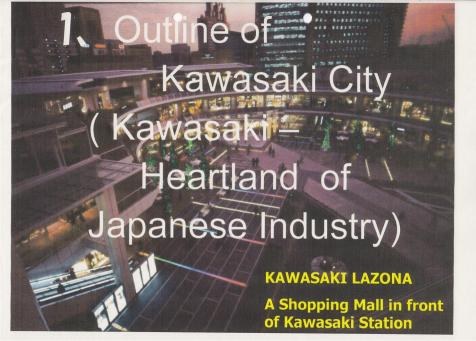
Eco-industrial complex Kawasaki Model International contribution by the transfer of environmental technologi into Asia

Kazuyoshi Ito
Director of
Commerce & Industry Dept.
Economic and Labor Bureau



# Location: Kawasaki

Shenyang 3hrs 45m.

> Seoul 2hrs 20m.

Directly northeast of the city is TOKYO's Haneda Airport, which is a central airport for domestic flight can be reached within only 14 minutes.

When the airport begins operation as an international airport in 2010, it's expected to trigger the development of our city as a gateway to Asia.

Kawasaki City

Shanghai 3hrs10m Kawasaki City, located in the center of the Tokyo metropolitan area, offers direct access to the largest consumer market in Japan as well as excellent domestic and international

2000km area from transportation links.



# Overview of Kawasaki



6			
	Kawasaki	Japan	
Population	1,410,395 (as of 11/1/2009)	127,520,000 (as of 5/1/2009)	
Population Growth Rate	7.9% (FY 2004→2009)	-0.2% (FY 2004→2009)	
Average Age	41.1 (as of 10/1/2009)	43.3 (as of 10/1/2005)	
Labor Force Population	737,210 (FY 2005)	65,400,000 (FY2005)	

	Kawasaki	Japan
Households	652,947 (as of 11/1/12009)	52,320,000 (as of 3/31/2008)
Area	144.35 km²	377,929.99 km²
GDP	43.1 billion dollars (4.7 trillion yen) (FY 2006)	4.37 trillion dollars (507trillion yen ) (FY 2006)
Major Industries and business categories	Manufacturing (steel, electronics, telecommunications, precision machinery, petrochemical, chemistry) information and service	Manufacturing, services, wholesale and retail trade, real estate, finance, insurance, transportation, telecommunications
Developing Industries	Telecommunications, environmental, welfare and life sciences	Telecommunications, environmental, life sciences, nanotechnology materials, energy and manufacturing technology etc.
Registered Foreign National Population	32,776 (from 120 countries) (as of 9/30/2009)	2,217,426 (as of 12/31/2008)
Foreign Firms	115 (83 head offices : 5 <sup>th</sup> in Japan)	Approx. 3,500

# Worldwide Companies in Kawasaki

Kawasaki City has a hundred-year long history as an industrial powerhouse. It was organized as a municipality in 1924 and had roughly 50,000 citizens at the time. The city has now become an international metropolis with a population of 1.4 million. Major Industries are steel, electronics, communication, machinery, oils, chemistry, information, and service. Kawasaki has the highest percentage of manufacturing in GDP among major cities in Japan.



# Three Science Parks Giving Rise to New Businesses -Accumulation of Cutting-Edge R & D Functions-

### Kanagawa Science Park (KSP)

The first science park in Japan (established in 1989) and one of the largest technology incubators in Japan 118 companies (as of Jan. 2006) http://www.ksp.or.ip/english/



KSP

Shin-Kawasaki Science Park

Shin-Kawasaki Science Park (KBIC、K²)
Cooperative academic-industrial science park
(Kawasaki Business Incubation Center (KBIC)
(Keio University Shin-Kawasaki Town Campus (K²)
21 companies and 7 laboratories (as of Jul. 2006)
http://www.kawasaki-net.ne.jp/kbic/index-en2.htm





KBIC

K

#### Techno Hub INnovation Kawasaki (THINK)

Private-sector-led science park
Custom-made research space available
55 companies (as of Mar. 2006)
http://www.techno-hub-innovation.com/





THINK

# 2. The present condition and future of Eco-Town plan

Going through efforts towards pollution conquest, we have established the environmental technologies in Kawasaki

MUZA KAWASAKI SYMPHONY HALL

# Kawasak has overcome Pollution

#### Rapid Economic Growth and Industrial Pollutions

The accelerated industrialization caused air and water quality degradation due to the discharge of pollutants from factories

In the situation, popular protests against industrial pollutants become active in the coastal region as well as Japan.

National government hesitated to initiate bold actions for the pollutants issues, however because of its policy to pursue further economic growth. The needs

Municipalities that reflect the needs of the citizens more easily than the national government began to launch various measures to solve the issues ahead of the government.

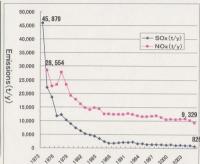
Kawasaki City Ordinance for Pollution Prevention was formulated in Kawasaki in 1972.

The industries in Kawasaki kept inn vating technologies to deal with those regulations, which resulted in the great decrease in the discharge of pollutants.

Going through the history sestablished a basis for technologies, strong and administration and basis = 0.00

strong as a bank and salar he public and on, and salar provide the public and on, and salar provide a principal salar provide the public and on the public a

View of coastal area in 1970s





Present view of coastal area

Kentoki cog -7.

( Kanazaki + Maptapet >

# Environmentally harmonious urban development started with the designation as an "Eco-Town ."

Japan faced two serious problems in 1990s, which was global issues and the rupture of the bubble economy. The furthering degradation of the global environment required to respond in ways more complicated and effective than ever, and the rupture of the bubble economy required to respond to the hollowing out of Japanese industries caused by the transfer of factories to foreign countries.

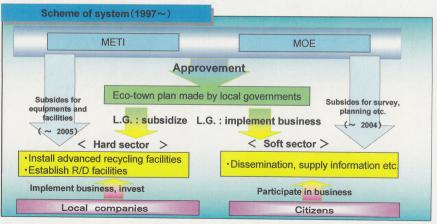
To revitalize manufacturing industries, reorganize the Coastal Region, and ease and eliminate the interminglement of houses and plants, the Kawasaki City is carrying out measures for supporting companies' efforts and developing recycling-related industries to create a recycling society suitable for the 21st century.

In July 1997, the Kawasaki City drew up "Kawasaki City's Basic Plan to Develop an Environmentally Harmonious Town" after receiving the approval for the "Eco-Town" from the Ministry of International Trade and Industry.

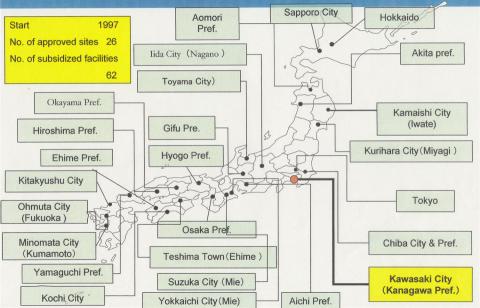
At present, the city government is pushing on with a full-scale operating plan, receiving cooperation from many people.

# Eco-Town Project

- Creation of Advanced Environmentally Harmonized Town TZero emissions Plan I
- ①Promotion of environmental industries on locally accumulated technologies
- ②Formation of resources cycling economy and society through reducing waste generation and promoting waste recycling on site



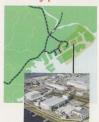
# Eco-Town Plans approved by Governments (Feb. 2010)



# Characteristics of Kawasaki Eco-Town

- Kawasaki Eco-Town covers the whole of the Kawasaki coastal Region of 2,800 ha.
   The main characteristic is the existence of various manufacturers in a place next to an established urban area.
- While carrying out their operations, the manufacturers have developed the equipment and technologies for using each other's waste and byproducts as materials.







### Kawasaki Zelo Emissions Industrial Park

#### Leading model project for the Kawasaki Eco-Town Plan

- Industrial Park was launched as model facilities for Ecotown plan in this area
  - ( operation started in November 2002 )
- · Reduce waste from business activities as much as possible
- Minimization of environmental load in the park by reuse and recycling of waste and cascade use of energy
- The whole industrial park obtained ISO14001 certification in March 2005



Kawasaki Zero Emissions Industrial Park

#### **Major Practices of Companies in the Park**

- · Use of natural gas cars
- · Use of hydro-generation plants
- · Circulating use of chemicals and water
- Recycling of used mix papers
- · Circulating use of waste water from surface plating
- · Reuse of incinerated ash as material for cement

Location	Mizue-town, Kawasaki Ward	
Area	77,464m²	
No of companies	15 (metal fabrication, paper, surface plating etc.)	
Workers	About 400	

# Resources Recycling Facilities

Reuse of waste plastics for blast furnace 2000 ~

Capacity (plastics) 25,000t/year

JFE KANKYO Corp.

Recycling of used electric appliances

Capacity 400,000~500,000 sets/year

JFE Urban Recycle Corp.

Concrete setting frame production from waste plastic

Capacity (plastics) 20,000t/year

JFE KANKYO Corp.

Material production for ammonia from waste plastics

Capacity (plastics) 65,000t/year Ammonia production 58,000t/year

SHOWA DENKO K.K.

Used mix paper recycling 2002 ~

Capacity (used mix paper) 81,000t/year
Produced toilet and tissue paper 54,000t/year SAN-El Regulator CO.,LTD

PET bottles material recycling
- PET to PET 2004 ~

Capacity (used PET bottles) 27,500t/year
Produced material for new bottles 22,300t/year PET REFINE TECHNOLOGY CO.,LTD

\* Others DC (Cement products) and YAKIN-Kawasaki (Non-ferrous products) implement recycling

# Kawasaki Eco-Town Plan

Kawasaki's Fundamental Plan to create the Town harmonizing with Environment

(Kawasaki Eco-Town Plan)

# Companies go for

●Install and construct recycling facilities

Companies collaborate together for ecofriendly on site

- ●Construct Zero
  Emissions
  Industrial Park
- Survey possible
  way to use
  resources and
  waste in
  companies

Research for sustainable development of coastal area on environment

●Collaboration with NPOs (Industrial Business Creation Liaison Centre etc) and studies on advanced resources recycling and unused heat reuse Contribution for international communication and sending performance

- ●Promotion of the plan of Asian Venture Business Town
- ●Collaboration with UNEP



#### Carbon Challenge Kawa aki Eco-strategy (CC Kawasaki)

To promote a virtuous and harmonious circle for 'environment' and 'economy', and to engage the entire city in the development of a sustainable society on a global scale on the basis of the following three fundamentals.



#### i. Employ the characteristics and advantages of Kawasaki City to promote countermeasures against global warming.

A virtuous circle for 'environment' and 'economy' to build a 'Kawasaki CO2 reduction model' to reduce CO2 emissions with the use of advanced technology.

Development of Kawasaki City's own system for evaluation measures of life-cycle of products and services.

Promote a vision of the International Environmental Special District developed in Kawasaki City through these activities.

# II, International contributions through environmental technology.

Kawasaki City has a concentration of industries with internationally recognized environmental technologies. Kawasaki City is able to contribute to measures for global warming on an international scale in combination with these industries.

#### Main Activities

 Develop a system for support and creation of advanced industries
 Joint energy use by industries in coastal

Use of NEDO grants for joint use of energy through Kawasaki Steam Net Inc.

OFormation of an eco-industrial complex OThe eco-town plan and zero-emissions

industrial areas



©Establishment of Environmental Technology Information Centers

**©Kawasaki International Environmental** 

**Technology Exhibition** 

# III. Engage in reduction on CO2 levels through a wide range of organizations.

A joint effort by citizens, businesses, and local authorities to develop effective measures for CO2 reduction.

Take maximum advantage of the lessons learned in resolving environmental problems with the high level of environmental consciousness of the citizens of Kawasaki.



The property of the power plants, and establishment of joint citizens' powerplants

OCooperation between citizens and businesses in reducing use of plastic bags in retail stores

# Leading Environmental Technology / Facilities Concentrated in the Kawasaki Waterfront Area



# Energy Cycle and Effective Energy Use Initiative in Collaboration with Companies

This autumn Kawasaki plans to commence a large-scale energy-saving project with Tokyo Electric Power Company (TEPCO) to supply steam from a thermal electric power plant to factories in the surrounding areas.

- Quantity of steam supplied Approx. 300,000 ton annually
- Time of supply February 1, 2010
- Effect of energy saving

Approx.11,000 kl. annually (crude oil conversion), about 4% \*Equal to annual energy consumption of approx.9,300 average families

Effect of CO2 reduction

Approx.25,000 tons annually

\*Equal to annual emission of CO2 approx.4,600 families

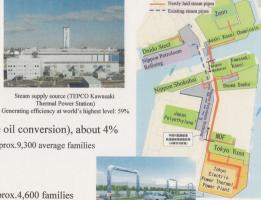


Image of steam piping (Piping will be designed to complement the landscape)

# Mega Solar Power Generation Project

Kawasaki City and Tokyo Electric Power Co. are moving ahead with a joint mega-solar power generation project to construct solar electric power plants with a combined total output of 20,000kW in the Kawasaki City coastal area. These plants are set to commence operation in FY2011.

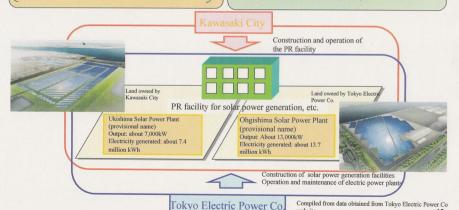
Tokyo Electric Power: Construction of the solar power facilities: operation and management of the electric power plants Kawasaki: Construction and operation of a PR facility

One of the largest solar power generation plants in Japan

- > 2 electric power plants with a total output of about 20,000kW (7.000kW + 13.000kW)
- > Will generate about 21 million kWh, equivalent to the amount of electricity used by about 5,900 ordinary households annually
- > Annual CO2 reduction effects of about 8,900t

website

-19-



## Supporting the Creation of Cutting-edge Industries in the Environmental and Energy Sectors

- Support will be provided for the commercialization of leading-edge technology in the environmental, energy, and life sciences fields in order to encourage the creation and buildup in the waterfront area of leading industries that can contribute to global well-being and help solve the common problems facing humanity.
- Companies engaged in the development and mass production of large-sized lithium-ion batteries
  will utilize this system and in the spring of 2010 a mass production factory / research and
  development base will be established in the waterfront area.





By researching, developing and mass producing safe and energy—to—weight efficient lithium—ion batteries, solar and wind power generation devices, and a variety of integrated storage systems, it is hoped that great contributions can be made towards global energy and environmental problems.







# Support Manufacturing for a Low Carbon Society Low CO2 Kawasaki Pilot Brand

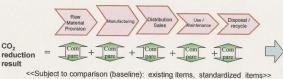
#### Kawasaki CO2 Reduction Model

CO<sub>2</sub> Transparency in All Processes!

- •A framework that assesses technologies and products that contribute to lifecycle CO2 reduction
- •CO2 reduction amounts are calculated in comparison to existing products, not only at the time of production but for the product's entire lifecycle as well

#### Example of calculation (for manufactured goods)

<<Low-CO2 Products etc: Products / technologies subject to approval >>



Permeate the concept for assessing CO2 according to product lifecycle



Low-CO2 Kawasaki Brand

System of assessment based on lifecycle

Based on the Kawasaki CO<sub>2</sub> reduction model, a product and technology assessment system that contributes to a low carbon society.

Trial implementation carried out this fiscal year, aim for full-scale implementation based on accumulated experience from trials.



# Kawasaki International Eco-Tech Fair

#### International ECO-Tech Fair 2009





[FY 2008 Conference Contents]

ODate: 2/17, 18 2009 (2days)

OLocation: Todoroki Arena

©Exhibitors: 117 exhibitors, mainly local businesses

OVisitors:

Foreign visitors (Hong Kong, China, Korea, Vietnam, Denmark, etc.)

Approx. 150

Approx.8,000 total visitors

ONumerous business negotiations conducted in the Negotiation Space Booth.

Steadily promoting solid efforts towards industrial development and international contributions by supplying environmental technology overseas

OThe fair is of a multi-track, cooperative structure whose purpose is to promote the transference of environmental technology overseas among the exhibitors, domestic and foreign visitors, and sponsor organizations.

⇒A cooperative structure for realizing the transference of technology

OLarge number of visitors who have a high interest in environmental problems and environmental technology

OLarge number of exhibitors who realize great PR outcomes and high sense of satisfaction (according to exit questionnaires)

⇒Effective spread, both domestically and overseas, of information about leading environmental technology

ORealization of business negotiations between foreign companies and exhibitors

OThrough the provision of follow up advice from experts at the end of the exhibit, many negotiations progress to the contract stage

⇒Accumulation of know how for transferring environmental technology abroad

OAfter the tech fair has finished many delegations from abroad inspect Kawasaki's environmental technologies and initiatives.

⇒"If you come to Kawasaki you'li find environmental technology" firmly established

# Deepening cooperation and exchange with overseas organizations in the environmental field

#### Kawasaki Citv

Promotion of Carbon Challenge Kawasaki Utilize Kawasaki's features and strengths to actively promote global warming countermeasures throughout the entire city

Concentration of environmental technology and know how

Accumulation of technology and know how in the environmental field by way of the current concentration of research facilities and past experiences dealing with nollution

Contributing internationally through environmental technology

Through the transfer of the city's accumulated leading environmental technology abroad, we are proactively contributing to global society

Deepening cooperation and exchange in the environmental industry field through efforts to transfer environmental measures and technologies abroad United Nations Environment Program (UNEP)

United Nations Industrial
Development Organization (UNIDO)

Embassy of Denmark

#### Cooperation with UNEP

Since 2005 Kawasaki has been holding the "Asia-Pacific Eco-Business Forum" in order to share the results of our efforts with environmental measures with other Asian cities



#### Cooperation with UNIDO

Groups such as a delegation from African embassies in Tokyo (26 people representing 23 embassies) and researchers from South America inspect environmental technologies in use at businesses in Kawasaki



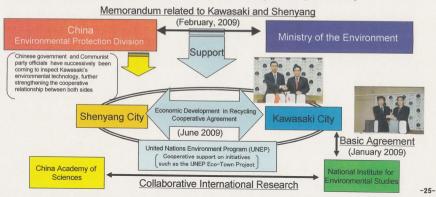
#### Cooperation with the Embassy of Denmark

We hold the "Kawasaki International ECO-Tech Forum," and will hereafter implement the exchange of ideas for building cooperation in the environmental industry between corporations from Kawasaki and Denmark a leading



## Kawasaki – Shenyang: Cooperation Relating to the Creation of Eco-friendly Cities

- With Shenyang City in mind Kawasaki City and the National Institute for Environmental Studies concluded a basic agreement (January, 2009) for engaging in "Cooperative Research and Development for Asian Cities".
- The Vice-Mayor of Shenyang City participated in the "5th Asia-Pacific Eco-Business Forum" and the "Kawasaki International ECO-Tech Fair" (February, 2009)
- Kawasaki and Shenyang concluded an "Economic Development in Recycling Cooperative Agreement" (February, 2009)
- The governments of Japan and China concluded a "Memorandum Related to the Cooperation between Kawasaki and Shenyang in Creating Eco-friendly Cities" (June, 2009)



### Mutual Cooperation for Circular Economic Development Between Kawasaki and Shanghai's Pudong District

Chinese Government Promotion of "Recycling City Cooperation" between Japanese and Chinese cities in order to realize mutually cooperative relations in the energy and environmental fields Ministry of Economy
Trade and Industry

#### Shanghai's Pudong District

Kawasaki City

Kawasaki –Shanghai Jiao Tang University concluded a Memorandum of Cooperation for "Exchange Related to Environmental Protection" (2004) and have gone on to participate in exchanges such as the "Shanghai Environmental Conference"

Looking at cooperating in the energy conservation and environmental fields a survey was implemented to examine the possibility of engaging in a project for the proper handling and recycling of disposed fluorescence lights and electronic equipment (FV2008 I FY2009 Ministry of Economy, Trade and Industry Project)

Both sides to confirm their collaborative relationship by way of mutual cooperation utilizing Kawasaki's environmental technology and Eco-Town initiatives, etc. (Execution of Cooperative Agreement planned for February, 2010)

Promotion of Industrial Exchange and Global Contribution in the Environmental Arena



Japan-China Joint Study Group (December 2009 in Shanghai



Meeting with Vice-Mayor of Shanghai's Pudong District

As a part of the "Recycling City Cooperation" both cities are supporting efforts geared towards -cooperation in the energy

Conducting survey to examine possibilities for FY2008-2009 2008



Examining the possibility of cooperating in the establishment of a recycling plant for electronic goods

# Promotion of Kawasaki's Intellectual Property Strategy

①Promote the creation, protection and use of intellectual property, and aim to become a region which successively creates new industry

②Foster ethical behavior in dealing with intellectual property, strive to become a leading city in the dissemination of intellectual property principles

#### Formation of Intellectual Property Strategy

#### [Fundamental Policy]

O Promote a create-protect-use cycle for intellectual property OFoster ethical behavior in dealing with intellectual property



Conference



Ethical Behavior in Dealing with Intellectual Property

#### Strategically Important Projects

#### OIntellectual Property School

Acquire fundamental knowledge related to intellectual property (IP), know how on how to use IP in operational strategies

#### OImplementation of Intellectual Property Program

Intellectual Property exchange meetings (Introduce technology of small-to-medium sized enterprises and open patent of large enterprises) - 6 contracts concluded between large enterprises and SMEs in the city

#### OAsian Intellectual Property Forum

Aim to foster ethical behavior amount Asian cities in dealings with intellectual property Representatives from China, Korea, and Vietnam were invited to a forum held in Kawasaki in April, 2008

> Making international contributions through the business-based transference of environmental technology Asian Intellectual Property and Technology Forum in Hong Kong

### Asian Intellectual Property and Technology Forum in Hong Kong

- In cooperation with Hong Kong Trade Development Council the "Asian Intellectual Property and Technology Forum in Hong Kong" was held in the Hong Kong Exhibition and Convention Center on December 3, 2009
- Along with bettering common understanding related to the importance of intellectual property protection and coordinating functions in technology transfers, based on that common understanding, both Kawasaki and Hong Kong confirmed that they would make efforts in mutually developing industry in both of their regions.
- Many businesses were matched between the 14 companies from Kawasaki and local Hong Kong businesses, and talks are continuing



Photo From left) · Hiroshi Nishioka Chairperson, Kawasaki Chamber of Commerce and

Industry · Alan Wong Deputy Executive Director, Hong Kong Trade and

· Takao Abe Mayor of Kawasaki · Daniel Cheng

Chairperson, Hong Kong Environmental Industry



Hong Kong Financial Secretary John Tsang visits the Kawasaki Japan Pavilion





Hong Kong Convention and **Exhibition Center** 



Kawasaki Japan Pavilion

### Features of Kawasaki International ECO-Tech Fair 2010

#### Indoor Venue • Outdoor Exhibit Enhancement

· Exceeding previous fair: 120 organizations, 210 booths

· Outdoor exhibit enhancement : eco-car, etc.

Large number of visitors from overseas; exceeding numbers of previous fair

Enhancement of Stage Events

 Plenty of presentations given by a variety of experts from the environmental industry Picture and video displays about Kawasaki's Green New Deal initiative.

Proture and video displays about Kawasaki's Green New Deal Initiative including information about the environmental knowhow accumulated by Kawasaki City through its efforts in dealing with a variety of environmental issues, and its initiatives geared towards the realization of a sustainable global environment

Dissemination of results in transferring environmental technology overseas

Dissemination of information about Kawasaki's low-CO<sub>2</sub> technology / products

Introduction of selected products using low-CO<sub>2</sub> technology developed in Kawasaki "Hands-on Classroom" for experiencing environmental and scientific technologies "Hands-on Classroom" provided by exhibitors etc, enabling children who will bear responsibility for future generations to be able to experience the attraction and importance of environmental and scientific technologies







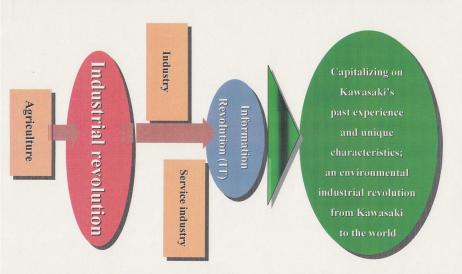
- OAlong with electric car exhibits there were exhibits for chargers and related infrastructure. Hands-on displays of quick chargers were also available
- OTest driving electric cars outside on the streets surrounding the venue was also possible

# World-wide Dissemination of Information about Environmental Technology and Products from Kawasaki Realization of Global Contributions

#### Industrial Exchange Through the Transference of Environmental Technology



# From the Industrial Revolution to an Environmental Industrial Revolution

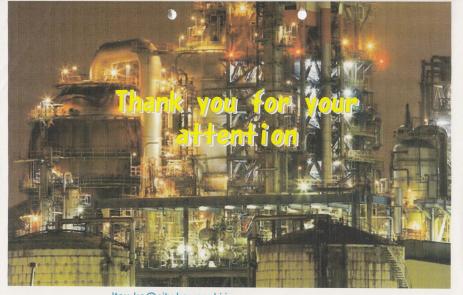


The Coastal Industrial Region is seen based on history.

The past, the present, and the future

- ★ The Coastal Industrial Region is expected to be dynamic development.
- It will become the Gateway to Asia through accompanying internationalization of Haneda Airport. The attraction of frontier industries will increase, strengthening of intentional accumulation.
- The Coastal Industrial Region will continue leading Japanese economy

We consider about the light and shadow in this Region



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