

# The Low Carbon Green Growth Pilot City, Gangneung, Korea

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Ministry of  
environment

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# I. Overview

## 1. Background



### A presidential speech, Feb. 10. 2009

We are currently moving toward a green growth era, and advanced nations have already entered into a competition to create green cities. There is a need to form a world-class model for low-carbon green growth and a low-carbon green city in Gangwon province and highlight this as an internationally renowned prestige city

# II. Pilot Model Development

## 1. Vision & Strategy

Vision

**The global prestige city**

Leading the way into low-carbon green growth

Objective

Natural eco-city

Culture & tourism

Zero-carbon city

Strategy

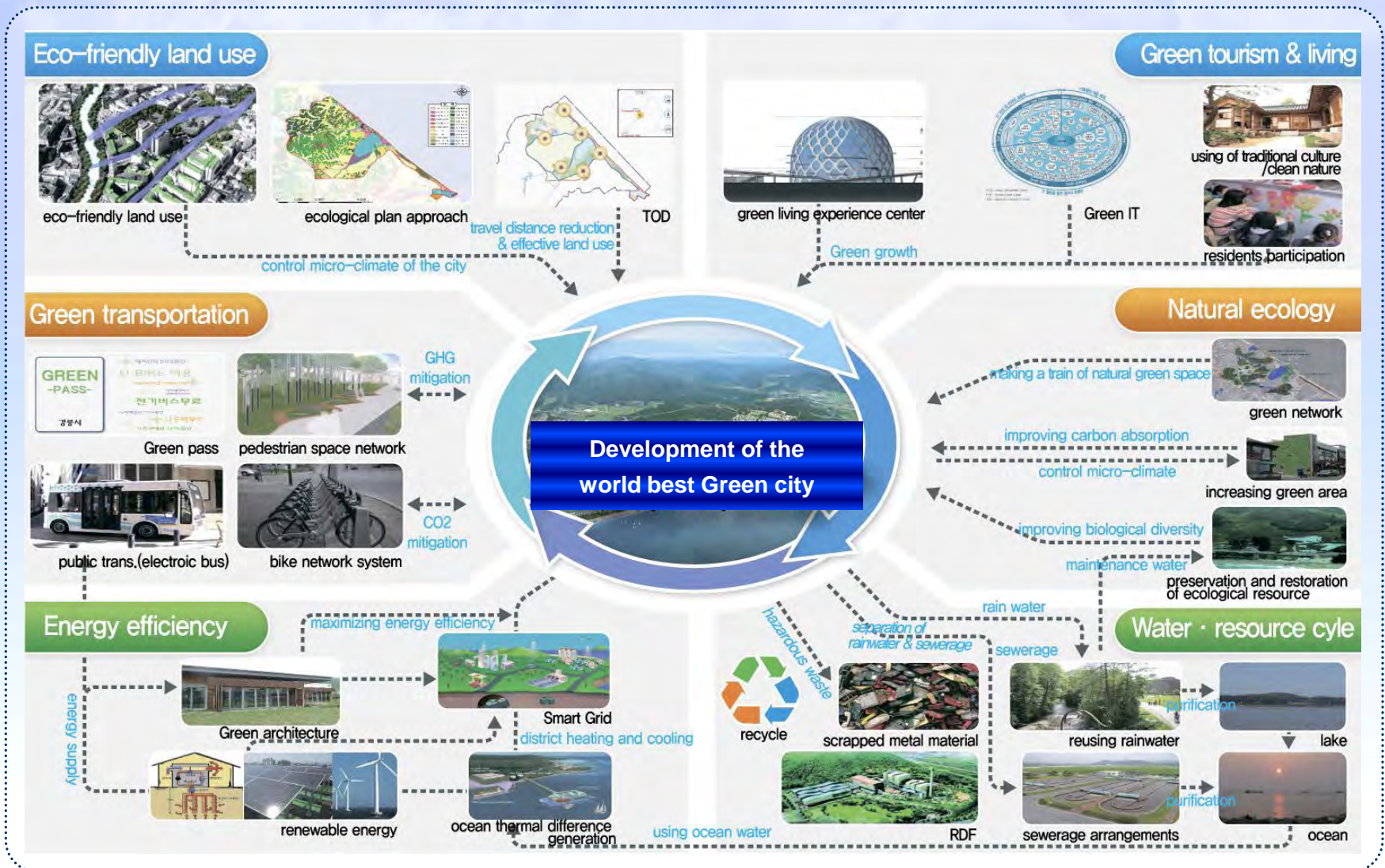
- Preservation and restoration of the natural environment
- Expansion of the green area within city environment

- Utilization of traditions and culture and the assets of local resources
- Public participation & Practice of green life

- Demonstration for domestic technology and a test-bed for green high-technology
- Restructuring land use, energy, transportation to low carbon type
- Constructing infrastructure of water&resource cycling system and others



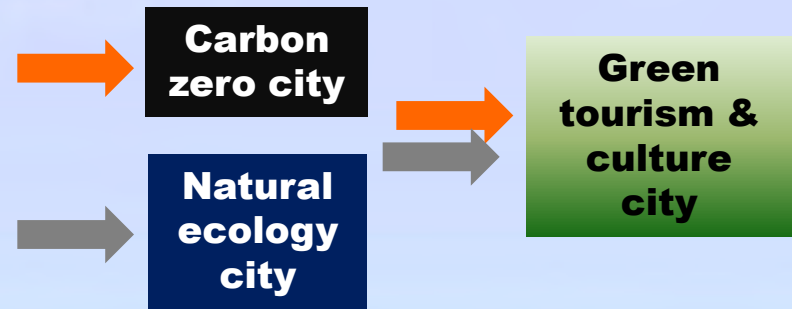
# 2. Model



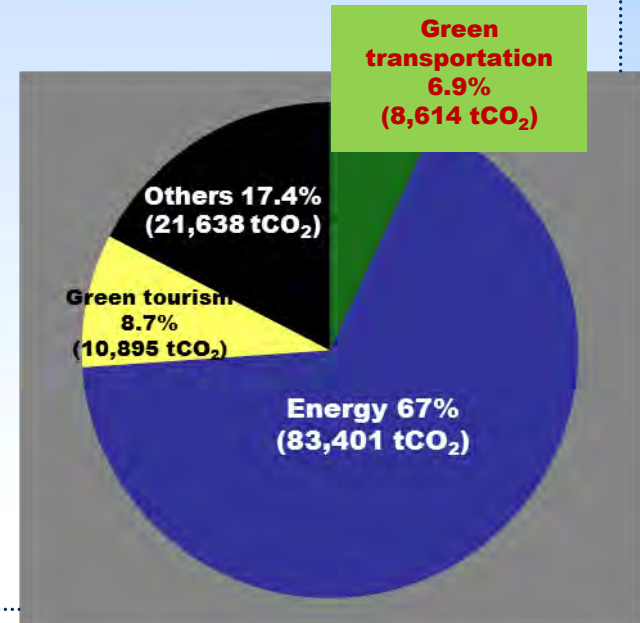
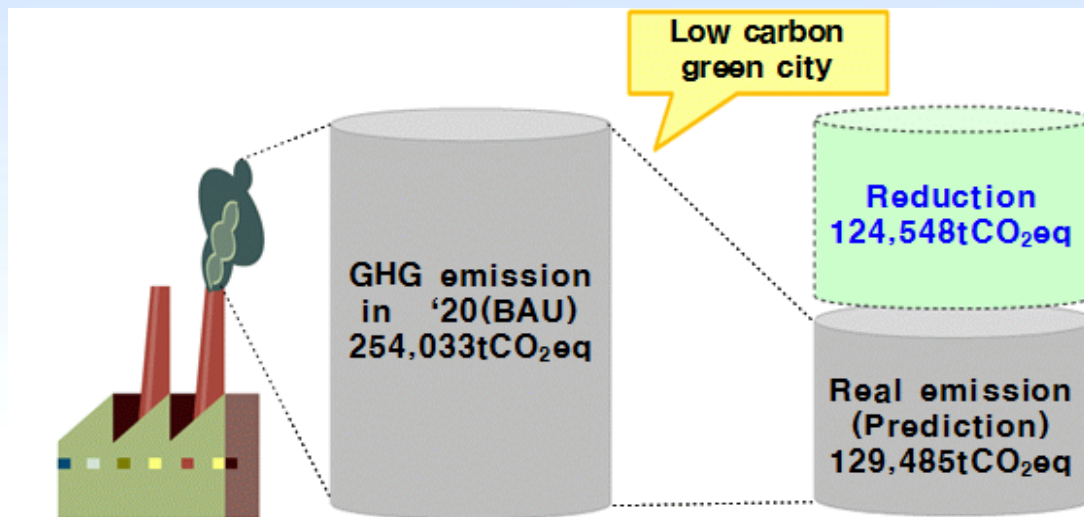
# 3. Planning objective

## Priority policy objective

- 1 Mitigate 49.0% of green house gas
- 2 Mitigate 39.5% of energy use
- 3 Achieve 60% of ecological green area



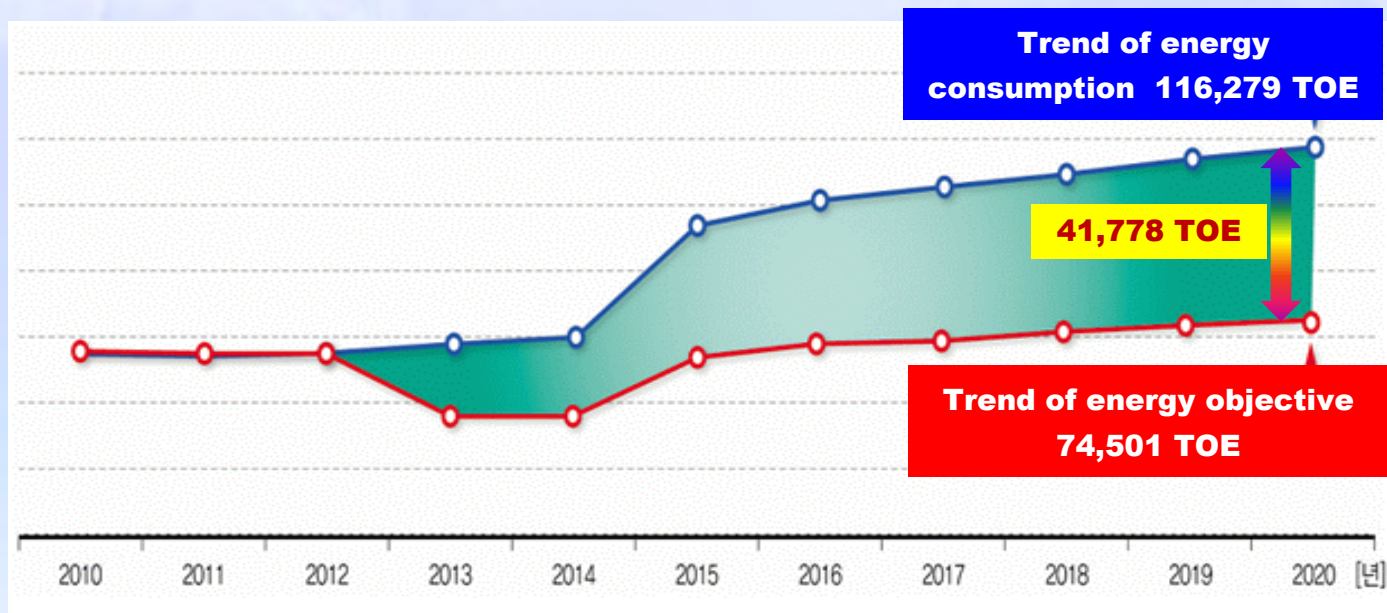
## Reduction of Green house gas





### 3. Planning objective

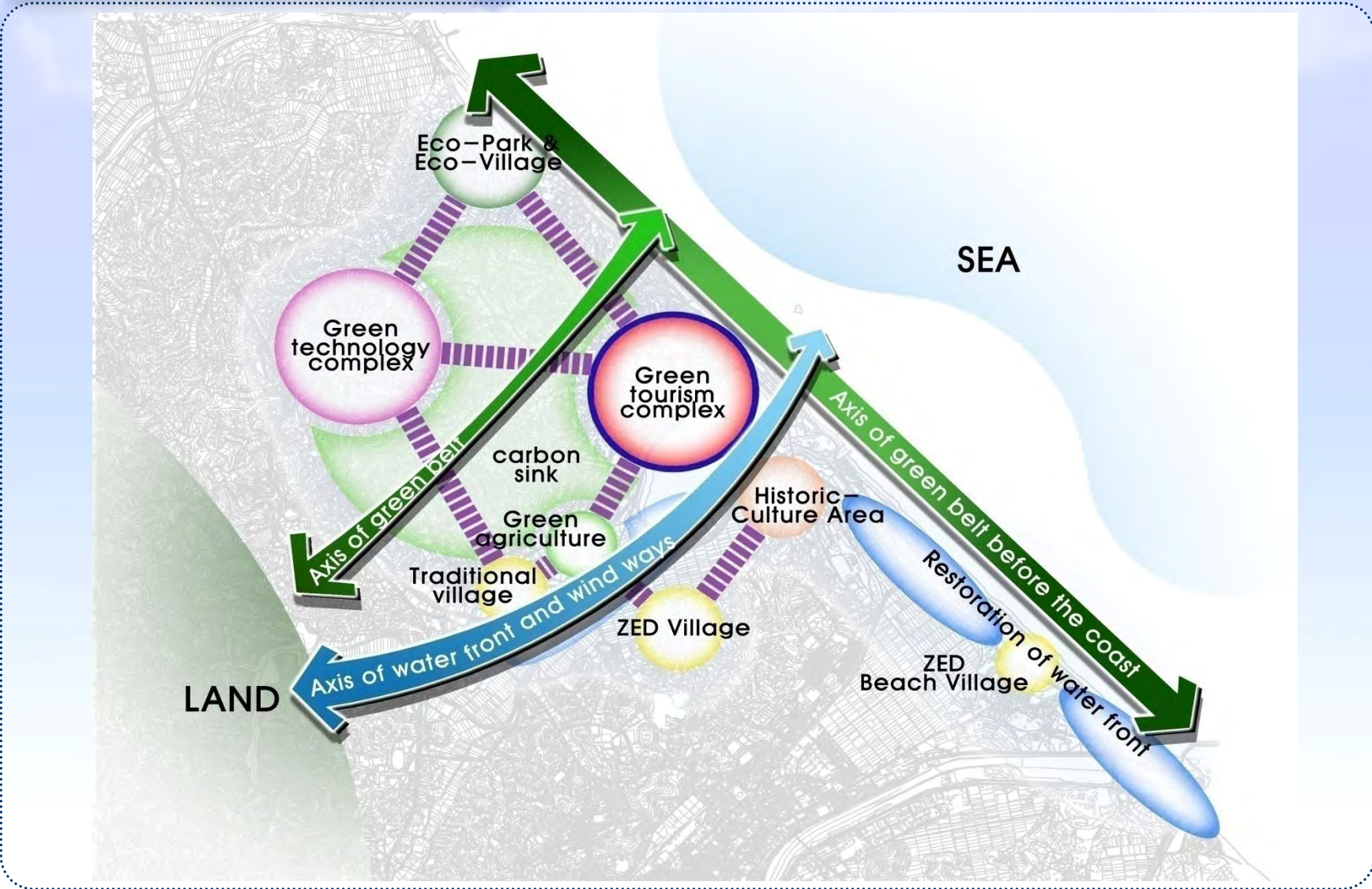
#### Objective of mitigating energy use



#### Mitigating energy use quantity by subject

Section	Total	Green transportation	Energy efficiency	Green tourism & living	Others
Mitigating energy use (ton CO <sub>2</sub> eq)	<b>41,778</b> (100%)	2,877 (6.9%)	27,210 (65.1%)	4,750 (11.4%)	6,941 (16.6%)

# 4. Master plan





# III. Management policies for Greenhouse gas

## 1. Plans to reduce

Categories	Available project
Eco-friendly land usage	<ul style="list-style-type: none"><li>● Transit-Oriented Development</li><li>● Multidirectional land usage</li></ul>
Green transportation	<ul style="list-style-type: none"><li>● Popularize bicycle and public transportation</li><li>● Convert road traffic into rail-road traffic</li><li>● Building infrastructure for green vehicle (hybrid car etc.)</li></ul>
Natural ecology	<ul style="list-style-type: none"><li>● Minimize forest clearing</li><li>● Encourage planting and increasing ecological area</li><li>● Restore rivers and wetlands</li></ul>
Energy Efficiency	<ul style="list-style-type: none"><li>● Production and utilization of renewable energy system</li><li>● Supply high efficiency energy building</li><li>● Improve efficiency of day-lighting and artificial lighting</li><li>● Introduction of Smart Grid</li></ul>
Water & resource cycle	<ul style="list-style-type: none"><li>● Install wastewater treatment facilities</li></ul>
Green tourism and living	<ul style="list-style-type: none"><li>● Establish eco-friendly support facilities</li><li>● Activate community culture (green consumer campaign etc.)</li><li>● Promote an ecological environment</li></ul>

## 2. Plans to adapt

Categories	Available project
Eco-friendly land usage	<ul style="list-style-type: none"><li>• Architectural planning and design considering wind ways</li></ul>
Natural ecology	<ul style="list-style-type: none"><li>• Boosting inhabitation by restoring the Kyong-po wetland</li><li>• Preserve a buffer-zone through pest control system</li><li>• Expand forest biomass through forestation</li><li>• Build an early warning system for farm animals</li></ul>
Energy Efficiency	<ul style="list-style-type: none"><li>• Improve building efficiency through the green curtains</li></ul>
Waste & resource cycle	<ul style="list-style-type: none"><li>• Buildings of the water management policies through reusing the rain water in building</li><li>• Prevent flood damage by replacing with sewer pipe</li></ul>
Green tourism and living	<ul style="list-style-type: none"><li>• Making a preparation for extremely cold climate by safety training and Damage Prediction</li><li>• Building Infrastructure for the weak and the vulnerable</li></ul>

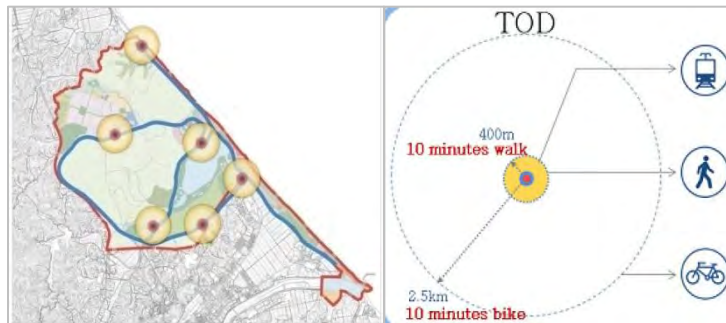


# IV. Project plan by subject

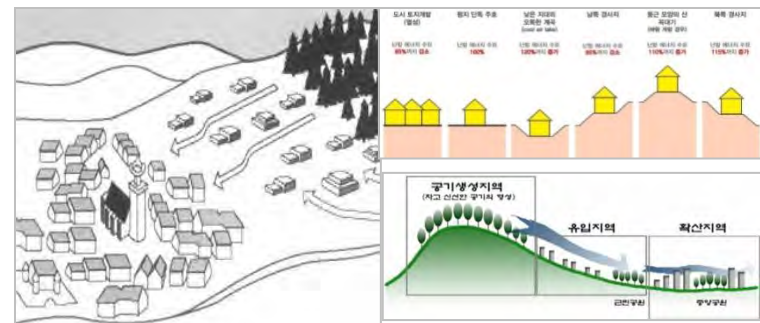
## 1. Eco-friendly land use

- Conservation of restoration area as an ecological hinterland
- Construction of high efficiency structure through the Multidirectional-intensive land usage
- Relieve effect on heat island by constructing wind ways and minimizing change of geographical features

**Deconcentrate centralized structures and multidirectional usage of land**



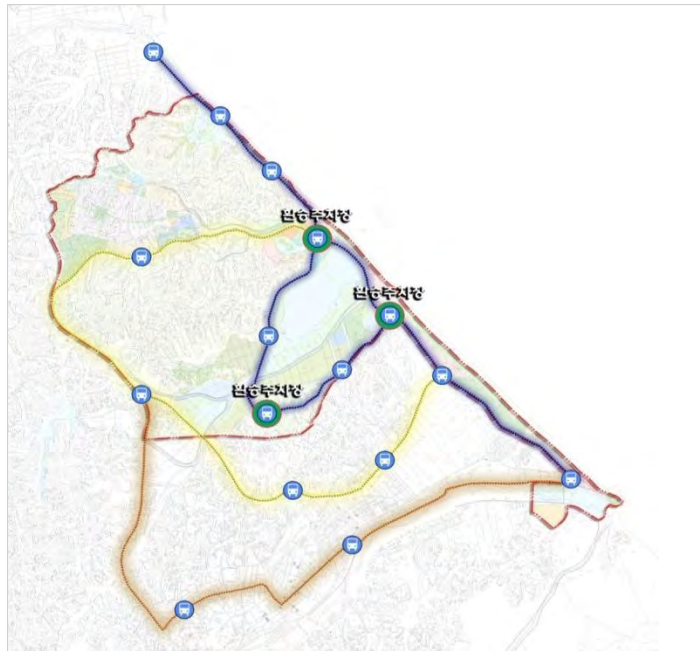
**Eco-friendly arrangement**



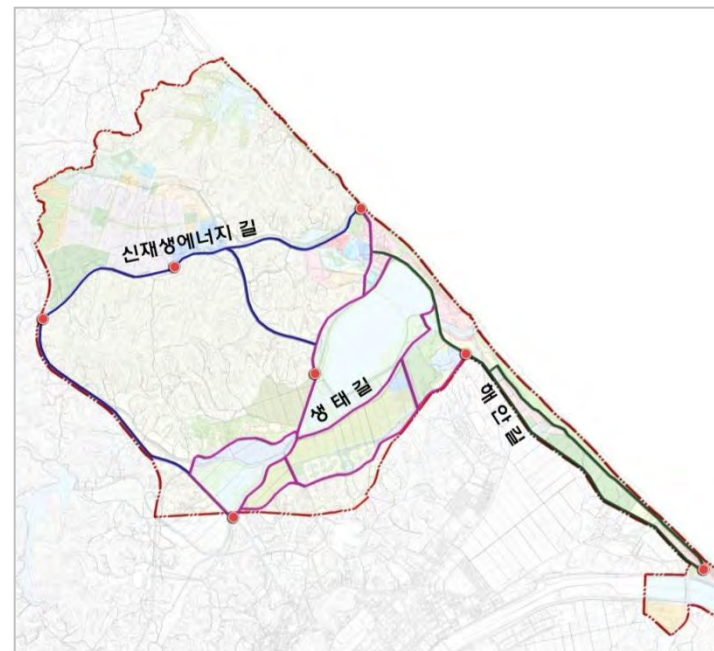
## 2. Green transportation

- Urban traffic network to improve the utilization rate of public transportation
- Reducing CO2 by installing a park-and-ride lot
- Introduction of U-bike with IT, and construction of cycle path linked to public transportation
- Improvement of streetscape, and reserving pedestrian space by reducing lanes and setting up auto-restricted zone

### Urban traffic network and a park-and-ride



### Cycle path(U-bike)

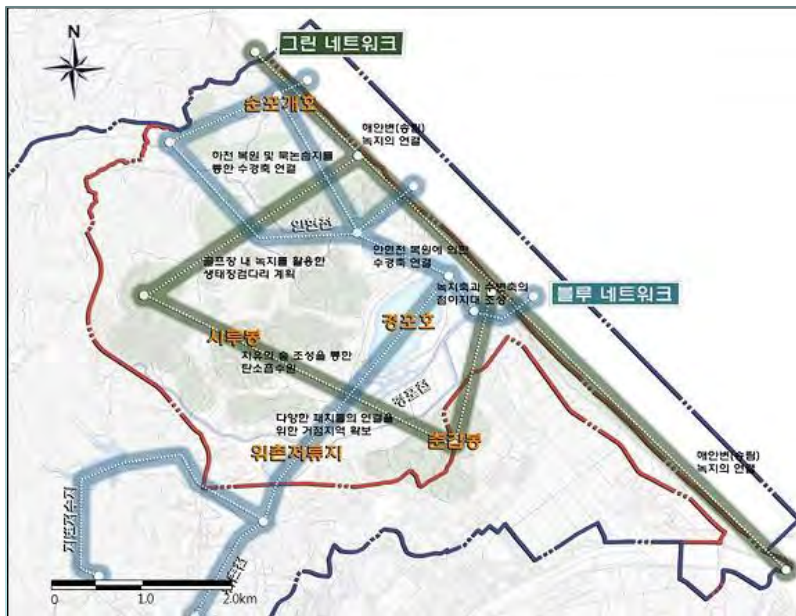




### 3. Natural ecology

- Construction of Blue-network focused on river and coast and Green-network focused on green field
- Provide trail and natural park linked local resource
- For preventing costal erosion, apply technology and keep the distance between the coast and buildings

#### Green-blue network



#### Technology of coping with coastal



## 4. Energy efficiency

- Adoption to renewable energy system and improvement of architectural construction considering building age
- Reduce CO2 using renewable energy, not fossil fuels
- Prevent unnecessary power supply and demand by supplying Real-time Information Sharing System

### Energy efficiency of building

#### Passive House

High Insulation, High Airtight ,  
High efficiency  
Glazed Window, Natural  
Lighting system, Heat  
Recovery System

#### Renewable energy

Power supply using  
photovoltaics and  
solar thermal heating

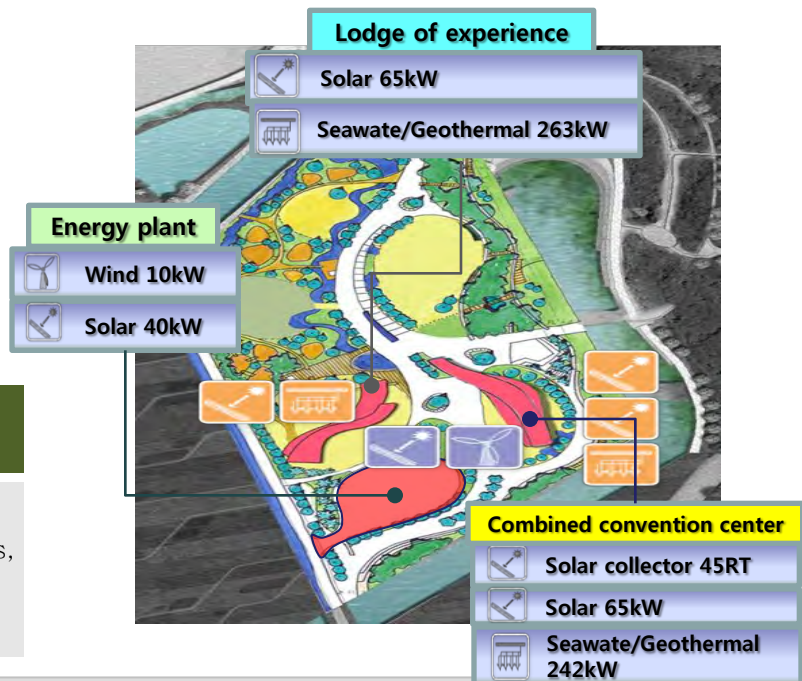
#### Artificial Greening

Roof planting, Wall  
planting , balcony  
planting

#### Zero Energy

ZERO electrical bills,  
ZERO fossil fuel

### The green technology complex





## 5. Water&resource cycle

- Construction of water cycle system through the installation of rainwater utilization and permeable block
- Enhance water utilization rate and decrease capacity-inflow ratio in STP by constructing separate sewer system
- Construction of recycling system to reuse the waste resource easily
- Minimize CO2 by reusing food waste and the other organic waste

### ■ Rainwater utilization(before)



### ■ Rainwater utilization(after)



## 6. Green tourism & living

### A. Construction of Green touring network and Green IT

- Promote a program after accessing customers' demands, and establish a network with local resource, historic cultural environment and green technology
- Designate transportation, environment & preventing disaster and energy management to main factor of U-City, and contain GHG inventory management system

#### Green touring network





## B. Practical Green living

- Participate in the Green living practices to maintain Green-city and provide base in local area for construction of green city
- A consultative organization for green model city consisting of local government, supporters of government authorities, and private supporters
  - Private supporters include experts and residents committee that consist of both residents and NGOs

Strategy	Detailed plans
Cultivating Communal Culture of Green-city	<ul style="list-style-type: none"> <li>● Encourage carbon point system</li> <li>● Green consumption campaign</li> <li>● Draw up guidelines for green, education and living</li> </ul>
Construction of ecological environment	<ul style="list-style-type: none"> <li>● Reduction of greenhouse gas</li> <li>● Zero waste campaign</li> <li>● Form a resident watchdog</li> </ul>
Construction of eco-village (A living Environment Improvement)	<ul style="list-style-type: none"> <li>● Roof planting, Wall planting, flowerbeds planting etc.</li> <li>● Improvement of street environment</li> <li>● Popularize green transportation</li> </ul>
Boosting Incomes of local resident (Popularizing eco-city)	<ul style="list-style-type: none"> <li>● Developing a program of urban agriculture</li> <li>● School meals using organic products</li> <li>● Promoting ecotourism</li> </ul>



# V. *Expected effect & Future plans*

- Location : Nearby Gyungpo in Gangneung
- Area : 18.3km<sup>2</sup>
- Expected population : 23,400

## Initiative Project (2012)

### Put up a good show shortly

- Green square(11,500 m<sup>2</sup>)
- Green street(28.8km)

## Mid-term Project (2016)

### Proof of technology & make work

- Promote using bicycle
- Environmentally friendly vehicle
- Low carbon streetlamp
- Supply of Green-home

## Long-term Project (2020)

### Necessity of long-term plan

- Green transfer station
- New & renewable energy park
- Smart grid
- Eco-village, traditional housing

# V. *Expected effect & Future plans*



Carbon dioxide absorption by the increase of the green field



Making Profit



Job Creation



Reduction of Greenhouse-gas Emissions



Tourist Attraction



Realization of low-carbon green society



# ***V. Promotional VIDEO(3mins)***



# Thank you!



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