lighting System for Refrigerator Freezers	Mitsubishi
Evaluation and measurement system for nitride semiconductors such as LEDs	YSystems Ltd.
Saving Energy in Sintering Process	Nippon Steel & Sumitomo Metal Corporation
Energy-saving pig iron plant	Kobe Steel, Ltd.
Memory LCD	Sharp Corporation
Stainless Steel Tubes for USC Boilers	Nippon Steel & Sumitomo Metal Corporation
Pipe Drag-reducing Additive ECOMISEL	Osaka Gas Co., Ltd.
Energy-saving Conduction Belt (Energy-saving Red)	Banda Chemical Industries, Ltd.
Flame-retardant Fluorescent Ball (EPA's Patent)	Banda Chemical Industries, Ltd.

**Hitachi Zosen Corporation**  
 Highly efficient thermal recycling technology **Waste-fired power generation system**

**Feature**

- Hitachi Zosen has engaged in the construction of 72 waste-fired power generation facilities (attached to wastewater-treatment plants).
- Total power generated reached 380MW
- The plant achieved 8,000 hours of continuous operations.

**Overview**

The system employs a sustainable and a recyclable technology in which a boiler efficiently absorbs the heat generated during waste incineration, and a steam turbine and power generator convert the heat into electric power. For example, processing of the 1,000 ton of waste of 8,000 t/d/day will generate 30 MW of power.

**Machikita Plant (Osaka city)**

Processing rate: 90 t/d. Power generation capacity: 32,000 kW

Some of the generated power is used in the plant while the rest is supplied to electric companies. Plant cells are welcomed.

Machikita Plant (Osaka city)

**Bafuou Plant (Taiwan)**

Processing rate: 1,000 t/d. Power generation capacity: 40,000 kW

Three plants in Taiwan, including the Bafuou plant, achieved 8,000 hours of continuous operations.

Bafuou Plant (Taiwan)

**Chuo Incineration Plant (Chuo-ku, Tokyo)**

Processing rate: 800 t/d. Power generation capacity: 15,000 kW

Recycled concrete and crushed stone were used as materials for plant construction.

Chuo Incineration Plant (Chuo-ku, Tokyo)

**Shanghai Langangshan Plant (China)**

Processing rate: 3,000 t/d. Power generation capacity: 60,000 kW

Waste gathered in the city of Shanghai is transported via ship to this plant located in a coastal area.

Shanghai Langangshan Plant (China)

**Hitachi Zosen Corporation**  
 Environmental Systems, Buildings, Environmental System Sales Ltd., Environment Sales Ltd. (China)  
 TEL: +81 6-6569-5001 FAX: +81 6-6569-0078 http://www.hitachizosen.co.jp



# 2.The Kansai Business Sector’s Contribution to Climate Change

## Industrial Tours

Kankeiren is proposing “Industrial Tours”, which highlight various countermeasures taken against disasters. **Seeing is Believing!**

We heartily welcome your visit in the near future!



**Industrial Tour**  
Kansai Economic Federation  
**Activities for 3 R's**  
(Reduce, Reuse, and Recycle)

This tour is intended for countries and local governments that have problems with the rapid increase in waste caused by the growth of economies and population associated with urbanization. (Maximum number of participants: 20 people per tour)

Visitors can learn about the activities for environmental protection being performed in the Kansai area through reducing, reusing, and recycling waste with the support of both the public and private sectors.

**<Example of tour plan> (including sightseeing)**

- Kansai Recycling Systems (40min. / drive)
- Osaka Station City (50min. / train)
- Osaka Hiranomori Power Plant (40 min. / train)
- Osaka Water Reuse Plant (90 min. / train)
- Sakai Recycling Center (90 min. / train)
- Sightsseeing in Osaka City (Planting Garden etc.) (10 min. / drive)
- Osaka City (Osaka City, Shimizu, etc.) (20 min. / train)

**Industrial Tour**  
Kansai Economic Federation  
**Disaster Prevention against Flood, Storm Surge, and Tsunami**

This tour is intended for countries and local governments suffering from water damage caused by floods in the rainy season, storm surges from typhoons or hurricanes and tsunamis caused by earthquakes. (Maximum number of participants: 10 per tour)

Visitors can learn the knowledge and know-how that the Kansai area, which has many rivers and has repeatedly suffered from floods, storm surges, and tsunamis, has accumulated from these disasters.

**<Example of tour plan> (including sightseeing)**

- Tsunami/Storm Surge Disaster Prevention Station (90 min. / train)
- Tsunami/Swimming Pool (30 min. / walk)
- River Disaster Prevention Training Laboratory (90 min. / train)
- Osaka City Sewerage Treatment Plant (90 min. / train)
- Osaka City Sewerage (90 min. / train)
- Sightseeing in Osaka City (Blue Sky Terrace, etc.) (20 min. / train)

**Industrial Tour**  
Kansai Economic Federation  
**Building a resilient city to earthquakes**

This tour is intended for countries and local governments suffering from earthquakes. (Maximum number of participants: 50 per tour)

The Kansai area has recovered from the damage caused by the Great Hanshin-Awaji Earthquake 20 years ago. Visitors can learn about the activities undertaken to reduce damage, such as improvements in the infrastructure and residents' awareness of disaster prevention, with the support of both the public and private sectors.

**<Example of tour plan> (including sightseeing)**

- Disaster Reduction and Human Restoration Institution (90 min. / train)
- Hyogo Prefectural Emergency Management and Training Center (90 min. / train)
- Hyogo Earthquake Engineering Research Center (90 min. / train)
- Sightseeing in Osaka City (Blue Sky Terrace, etc.) (20 min. / train)

**Industrial Tour**  
Kansai Economic Federation (Kansai-net)  
**Improvement and protection of the atmospheric environment by local governments and businesses**

Target: Countries and local governments suffering from air pollution caused by economic growth and industrialization (Tour capacity: Up to 20 people per tour)

As pollution became a serious problem in and around industrialized cities during the period of rapid economic growth in Japan, learning from this lesson, the Japanese government has introduced laws and regulations (with the cooperation of local governments and businesses in the Kansai region) to improve the atmospheric environment from the perspectives of measure, technology and preventive technologies. Participants in the tour can observe such efforts.

**Example of the tour (including sightseeing in nearby areas)**

- Government Bureau Osaka City Government (90 min. / train)
- Air Pollution Monitoring Station in Osaka City (30 min. / walk)
- Osaka City (Osaka City, Shimizu, etc.) (20 min. / train)
- Osaka City (Osaka City, Shimizu, etc.) (20 min. / train)
- Osaka City (Osaka City, Shimizu, etc.) (20 min. / train)
- Sightseeing in Osaka City (Blue Sky Terrace, etc.) (20 min. / train)

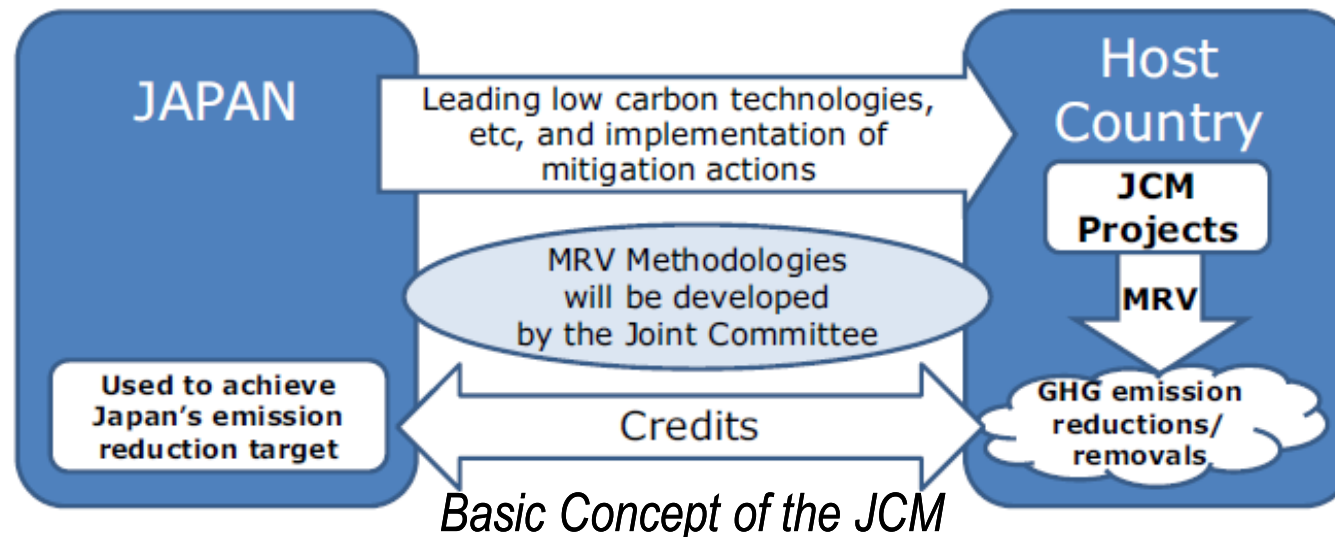
## 2.The Kansai Business Sector's Contribution to Climate Change

### Joint crediting Mechanism

■ The Joint Crediting Mechanism (JCM) aims at facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.

■ Japan has established the JCM with sixteen countries. (※)

※Mongolia, Bangladesh, Ethiopia, Kenya, the Maldives, Vietnam, Laos, Indonesia , Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar , Thailand



# 3.Examples of Studies and Demonstrations Under the JCM Support Programme

## Hitz's Appropriate Solutions for Vietnam

### Anaerobic digestion of organic waste for biogas utilization at market in Ho Chi Minh City

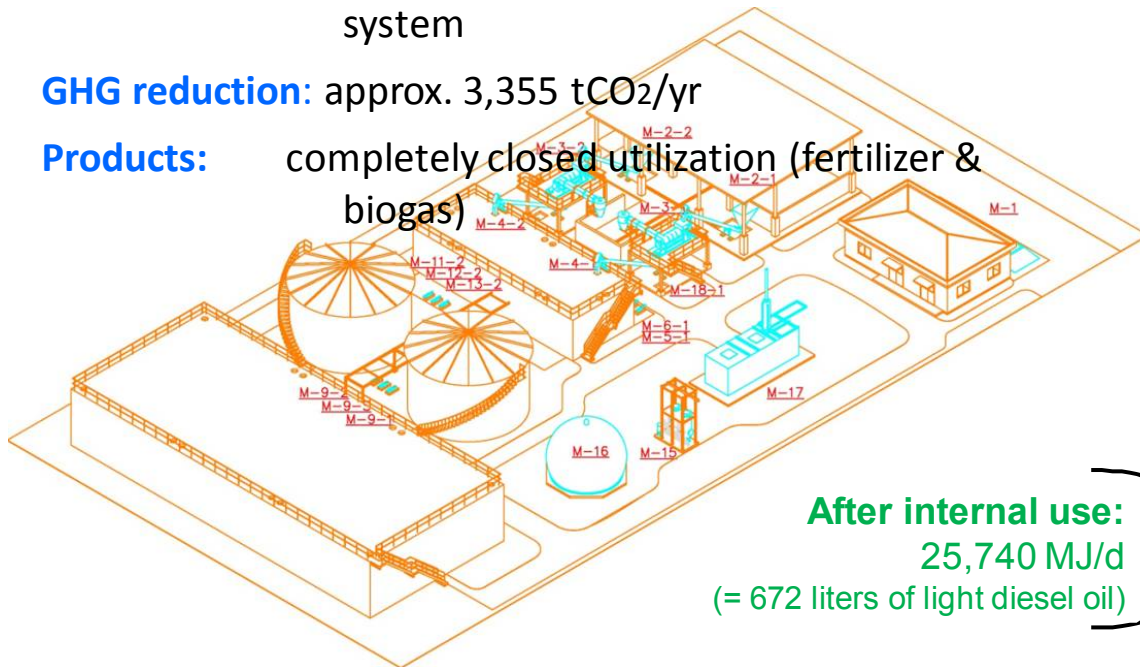
**Target Waste:** Market waste & sludge of wastewater treatment plant

**Capacity:** 50 t/d (market waste) + 3 t/d (sludge)

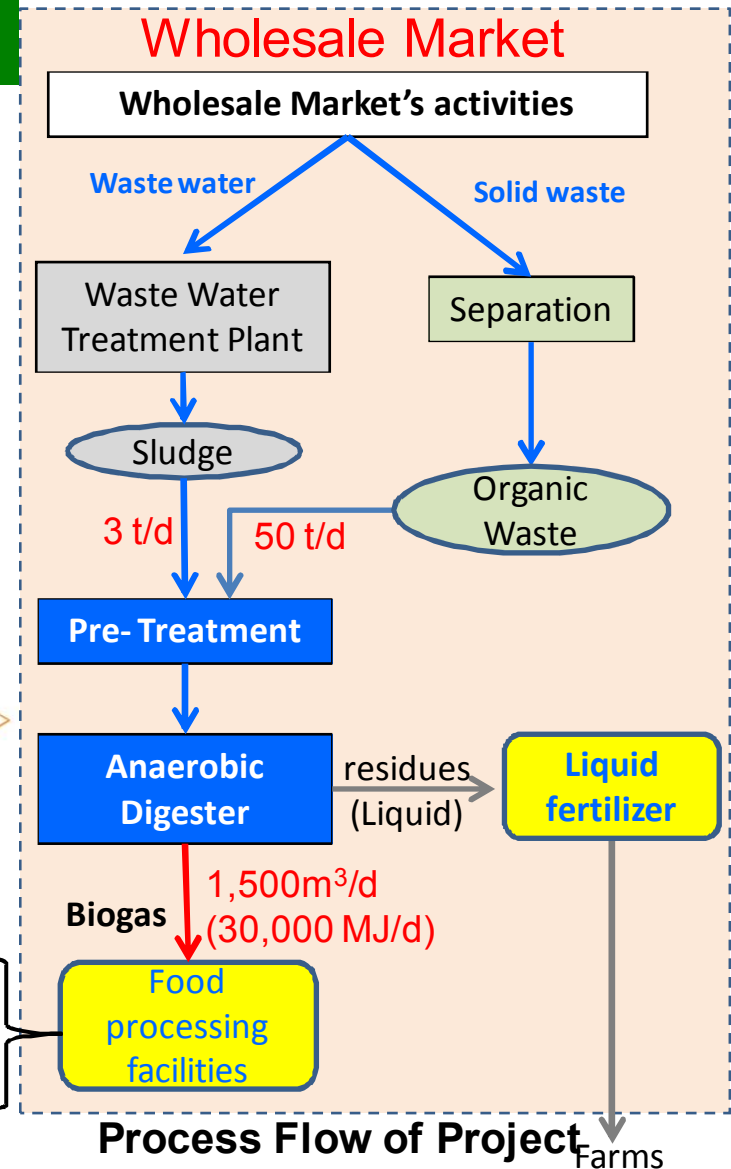
**Technology:** Water-needless Two-phase Methanation system

**GHG reduction:** approx. 3,355 tCO<sub>2</sub>/yr

**Products:** completely closed utilization (fertilizer & biogas)



After internal use:  
25,740 MJ/d  
(= 672 liters of light diesel oil)



Process Flow of Project

# 3.Examples of Studies and Demonstrations Under the JCM Support Programme

## Hitz's Appropriate Solutions for Vietnam

### Introduction of Energy-from-Waste Project in Ho Chi Minh City



# 3.Examples of Studies and Demonstrations Under the JCM Support Programme

## Hitz's Appropriate Solutions for Vietnam

### Overview of Our Major Business in Vietnam



**Model project**  
**Industrial Waste Power Generation System**  
 (Nam Son – Soc Son)  
 75 t/d × 1 line = 75 t/d  
 Completion: 5.2016



**JCM Project Planning Study**  
 Introduction of Energy-from-Waste Project in Ho Chi Minh City

**JCM Model Project**  
 Anaerobic Digestion of Organic Waste for Biogas Utilization at Market

**Feasibility Study Project (2014 – 2016)**  
 Development of Food waste Recycling loop in Ho Chi Minh City

**Feasibility Study Project (2015 – 2017)**  
 Septage treatment project in Ho Chi Minh City

JCM: Joint Crediting Mechanism