

How to Build Healthy and Livable Cities through Safe and Dedicated Bicycle Infrastructures - Case of Changwon

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ESHUT in Changwon
(Environmentally Sustainable
& Healthy Urban Transport, ESHUT)

Changwon Health Center

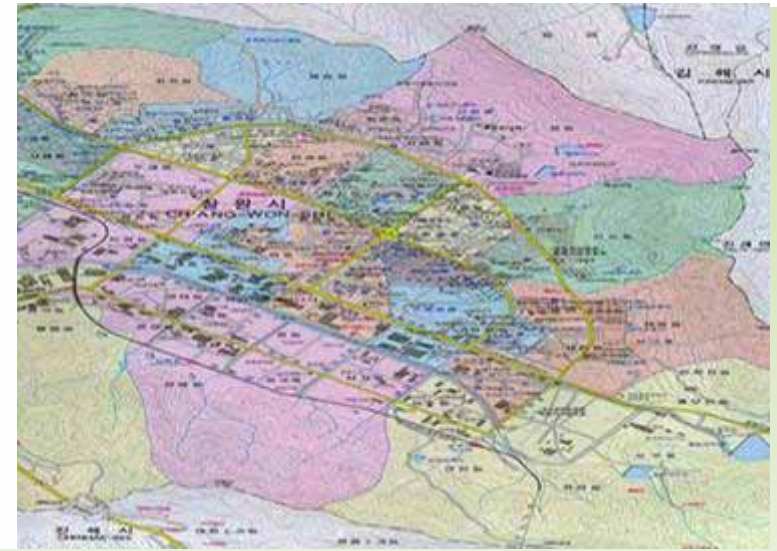
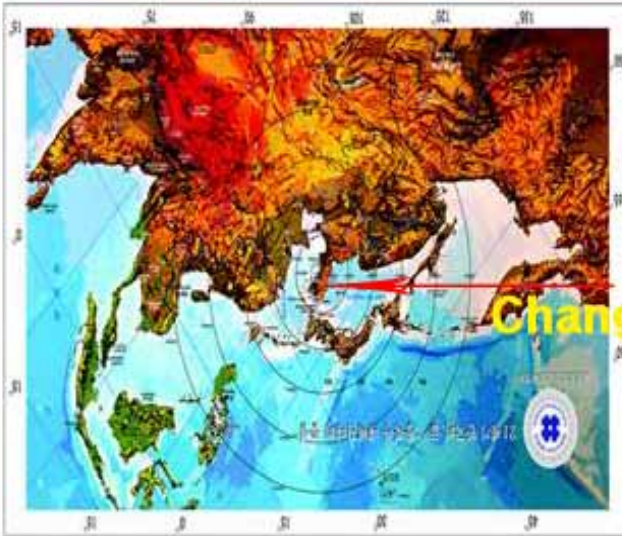
창원시
CHANGWON

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- Introduction and History of the City of Changwon
- Strategies for ESHUT
- Activities during the beginning, short, intermediate, and long terms
- Bike Rental System(NUBIJA)
- Results of NUBIJA
- EcoMobility Changwon 2011 & World Bike Festival



Geography and History of Changwon



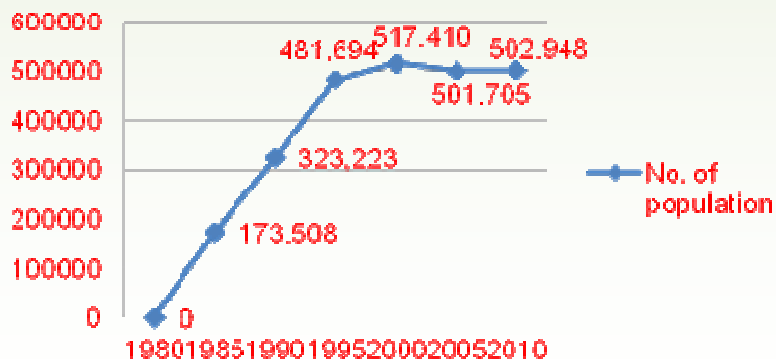
1. Changwon City has been established in 1980 as a first planned or designed city in Korea likewise Canberra in Australia
2. Prior to the establishment of a city, National Industrial Complex has been set up in 1974.
3. In 2010, a new larger Changwon City has been made by combing three neighboring smaller cities including existing Changwon City



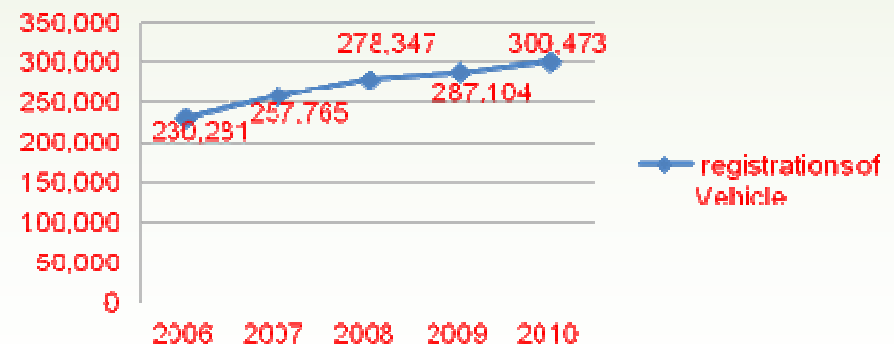
History & Current Physical state of **Changwon** Eco Changwon

1. Population of Changwon have been intended to be 300,000 people in the scope of Economy of Scale, under the meaning of a planned city.
2. However, as of 2009, this figure has been increased to over 500,000 people, and moreover, to be over 1,000,000 people due to due to consolidation to larger one city from three small cities
3. Crude Physical state: Even though Changwon has been developed as an Industrial city, most of all the industrial companies are free-pollution business, so Changwon has good air and water condition, except minute particles and CO2 due to increased motorized transport.
4. And, motorized vehicles have been increased enormously with considerable growth of population and resulting rapid urbanization

No. of population



Registrations of Vehicles



- 1) increased physical activity and decreased sedentary living(encouraging **walking** and **cycling**);
- 2) decreased use of automobiles(cars)(enhancing use of public transport and reducing use of a private car);
- 3) greening or redesign of whole city(planting of one millions trees, enlarging of gardens and green areas, and green roof movement);
and
- 4) development & use of alternative energy(increased use of natural gas).

Cycling

= Health

+ Environment (Air pollution)

+ Transport

+ Economy (Energy)

+ Infrastructure(Road, Parking problems)

Background of BSC

Environmental Capital City of Changwon

Vitalize
Of
Usage
Of Cyc

Improvement of
Air Environment
Alternative
Transport System

Need for vitalizing cycling

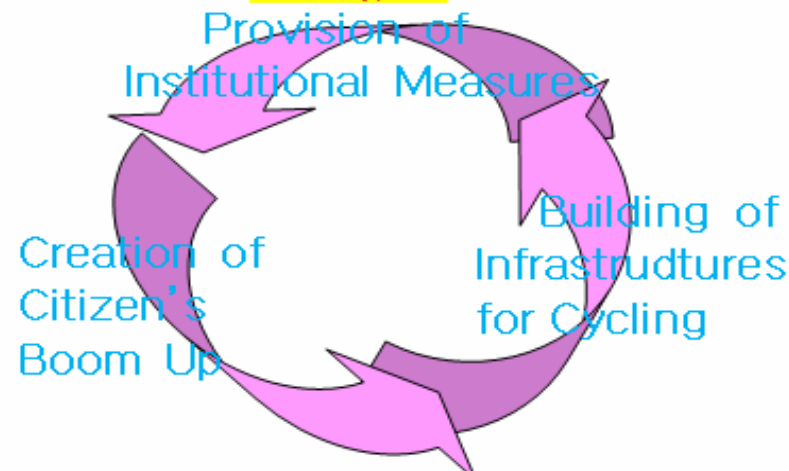
Building of Environmental
Capital City

Driving
Strategies
For
Cycling

Provision of
Institutional Measures

Creation of
Citizen's
Boom Up

Building of
Infrastructures
for Cycling



- **Cycling strategies:**

- To increase the proportion of travels made by bicycle in Changwon
- To create and maintain a comfortable and bicycle friendly environment in Changwon
- To promote the benefits of cycling, and
- To improve cycle safety

- **Targets:**

- Increase the number of bicycle trips made in Changwon, as a percentage of total transport, from 3.2% in 2006 to 7.3% in 2008 and **10% in 2010 to 12% in 2012 and 20% by 2020**
- To measure the proportion of Changwon cyclists who feel comfortable and confident when they are cycling in the city and ensure that it is 80% or higher by 2016

Activities in the beginning for cycling movement

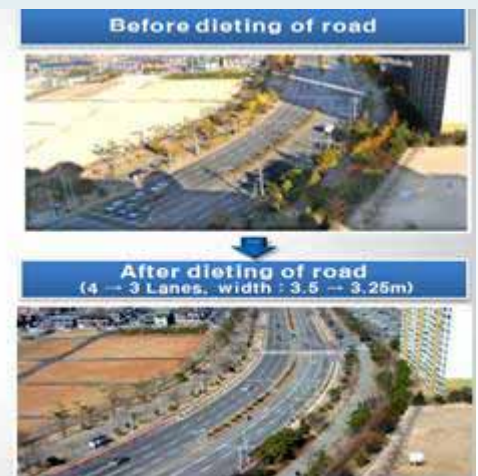


- Mayor has recommended for most of all the officials to cycle or walk in a short commuting to office and home
- Main Dept(Exclusive Charge Dept)for cycling
- Convening a focus group
- Convening workshop, seminars or symposia
- Convening Citizen's Debate
- Making Home Page in the internet
- Organizing a variety of groups or teams in relation to cycling
- Ordinance regarding use of cycle



Short term activities for Cycling

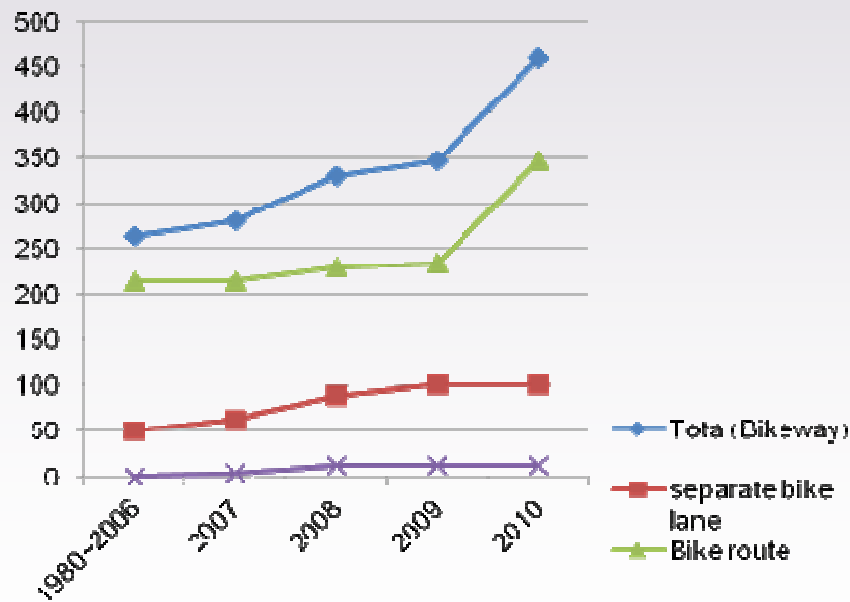
- Reconstructed or re-lengthen cycle lanes
- Dieting or being rehabilitated roads to the cycle lanes
- Installing cycle parking lots or bike racks
- Coordinating Sign and signage of safety facilities for cycling
- Cycle Donation
- Making bike map with electronic map
- Developing thematic course of cycling throughout a city
- Bike driver's license test course for cycling
- Establishment of Bike Cultural Center



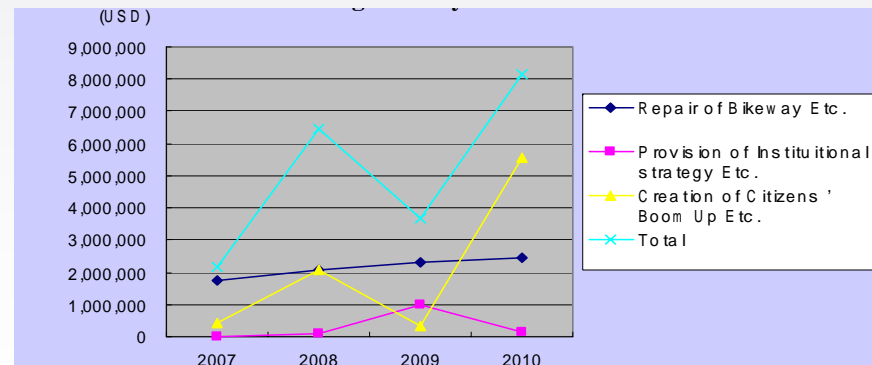
Length of bikeways cumulated, by the year



		~2006	2007	2008	2009	2010
Total(Bikeway)	141/460.2	95/264.6	107/280.9	117/329.7	121/347.5	141/460.2
Separate bike lane (Only bike)	18/100.8	2/50.3	12/62.0	16/87.8	18/100.8	18/100.8
Bike route(bike+pede strains)	121/347.5	93/214.3	94/214.9	99/230.0	101/234.8	121/347.5
Bike trail or paths(bike+other vehicle)	2/11.9	0/0	1/4.0	2/11.9	2/11.9	2/11.9



Year	Amounts of Total expenses
2007	2,171,248.57USD
2008	6,441,102.11USD
2009	3,664,500.41USD
2010	8,167,440.17USD
Total	20,404,291.26USD



Intermediate Activities for Cycling

- Bike insurance
- Allowance system for biking commuter of workers
- Detecting and improving Unreasonable regulation and systems
- Welcoming ceremony for “Day for Citizen’s cycling”
- Korea bike festival
- Changwon santa - bike parade
- “Car-free Day” for cyclist and walkers
- Operating a system of Rental of lending a bike



Long term Activities for cycling



- Extending many bikeways throughout a city
- Establishing infrastructures of far-advanced style
- Bike Networking within a country and between many countries
- Expanding Bike rental system



Bike Rental system (NUBIJA system)

for scaling up and expanding of Cycling

Bike Rental System(NUBIJA)

○ What is NUBIJA?



가 , !
Nearby Useful Bike, Interesting Joyful Attraction !

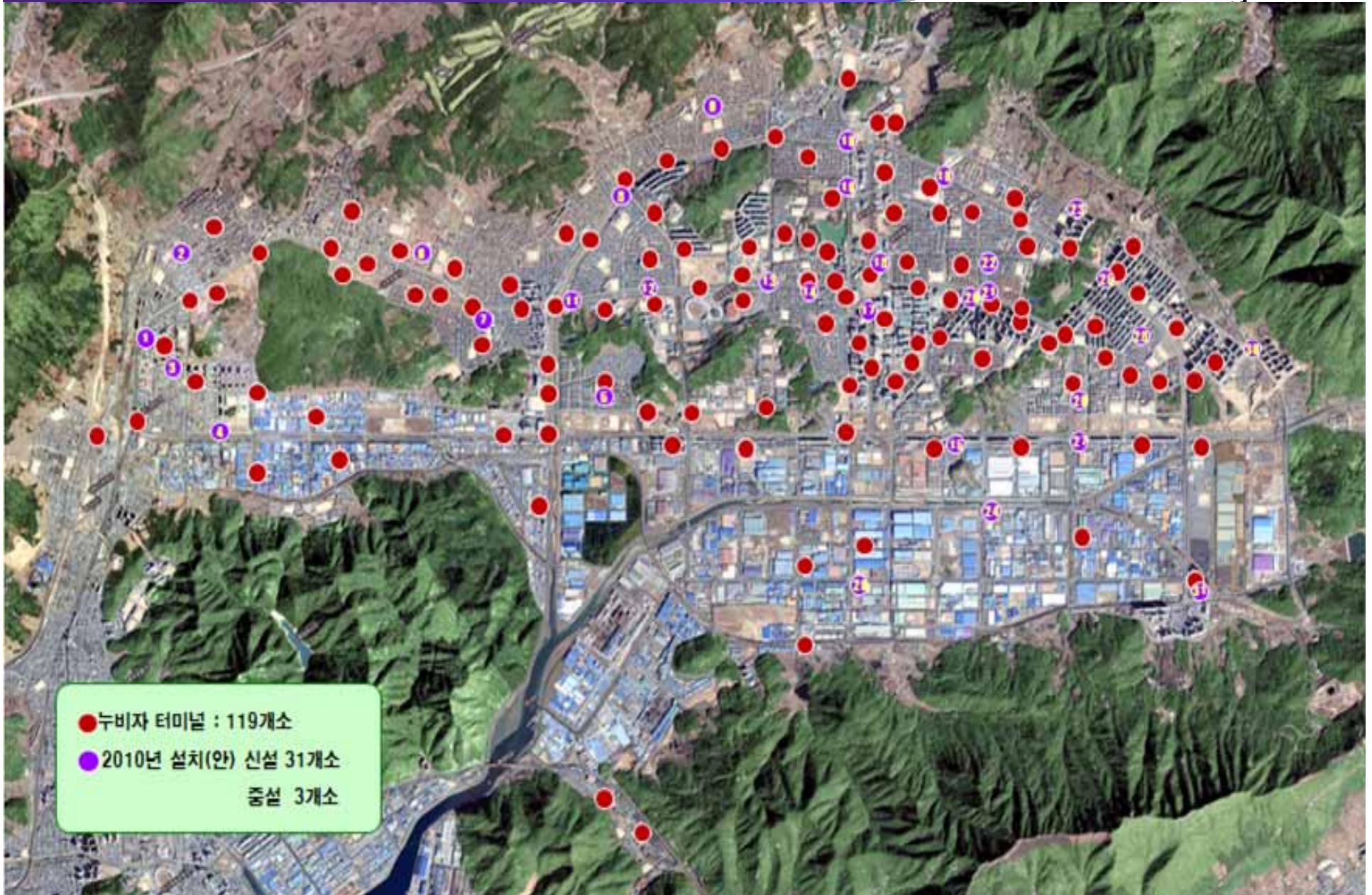
NUBIJA Project Plan

- Duration : 2008 ~ 2012(5years)
- Objectives : terminals 300, NUBIJA 6,000
 - * S.KOREA's the first & the best Public Bicycle System

Operation : terminal 230, NUBIJA 4,500 (2010.10)

- Operating Center : Changwon Cycle Racing Corporation

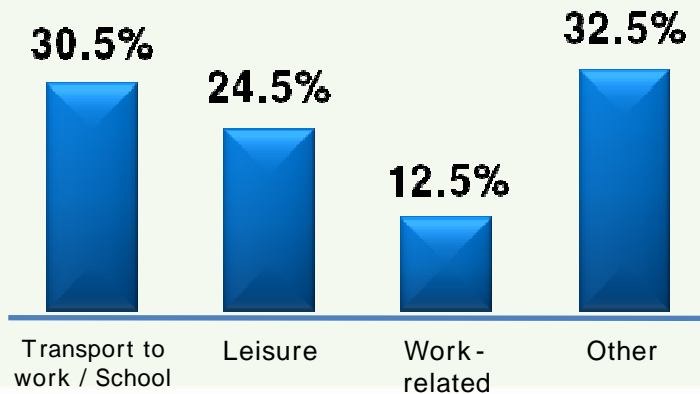
Terminals for NUBIJA



Survey of NUBIJA

Survey of Level of Satisfaction Felt by 「NUBIJA」 users (over 86.3% satisfied)

Purpose of Usage



Transportation Before Usage



「NUBIJA」 Overview (2008.10~2011.09)

- Members : 110,000
- Frequency of usage : 6,639,417
(Average of 20,000 times per day as of Sep 2011)



1

Effects of the Environmental improvement

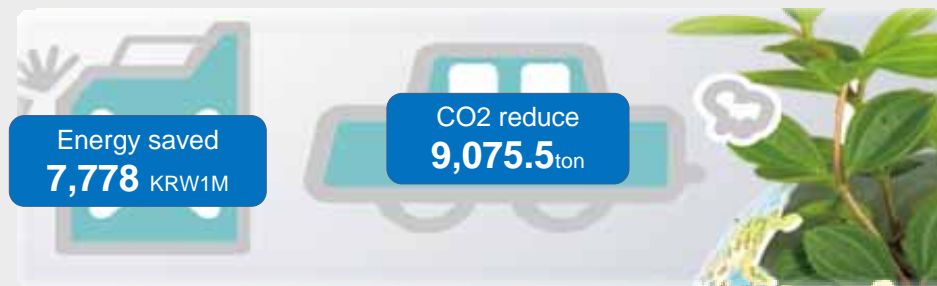
Category	Total	2008	2009	2010	2011.1~9
Frequency (Daily average)	6,639,417 (6,182)	13,806 (194)	1,358,190 (3,721)	2,184,904 (5,986)	3,082,517 (11,291)
Average duration of each use(min)	30	42	34	30	20
Distance(km)	36,751,610	144,963	11,459,728	16,113,667	15,498,210
Saved energy (KRW1M)	7,778	26	2,062	2,900	2,790
CO ₂ reduced(ton)	9,075.5	30.4	2,406.5	3,383.9	3,254.6

Distance : average speed of each NUBIJA 15km/h

Energy saved : KRW 1,800 per liter (10km/)

CO₂ reduce : 210g/km of the average CO₂ emission per car

➔ Energy saved : 7,778KRW1M, CO₂ reduce : 9,075.5ton



2

Other Effects

Promoting the local economy by creating jobs due to the Expansion of the bicycle-related industries

Establishing the foundation of a low energy consumption transportation culture

New short-distance transportation means at midnight

Promoting the bicycling movement among mid-age women (those in their 40s and 50s) with NUBIJA

Realization of Active Living via NUBIJA

New technology development : IT - United NUBIJA System

- Improving the convenience by using Smartphone
- Charging cellphone battery by nubija generating device
Patent pending (Oct. 2010)
- Ensuring international competitiveness and planning to export
relevant technologies by using the Smartbike patent of Apple Company and the unique technology of integrating Smartphone and the Public Bike System (through the cooperation with KT)



EcoMobility Changwon 2011 Congress World Bike Festival



Outline

- When : 2011.10.21(Fri)~10.24(Mon) <4days>
- Where : CECO, Pullman Hotel, Changwon Plaza
- Number of Participants : 50,000
- Organizer : Changwon city, ICLEI

Event Size

- Participants – 34 cities from 87 countries and 250 VIP
 - Organizations – 15 organization UITP, UN Habitat, GIZ (Deutsche Gesellschaft fur Internationale Zusammenarbeit), CITYNET, 8-80 Cities, etc.
 - List of VIPs
 - International : Tehran Mayor, Adelaide Mayor, Toyama Mayor
 - Government : Prime Minister, Minister of Environment Ministry
 - Korea : Seoul Vice Mayor, Suwon Mayor, Gimpo Mayor
- *Keynote speaker: Gil Penalosa (Executive Director, 8 – 80 Cities)

EcoMobility Changwon 2011 Congress World Bike Festival



Main Program

Conference

- EcoMobility Changwon Congress 2011
- World Bike Festival

Side event

- Practitioners' study visits
- EcoMobility related Film
- Bike race, Demo bike

Exhibit Event

- Pavillion of future mobility
- Pavilion for P.R & Culture Zone
- Experiment Pavillion

Expected Effect

- To speed up green growth of Korea by launching the Global Alliance for Public Bike Cities" for the first time in the world
- To have an opportunity to combine the world's best case studies of advanced cities and Korea's IT technology

Global result

Changwon's bicycle policy is also acknowledged from WHO





Healthy Cities Changwon

Thanks

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CHANGWON