The 11th Asian-Pacific City Summit

- A sustainable eco-friendly city construction -

Lee Sung-Woong / Mayor of Gwangyang City

- 2002–present: Mayor of Gwangyang City (elected for 3 consecutive terms)
- 2009: Chairman of Korea Forum for Progress of Future Maritime Affairs
- 2008: Member of Presidential Committee for Regional Development
- 1981–2002: Professor of the Dept. of Industrial Engineering, Chonnam National University
- 1998–1999: Vice Chairman of Korea Society for Quality Management

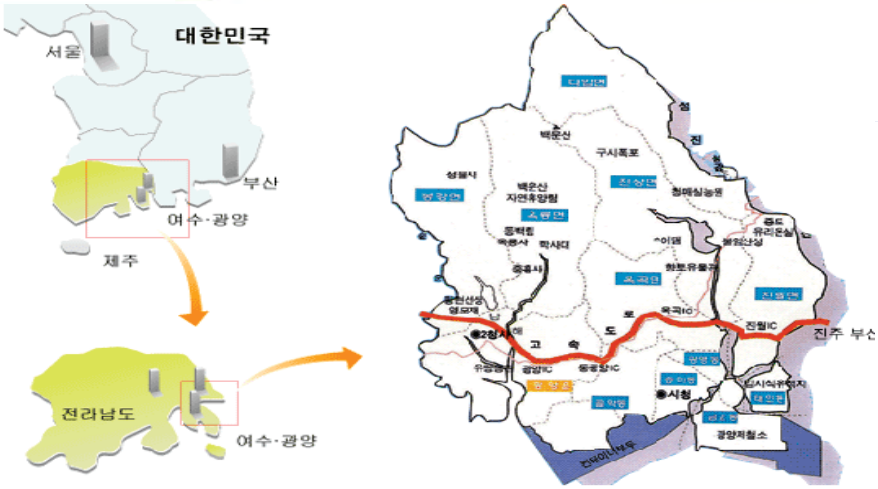
Presentation Order

1. Overview of Gwangyang City
2. Environmental Policy Direction of Gwangyang City
3. Promotional Policy for a Sustainable, Eco-friendly City
4. Future Environmental Policy Direction

Sunshine GWANGYANG

1 Overview of Gwangyang City

Location



Population

152,334 people
7.8% of Jeollanam-do

Area

456.3 ㎢
6.1% of Jeollanam-do

1 Overview of Gwangyang City

Geographic Characteristics

- Major city in south coastal sunbelt at the southern end of the Korean Peninsula
- Toward operating base for the national maritime management strategy

Natural Characteristics

- Mt. Baekwoon, with a height of 1,222 m, is blessed with a natural scenery
- Seomjin River, with a length of 212 km, is a treasure house of an aquatic ecosystem

1 Overview of Gwangyang City

Industrial Characteristics

- POSCO Gwangyang Steel Mill, a global leader, located in the National Industrial Complex
- Operating the Gwangyang Port container berth with the annual cargo processing capacity of 8.85 million TEU

Environmental Characteristics

- Environmental pollution problem arising from large-scaled heavy chemical industry complexes and power plants
- Ozone (O_3) and fine dust (PM10) frequently exceeding the atmospheric environmental standards

2 Environmental Policy Direction of Gwangyang City

CONSTRUCTION OF A 『SUSTAINABLE, ECO-FRIENDLY CITY』

※ DEFINITION: A CITY WHERE DEVELOPMENT IS HARMONIZED WITH PRESERVATION THROUGH IMPROVEMENT IN DEALING WITH ENVIRONMENTAL POLLUTION CAUSED BY INDUSTRIALIZATION AND THROUGH THE CREATION OF NEW JOBS BY ACTIVELY COPING WITH CLIMATE CHANGE

3 Promotional Policy for a Sustainable, Eco-friendly City

Reduction and Recycling of Daily Wastes

- Significant reduction of daily wastes: 0.63 kg per capita, daily(2012), compared with the national average of 0.98 kg per capita, daily
- All food wastes are put into resource recycling: 42 tons/daily (produced and sold as first- class organic fertilizer)
- Installation of collection places for recycled items in apartment buildings: 173 places in 59 apartments, KRW 0.9 billion (USD 0.84 million)
- Installation of daily waste energization facilities: 200 tons/daily (2014 -2020)


<Food Waste Resource Recycling Facilities>


<Collection Place for Recycled Items in Apt.>


<Waste Energization Facilities>

3 Promotional Policy for a Sustainable, Eco-friendly City

Eco-friendly Transportation Infraconstruction

- Construction and operation of U- Gwangyang Combined Control Center: combined control of 515 units of CCTV, KRW 1.3 billion (USD 1.21 million)
- Distribution of a CNG bus and electric cars: 63 cars, KRW 1.3 billion (USD 1.21 million)
- Bicycle lane infraconstruction (until 2012): 95 km, KRW 20.3 billion (USD 18.87 million)
- Seomjin River 100- Ri Bicycle- themed Road Construction: 42 km, KRW 20 billion (USD 18.59 million)


<Combined Control Center>


<CNG Bus>

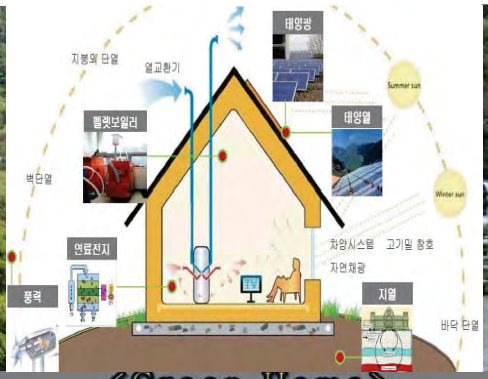

<Seomjin River Bicycle-themed Road>

3 Promotional Policy for a Sustainable, Eco-friendly City

Distribution of Renewable Clean Energy Sources

- Distribution of Photovoltaic Systems: 1,070 kW, 20 places, KRW 7.3 billion (USD 6.79 million)
- Distribution of Solar Heat Use Facilities: 557 m^2, 20 places, KRW 0.7 billion (USD 0.65 million)
- Distribution of 1,000 units of Green Home: installation of 233 photovoltaic houses, KRW 0.4 billion (USD 0.37 million)
- Daily waste Landfill Gas (LFG)Power Generation Facilities: 640 kW

<Photovoltaic Facilities>



<Green Home>

<LFG Power Generation Facilities>

3 Promotional Policy for a Sustainable, Eco-friendly City

Greenhouse Gas Reduction in Response to Climate Change

- Establishment of Gwangyang City's General Plan to Respond to Climate Change: 2011. 2
- Compared with BAU of 2005-2020 including the industries: 30.9% reduction
  - BAU in 2020: 47,042,000 tons of CO_2eq - Reduction: 14,535,000 tons of CO_2eq

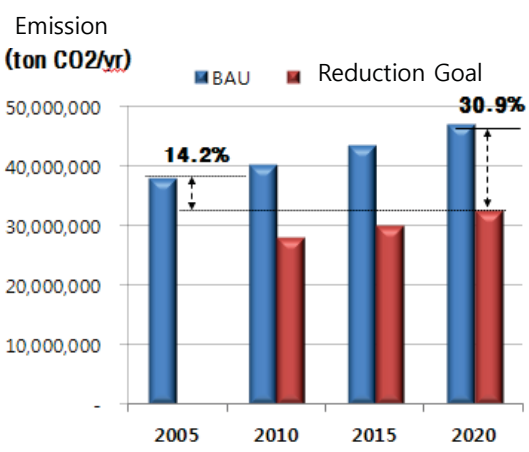
BAU (Business as Usual): greenhouse gas emission prediction until 2020 with no human intervention

Reduction Method (2011-2020)

- Industries: voluntary implementation agreement + goal management system + Emission Trading System

  Nonindustries: 9 fields, 48 projects, investment of KRW 593.2 billion (USD 551.45 million)

  (such as eco-friendly transportation, renewable energy distribution, carbon absorption source expansion project, etc.)



3 Promotional Policy for a Sustainable, Eco-friendly City

Prevention of Water Pollution

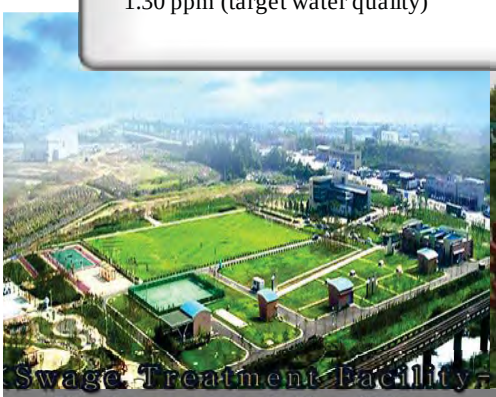
●Installation of disposal facilities for sewage, wastewater, and excrements: 5 laces, 61,300 m^3/day, KRW 119 billion (USD 110.63 million)

●- Underground structure to be converted to a ground park; Sewage treatment efficiency: 98% of BOD standard (discharged water quality: 3 ppm)

●Installation of village sewage treatment facilities: 37 places, 2,149 m^3/daily, KRW 19.6 billion (USD 18.22 million)

●- Prevention of pollution of Mt. Baekwoon's clean valley where large-scaled sewage treatment is difficult to establish

●Total control of Seomjin River water quality pollution: BOD 1.42 ppm (present water quality)→ 1.30 ppm (target water quality)



<Swage Treatment Facility - Underground Facility>

<Sewage Treatment Facility - Ground Park>

<Village Sewer>

3 Promotional Policy for a Sustainable, Eco-friendly City

Comfortable Atmospheric Environment Management

●Construction of atmospheric environment monitoring system in national industrial complex (2013): bad smell, dust, CCTV real-time monitoring, KRW 1.1 billion (USD 1.02 million)

●Residential health epidemiologic survey in the areas around national industry complex(2006-2025): National Institute of Environmental Research, KRW 4 billion (USD 3.72 million)

●Installation and operation of air pollution monitoring systems: 6 places(city air: 4, hazardous air: 2, electronic display: 1), KRW 1.2 billion (USD 1.12million)

● City air: 6 kinds(SO_2, NO_2, O_3, PM10, PM2.5, and CO), Hazardous air VOCs: 13 kinds, and PAHs: 7 kinds

<Atmospheric environment monitoring system>

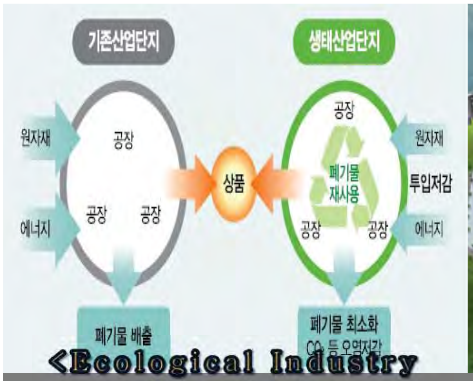
<Air pollution monitoring place>

<Environment electronic display board>

3 Promotional Policy for a Sustainable, Eco-friendly City

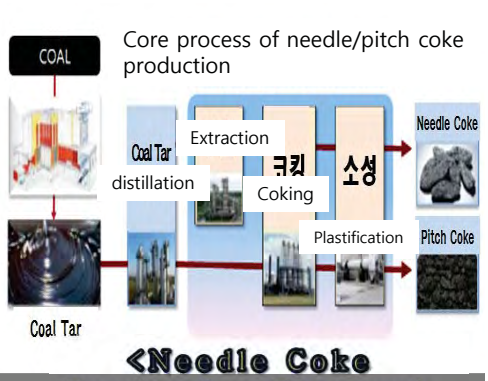
Eco-friendly Green Industry Promotion

- Construction of Ecological Industry Complex(EIP): construction of networks for the companies in the complex; recycling of by- products
- Production of granulated blast- furnace slag: 4.94 million tons/year; reduction of CO2 by 88% compared with general cement
- Production of SNG using the coal: 0.5 million tons/year, 92 MW power generation
- Production of needle/isotropic cokes using coal tar (a steel by- product): 0.1 million tons/year



<Ecological Industry Complex>

<SNG Plant>



<Needle Coke Production Process>

3 Promotional Policy for a Sustainable, Eco-friendly City

Construction of Ecological Parks and Rivers

- City Lake Park Construction(2011-2015): 2 Places, 392,000 m^2, KRW 14 billion (USD 13.01 million)
- Ocean Park Construction Project (2012-016): 1 Place, 17,000 m^2, KRW 10 billion (USD 9.3 million)
- Ecological River Construction Project (2010-2015): 3 Places, 7.1 km, KRW 54.9 billion (USD 51.04 million)


<Ecological Lake Park>


<Bird's-Eye View on Ocean Park>


<Ecological River>

3 Promotional Policy for a Sustainable, Eco-friendly City

Coal Absorption Source Expansion for Construction of Green City

- Green Gwangyang Grand Project (2011-2015): 3 core tasks, 9 strategic tasks, and 65 unit projects
  - Green Forest Landscape: construction of healing forest and installation of plant resource research institute
  - Green City Landscape: green rooftops and walls, construction of a Green Way on a site of an abandoned ship
  - Green Street Landscape: 8 connected greenbelts and planting of 1 million trees every year


<Forestation>


<Rooftop Greening>


<Construction a Healing Forest>

3 Promotional Policy for a Sustainable, Eco-friendly City

Environmental Improvement through Cooperation between Private Sector-Public Sector and Industry-University

- Organized and operated 「 National Industry Complex Environmental Improvement Council(2007-2012)
- - Greening project promotion: Road side 0.1 million m^2; Plant site 0.11 million m^2
- - Facility improvement in 27 plants that generate too much dust particles: 858 cases, KRW 341.3 billion (USD 317.28 million)
- Regional atmospheric environment improvement: fine dust(PM10) 61.4 (2007) → 48.8 $\mu g/m^3$ (2012)


<Inaugural Meetings>


<Closed-type Unloading System>


<Closed-type Transfer System>

3 Promotional Policy for a Sustainable, Eco-friendly City

Ecosystem Preservation Through Cooperation Between Local Governments

- Operation of the " Seomjin River Environmental Administration Council" (Dec. 2012): General meeting -26 times, working level meeting-36 times
  - 17 institutions: 11 primary local governments and 6 special institutions near the river areas
  - Operation result: permanent prohibition of aggregate extraction in Seomjin River; installation of public sewage treatment facilities; and wetland restoration

Seomjin River exploration, fish route installation, and release of native fish


<Regular Meetings>


<Permanent Prohibition of Aggregate Extraction>


<Wetland Restoration>

3 Promotional Policy for a Sustainable, Eco-friendly City

Revitalization of Sustainable Local Community

- ●Operation of sustainable environment council in Gwangyang City: ' 12. 7. 2.
  - Discussion of regional environment problems with the participation of citizens, organizations, enterprises, administrations, and professionals
- ●Operation of Green Start Gwangyang Network: ' 09. 5. 7.
  - Education of Green Leaders; Education on climate change; and Green Life PR activities
- ●Operation of " Gwangyang Downtown Forestation Project" : ' 06. 4. 5.
  - Construction of company park and carrying out of " Tree donating movement by citizens and enterprises"

<Sustainable Environment Council>

<Education on Climate Change>


<Construction of Company Park>

4 Future Environmental Policy Direction

Environmental Improvement Through Cooperation Between Local Communities

Environmental pollution is inevitable because of the characteristics of industrial cities.

Solving the environmental problems of the region on the basis of the values of opening, sharing, communication, and cooperation between the citizens, enterprises, and local governments,

- Widely respond to environmental problems through environmental management discussions between the primary local governments of Gwangyang bay area
- Solve the regional environmental problems through the active operation of " Gwangyang City Sustainable Environment Council"
- Transparently open environmental information and carry out an environmental administration that the citizens can directly participate in

4 Future Environmental Policy Direction

Environmental Improvement and Job Creation Through the Promotion of Eco-friendly Industries

- Improve the environment and create sustainable jobs through the promotion of eco- friendly industries using the crises of environmental pollution and climate change as opportunities
- - Strategic promotion of carbon material industries (C- industries) and rear industries
- - Inviting the CCS (Carbon Capture and Storage) and CCR (Carbon Capture and Reuse)industries
- Establishment of a mid- to long- term plan for a sustainable eco- friendly city construction (2014-2023)

Thank you!