

Korea Green IT National Strategy



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1. Background

Growing Calls To Reduce Carbon Emissions

- Worsening energy situation
- Increasing global calls to reduce carbon emissions

**To a Low-Carbon Society
by Green IT**



Need for a New Growth Engine

- World-wide growth of Green IT market
- 'Green IT' as a major national agenda

**Green IT
as a New Growth Engine**



Green IT National Strategy as a Priority Agenda

2. Green IT : Concept

Green of IT

IT as a Growth Engine to Transform the IT sector to be Green

Green by IT

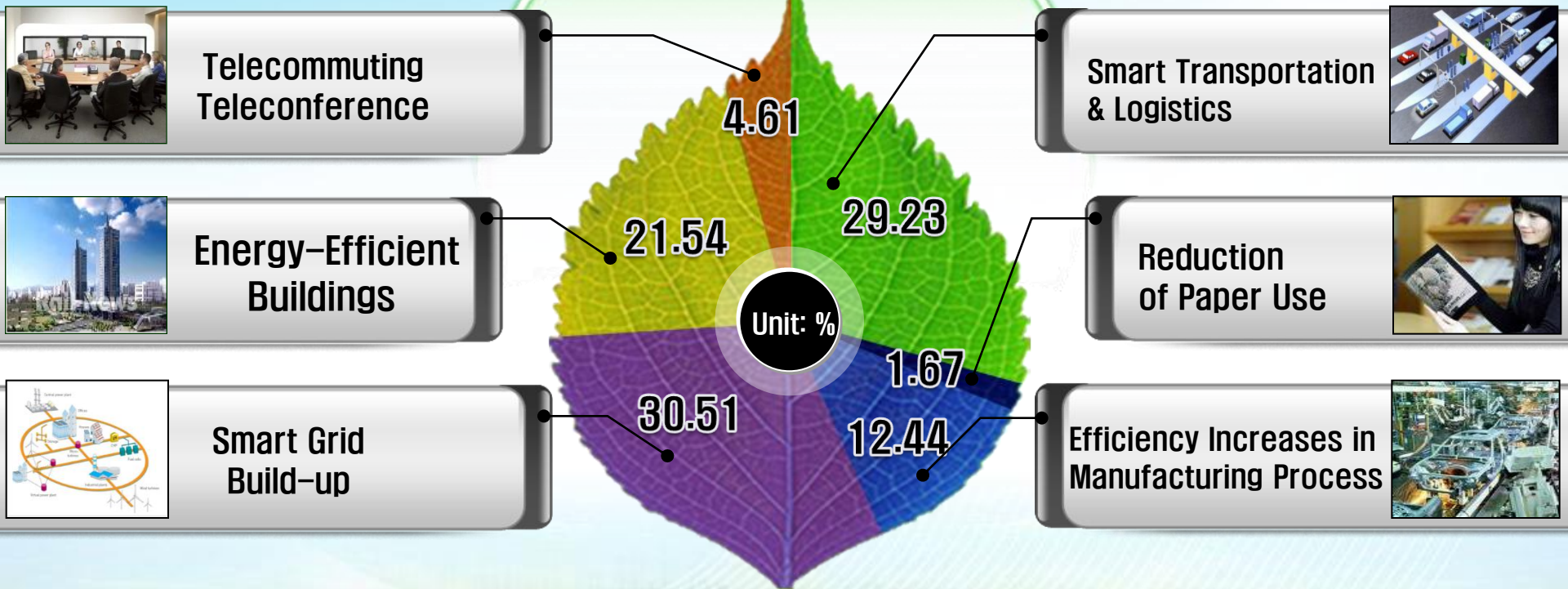
Low Carbon Applications And Strengthen Responding Capacity based on IT



3. The Role of IT in Green Growth

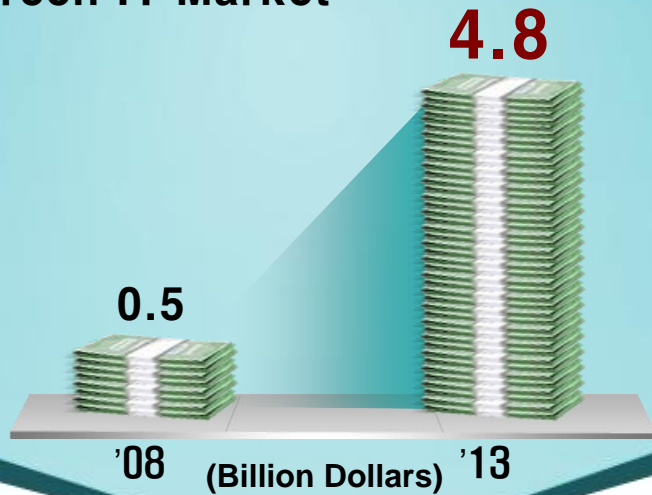
- Promoting the transition toward a low-carbon society
- A 15% reduction in the world's carbon emissions by 2020 (GeSI, 2008)

Carbon Emissions Reduction by Sector



Green IT, A New Growth Engine Leading Green Growth

Fast growth of world-wide Green IT Market



Increasing Green IT investment

- **U.S.** : 10 billion dollars into the e-medical sector
- **Japan** : 3 billion yen to development of Green IT
- **Denmark** : Green IT as an export promotion strategy

Strict environmental requirements

- **U.S.** : Energy Star 5.0
- **Japan** : Top Runner Program
- **Europe** : EuP, RoHS, WEEE, etc.

Optimal Conditions for IT-based Green Growth

Largest share of world display market

The Highest rates of Internet penetration

IT industry covers 34% of the total exports

Global E-Government Readiness

4. Vision & Goals

Vision

Global Green Leader

Goals

The IT Sector as a Growth Engine

The transition to Smart Low carbon Society

Strengthen responding capacity

9 Major Initiatives

Green of IT (3)

- Developing world best green IT products
- Greening IT Service
- A 10 times faster & safe network

Green by IT (6)

- Low carbon working environment
- IT-based green Life style
- Green Manufacturing
- Smart Green Traffic & Logistics System
- Smart power grid infrastructure
- Real time environment response system

5.9 Major Initiatives

Green of IT

1 Develop a World Best Green IT Product & Contribute to the World Green IT Market

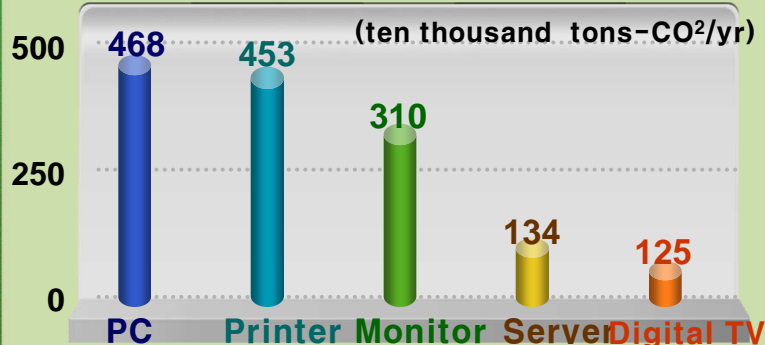
Goal

- Lead the world green IT market through developing & diffusing Low Power ·High Efficiency IT devices
 - Energy Consumption Reduction : over 20 % ; World Market Share : 10% (~2012)

Status & Issues

- IT Devices : Annually 14.90 Mill. Ton of CO₂ emissions ('08)

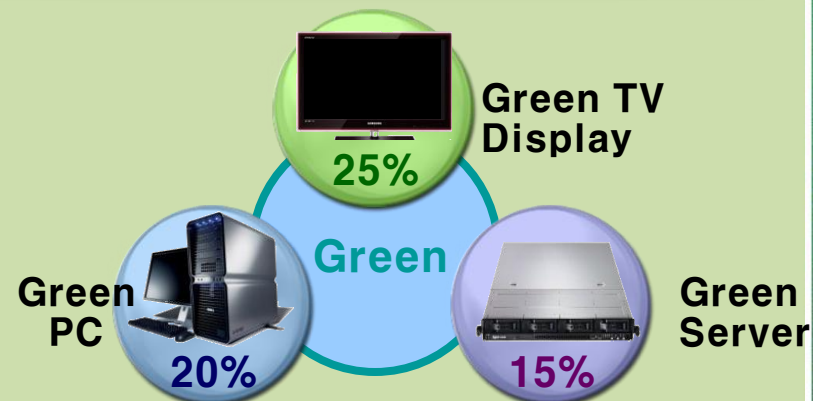
(Over 3% of CO₂ Emissions from Korea)



- Green IT products are a fast growing market

Directions

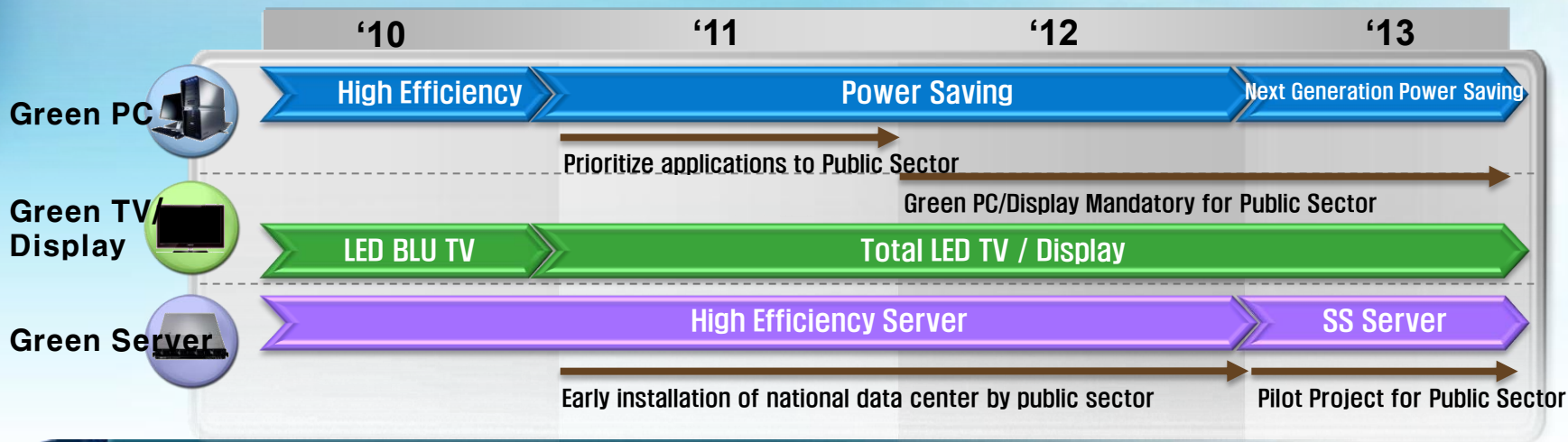
- Top 3 IT Devices to be Green



- Increasing Green IT device diffusion

1 Develop a World Best Green IT Product & Contribute to the World Green IT Market

Development & diffusion of Top 3 Green IT Devices led by the Public Sector



Encourage Private Sector Adoption by Offering Various Incentives

- Strengthen Green IT Certification (Low Power mark · Carbon Grade Attached) & offer Mileage (~'13)
- Facilitate obsolete high-powered IT Devices' transition to be green
- Support green TV diffusion in conjunction with the transition to D-TV (~'12)

Contribute to Global Green IT Standard

- Lead the standard for Green IT index, NGN, RFID/USN, U-HOME (~'12)

2 Facilitate IT Service to be Green

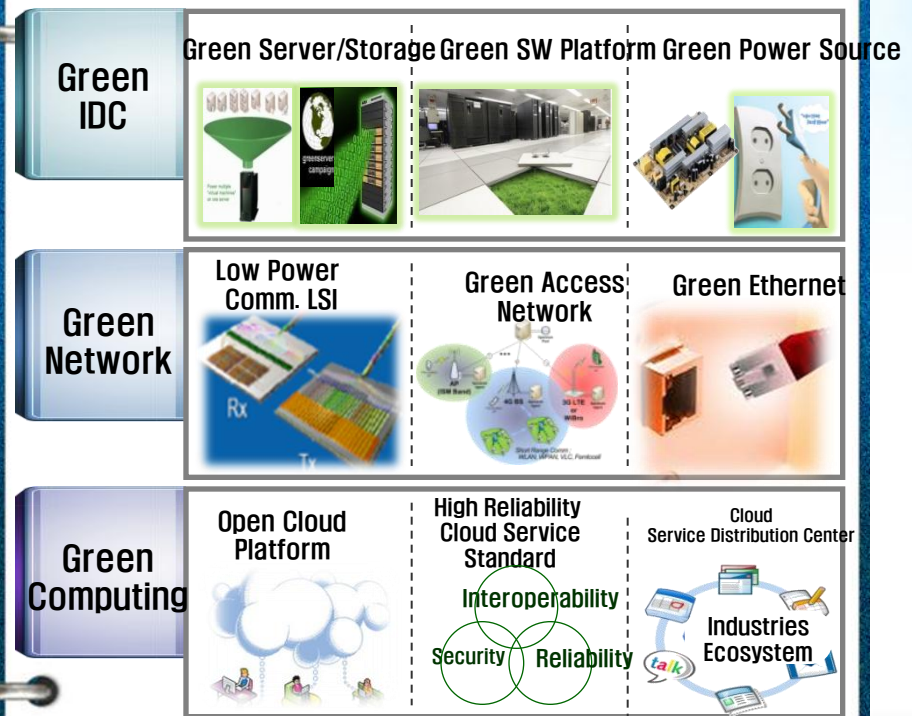
Goal

- Strengthen the base for Green Growth on Knowledge Service Industry by IT Service to be green
 - Improve Electric Power Efficiency 40 % by Green IDC , Cloud Computing ('13)
 - Develop Green IDC Plant Model ('20)

Status & Issues

- IDC Power Consumption doubles every five years
 - Server (13%), Storage (56%), Other demands
- Global Communication Corps. accelerate network integration & high efficient network
 - * Reduce £ 1 Bill. by High efficient Network [BT, 21CN]('08)
- The Competition of low power cloud computing gets higher
 - IBM, MS, etc... are beginning to penetrate the Korea market

Directions



3 Establish a 10 times Faster and Safe Network

Goal

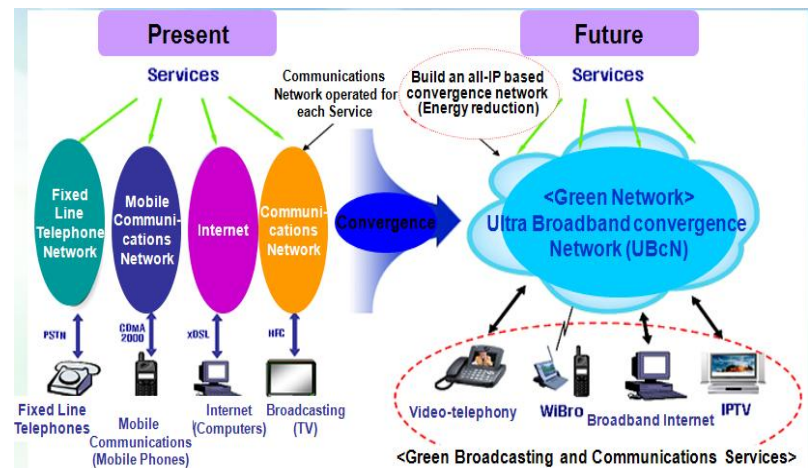
- Introduce UBCN which is 10 times faster than the current service & develop core-tech. ['13]
- Wire 100Mbps → 1Gbps, Wireless 1Mbps → 10Mbps , individual Sensor N/W → Integrated Sensor Infra.
- Provide infra. For Realistic Video Meeting, Tele-education /medicine, Gathering info. environment/disaster

Status & Issues

- Giga Infra needed for Realistic Video Meeting, & Virtual Reality Service
- Ultra speed wireless N/W needed for gathering info. From real time forecast/enviro./disaster/logistics, etc.
- ※ Transmission for Info. Of wireless CCTV needed for 10Mbps level
- Having a difficulty in ensuring place, communication Infra, power, etc. for sensor deployment

Directions

- UBCn convergence & advancement upon service type (telecomm. Internet, etc...)



※ UBCn : Ultra Broadband convergence Network

4 Transition to Low Carbon Working Environment by IT

Goal

- By transforming working methods & adopting energy mgmt., build low carbon • green work environment
 - Build tele-coworking environment , minimize paper document, etc. : 3.15 Mill. Ton of CO₂ reduction('13)
 - Promote building energy mgmt. system diffusion: 20 % Energy savings ('13)

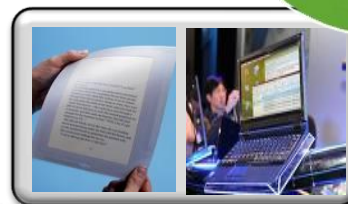
Status & Issues

- Low adoption of tele-coworking : Japan 10%, Korea 1%
- Annual paper consumption has increased 20%: 8 Mill. Tons ('08)
 - Although power consumption of Printer is high (2nd Rank among IT devices), it is difficult to develop its low-power tech.
- 20%: energy consumption by building
 - Energy savings rate : developed nations average about 20% but just 8 % in Korea

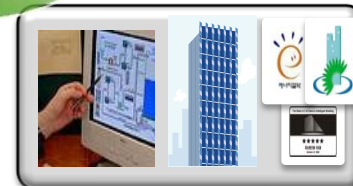
Directions



IT based Tele-coworking



Paperless working environment



BEMS Diffusion

5 Achieve IT based Green Life Transformation

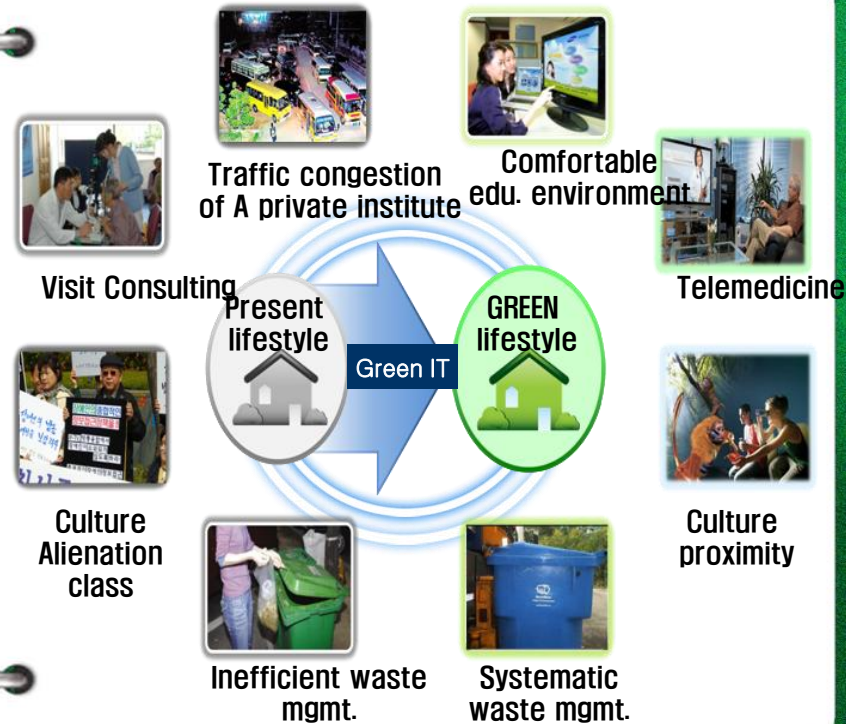
Goal

- Green Living to Edu. Health, living environment mgmt. etc.by IT Tech.
 - Reduce 10% of the cost of private edu. by tele-edu & 30% of the rate of visits to a medical institution
 - Reduce 20% of the amount of food garbage & improve 20% of energy efficiency of new housing ('13)

Status & Issues

- High realism available insufficient Tele-service adopting by IPTV
 - ※ Sharing online private edu. : 5% (elementary)~22% (high)('07)
- Telemedicine adoption for Multiple chronic disease being delayed
 - ※ Cold [rank 1st, medical consulting costs 15%], Hypertension [rank 2nd, medical consulting 20%]
- Insufficient Living Envin. Mgmt System
 - ※ Food garbage, building energy mgmt. etc.

Directions



5 Achieve IT based Green Life Transformation

Deploy High-Tech. Eco-friendly Classroom

- Deploy digital textbook, digital board, etc.
 - Standardization ('09) → 200 schools (~'11) → 300 schools (~'13)
- Highly realistic , tailored IPTV edu. service
 - 3,000 special class('10) → 240,000 class('12)

Minimize medical institute visits

- Deregulation of the telemedicine sector
 - Simple disease : telemedicine,
 - chronic disease : health monitoring
- Launch pilot projects for elderly living alone & the underprivileged class
- Develop the core technology for IPTV based u-health

Improve access to realistic cultural contents

- Offer virtual experience contents by virtual reality based realistic art gallery, museum, tour, etc. (~' 13)



Build a foundation of green living environment

- RFID based food garbage discharging mgmt
 - Facilitate the volume-rate garbage disposal system by RFID tag attachment on waste containers
- Develop housing energy mgmt system
 - Prior adoption for New built house

6 Green Manufacturing by IT Convergence

Goal

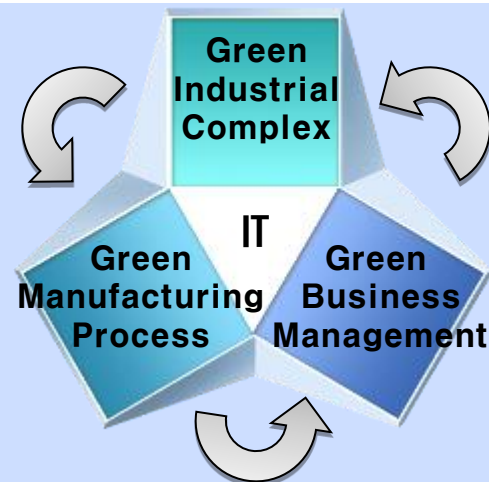
- Promote low-carbon green growth by applying IT to industrial complexes and manufacturing industry
 - Increase energy efficiency by 8% and decrease carbon emissions by 6.9 million tons through green IT-based production management (2013)

Status & Issues

- Production related energy use is 57.5% of the total
- Ageing industrial complex is becoming an environmental issue
 - 17% of industrial complex are more than 20 years old
 - ※94 environmental accidents in 2004~2008
- High awareness of green business management but investments still low
 - 61% willing to participate in resource circulation network
 - Less than 1% participate in green business management

Directions

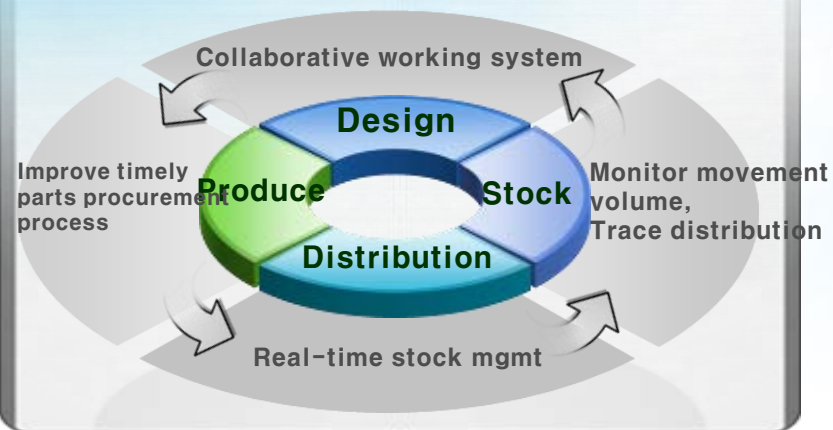
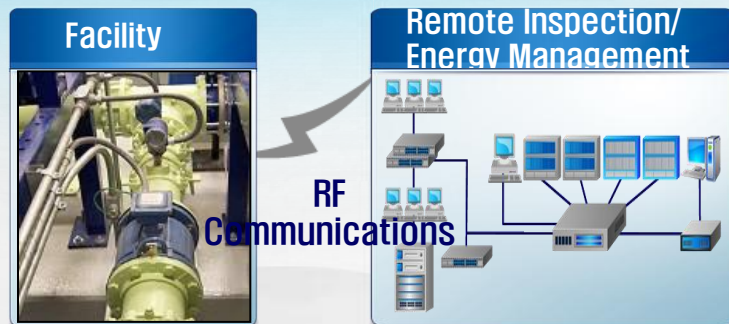
- Apply IT in the manufacturing process to save energy and eliminate pollution factors
- Strengthen support for SMEs and Green Business Management



6 Green Manufacturing by IT Convergence

Use IT to make the manufacturing process green

- USN-based production facility management and FEMS for remote inspections
Develop core technology (2010)
Distribute / Diffuse (2012)
- u-Manufacture process Life-cycle mgmt system
Develop and distribute (2013)



Use advanced IT to create and manage green industry complex

- Gradual expansion of green industrial complex infrastructure (2010) through energy environmental monitoring, support for collaborative work systems among companies, etc...

Create IT foundation for resource recovery

- Establish and operate Matter flow analysis system, product resource life-cycle evaluation information systems

7 Transformation to Smart Green Traffic / Logistics System

Goal

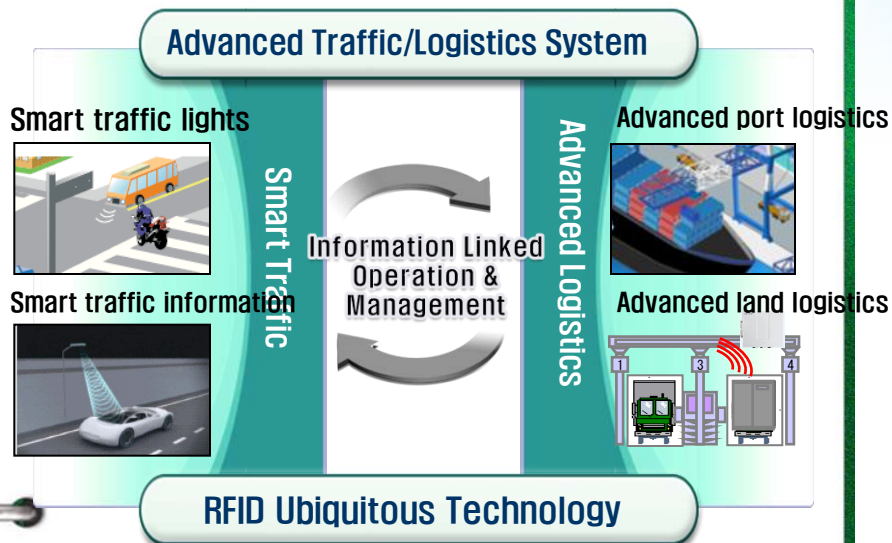
- Create Foundation for Green Traffic and Logistics System
 - Reduce 1 million tons of CO₂ by minimizing traffic bottlenecks and reduce 1.7 million tons of CO₂ through efficient logistics handling

Status & Issues

- Inaccurate traffic information and low linkages among agencies means information is not effectively utilized
 - ※ Telematics subscribers: 700,000 (2007) → 650,000 (2008)
- 17% bicycle diffusion is lower than developed nations
 - ※ Netherland 98%, Japan 68%
- Low level of IT deployment at major logistics points and logistics information is not shared
 - ※ IT system deployment status: Ports (2/16), Railroad (1/26), Airport (1/10)

Directions

- Develop advanced intelligent traffic system
- Strengthen logistics capacity by utilizing advanced technology in distribution points



8 Build Smart Power Grid Infrastructure

Goal

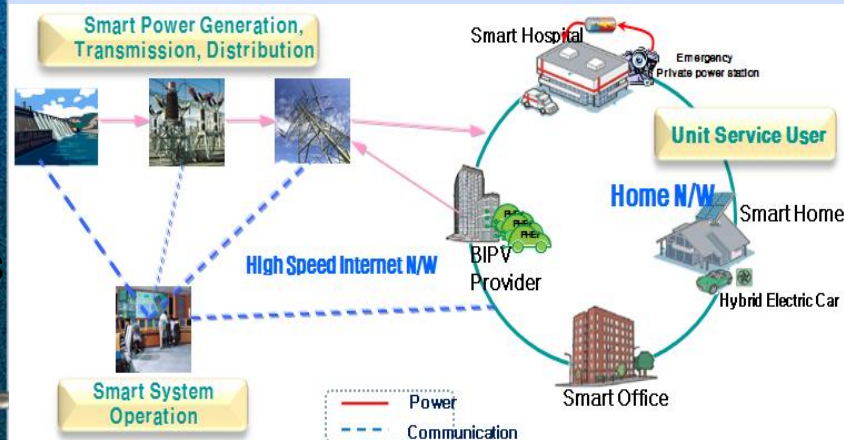
- Build smart power grid infrastructure, improve power management efficiency, and promote energy prosumer
 - Lead world smart grid market, conserve 6% of domestic electric power consumption ('30)

Status & Issues

- Paradigm shift from monopolistic market to a strategic industry with multiple providers and consumers
 - ※ Developed nations are also developing smart power grids (IntelliGrid of the U.S and Cool Earth of Japan)
- Need to be more aggressive in making use of highly developed infrastructures such as broadband and home network
 - ※ U.S Communication/Solution companies are participating in smart power grid projects
- Need to prepare a basis for smart power grid including streamlining institutions and standards

Directions

- Establish open power infrastructure to create bi-directional power market
- Early construction of national level smart power grid by linking broadband, and home network infrastructure



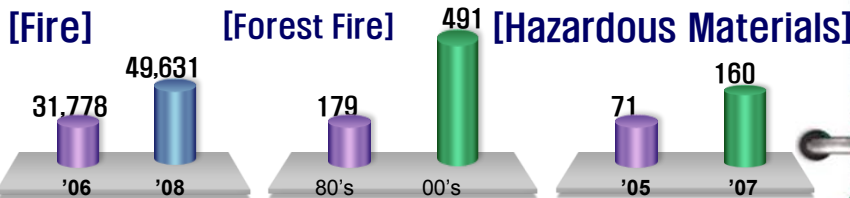
9 Smart Real-Time Environment Monitoring & Early Response Disaster System

Goal

- Establish aggressive preventive response system for early response to climate changes and disasters that create large quantities of CO₂ through comprehensive and systematical environment monitoring
 - Increase capacity for monitoring and predicting climate changes which is 50% of developed nations to 90% (2018)
 - Protect forest resources, which are the core carbon absorbers from forest fires → 3,500 tons of CO₂ reduced annually (2013)

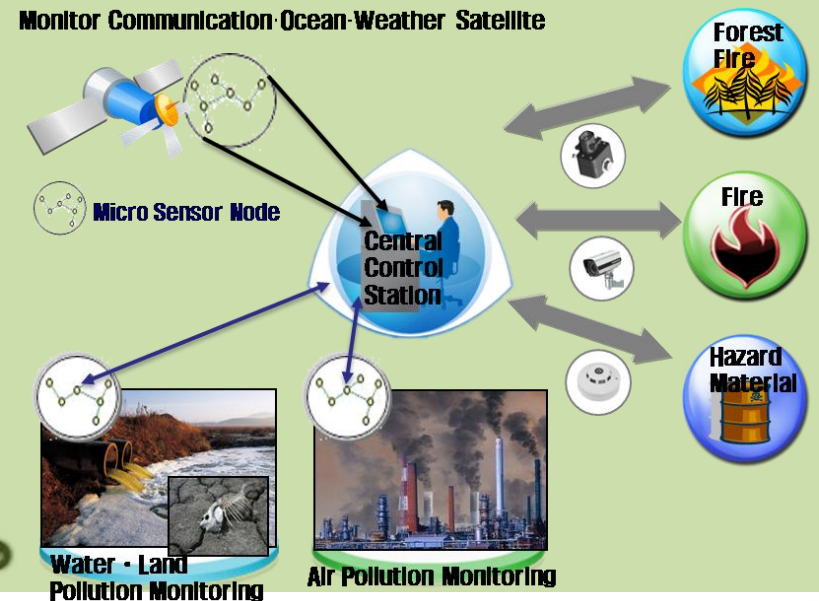
Status & Issues

- Only certain atmosphere and water indicators (ozone, water temp, etc...) are in real-time, land measurements are done manually
 - Sensors are mostly imported, with low localization of 13%
- Climate change monitoring at an early stage of weather information gathering
- Inadequate carbon emission measuring system
 - 43 companies (80 test locations) establish-verify (2008 end)
- Increasing cases of forest fires and hazard material contamination



Directions

- Strengthen sensor-based real-time environment monitoring systems and develop advanced disaster detection/prevention system





Thank you