

# **Green IT and Energy Standards in Korea**

10 January 2011

**KEA** Korea Electronics Association

# KEA is the Korea's largest representative association, dedicating to advancing IT & electronics industry.

**Established in 1976**

Electronics Industry Association of Korea

**More than 500 members**

KEA unites 500 companies within the IT & electronics industry.

**Divisions and councils**

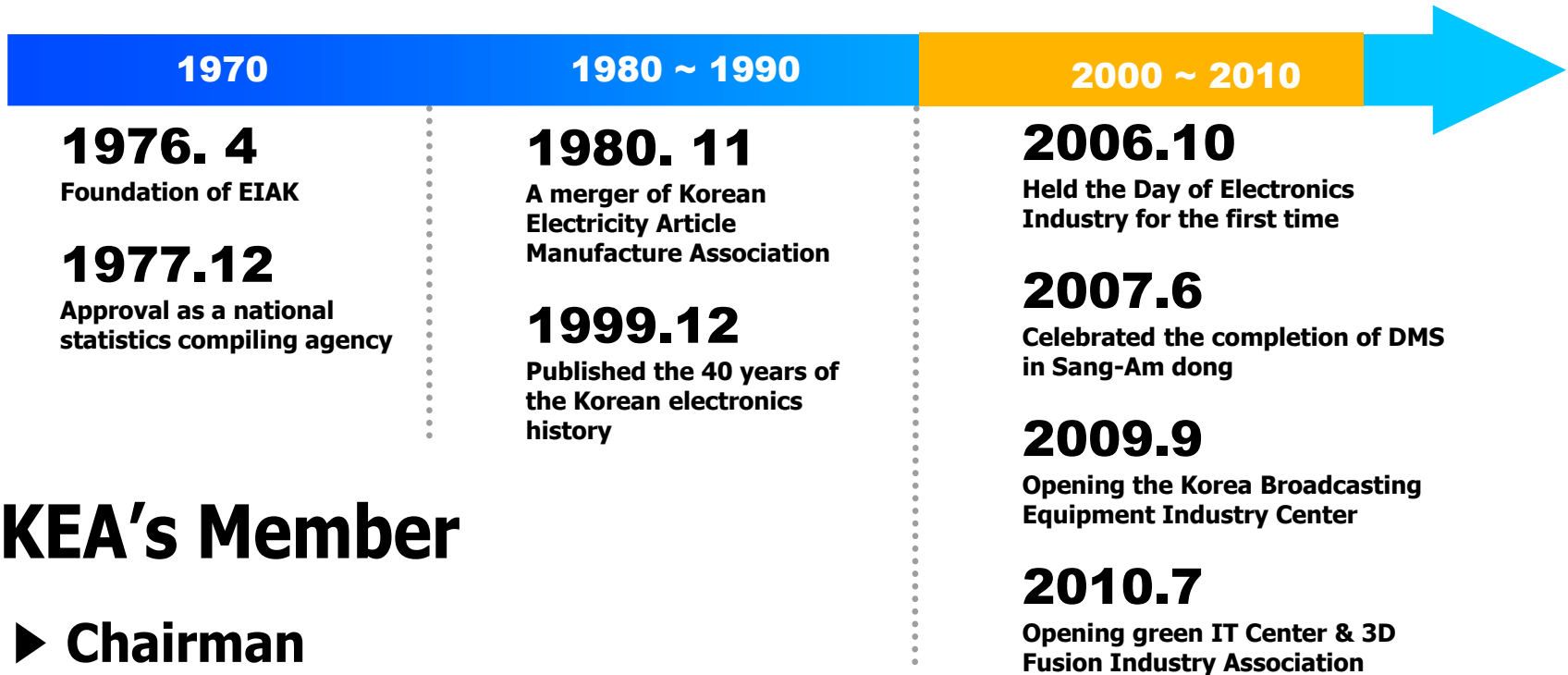
Mobile, 3D, broadcasting equipment, medical equipment, patent/environment energy assistance, ...

**Industry Infrastructure**

Patent, Energy regulation, Standardization  
Education, Environment/Green...



# 50 years in electronics industry with KEA



## KEA's Member

### ▶ Chairman



**Yun, Jong Yong**  
Executive Adviser  
Samsung Electronics Co., Ltd.



### ▶ CEO & Vice Chairman

**Jeon, Sang Hwon**  
Executive vice chairman  
Korea Electronics Association

Over 500  
Members

**Koo, Bon Joon**  
LG Electronics Co., Ltd.

**Yoon, Bong Soo**  
Namsung Corp.

**Park, Jae Beom**  
Daesung Eltec Co., Ltd. ...

# Contents

**I** Background

**II** Policies

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# I. Background



# Environment and Resource Crisis in the Earth

## Crisis of resource depletion

\* World Resource Institute



- ✓ Resource Availability (40 years for oil, 58 years for gas, 28 years for copper)

## Water shortage

\* UN, development of water resource report



- ✓ Per capita fresh water supply will decrease 1/3 within 25 years
- ✓ difficult secure agricultural water for food production

## Escalation of GHG emission

\* Stern report (UK)



- ✓ GDP expects to decrease 5~20% annually when maintaining economy as it is (possibility of 2<sup>nd</sup> Great Depression)
- ❖ Korea is ranked the 9<sup>th</sup> largest CO<sub>2</sub> emission country

## Increase of energy consumption

\* International Energy Agency

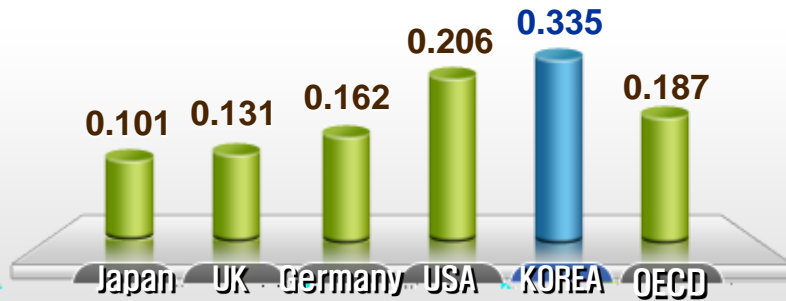


- ✓ global energy consumption expects to rise 50% till 2030
- ❖ Korea is ranked the 10<sup>th</sup> highest energy consumption country

# Status in Korea

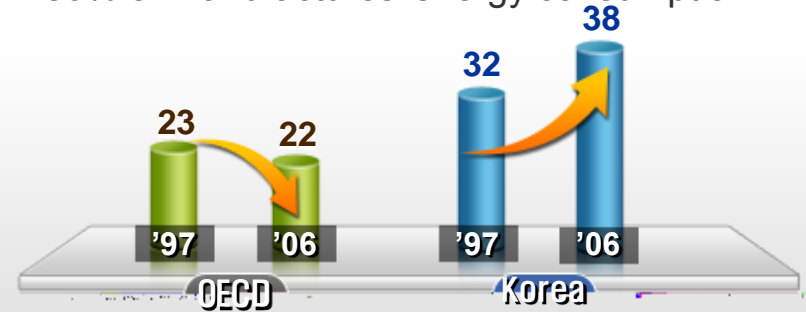
## Low energy efficiency

\* Energy unit (1 Mill. toe/\$1K, IEA in 2007)



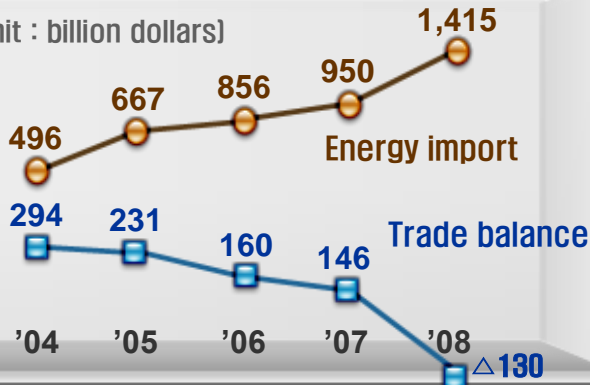
## Growing heavy Industry portion of consumption

\* 38% of national energy consumption, 80% of manufactures' energy consumption



## Depends on 97% energy import

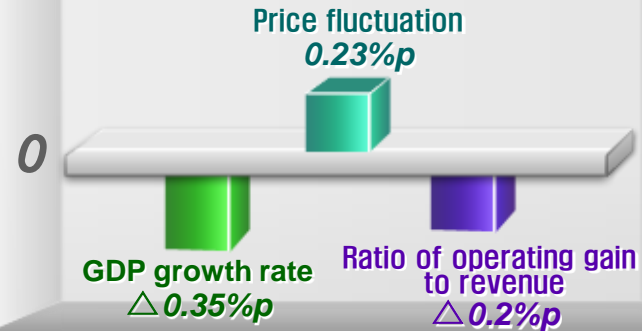
(unit : billion dollars)



Energy import : \$1,415 billion (2008)  
Export semi-conductors + automobiles + shipbuilding : \$1,109 billion

## Weak economic structure by oil price

Oil price 10% ↑



Samsung economic research institute ('07)



## Paradigm Shift for Green Growth

- **Low-Carbon Green Growth** as long-term national vision & policy paradigm for promotion of New Growth Engine **is the major policy of current government**
- **Green IT, Best opportunity** to search for New growth Engine

### Optimized condition IT-based Green Growth

No. 1 global market share  
in the Display sector (38.4%)

No. 1 internet distribution rate  
among OECD countries

IT industry covers 34%  
of the total exports

The world's No. 1 Global E-  
Government Readiness



## II. Policies



# Low Carbon Green Growth Policy

## 3 Objectives & 10 Key Agenda

### ● Mitigation of Climate Change & Energy Independence

- Effective mitigation of GHG emissions
- Reduction of Fossil fuel & Enhance Energy independence
- Strengthening Actions for Climate Change

### ● Creating New Engines for Economic Growth

- Develop Green Tech.
- Foster Green Industry
- Innovate Industrial structure
- Lay Foundation for Green Economy

### ● Enhanced Quality of Life & Int'l Leadership

- Green Transportation & Land, Water Management
- Green Life Revolution
- Global Green Leader

IT facilitates **synergies** between knowledge-based society and low-carbon society **paradigm**

# Policies for Green IT

## 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)

- 1 Developing world best green IT Products
- 2 Greening IT service
- 3 A 10 times faster & safe network

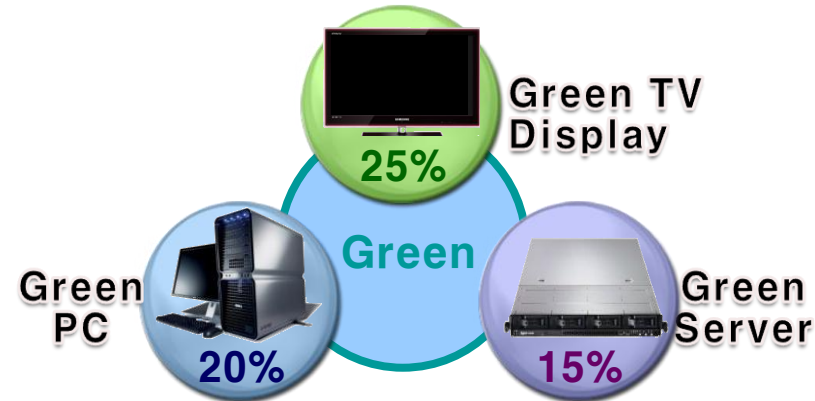
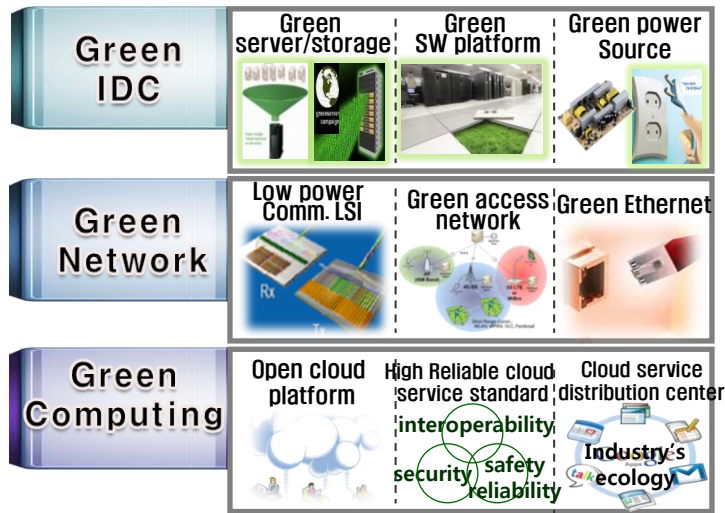
### Green by IT (6)

- 4 Low-carbon working environment
- 5 IT-based Green life style
- 6 Green Manufacturing
- 7 Smart Green Traffic & Logistics system
- 8 Smart Power grid infrastructure
- 9 Real time environment response system

1

Develop a World Best Green IT product & Contribute to the World Market

- ▶ Lead the world green IT market through developing & diffusing low power ·high efficiency IT devices
  - Energy Consumption Reduction : over 20%, ; World Market Share : 10% ('12)



<Top 3 IT Devices to be green>

2

Facilitate IT service to be green

- ▶ 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 Computation('13)
  - Develop Green IDC Plant Model ('20)

3

Establishment a 10 times faster & safe network

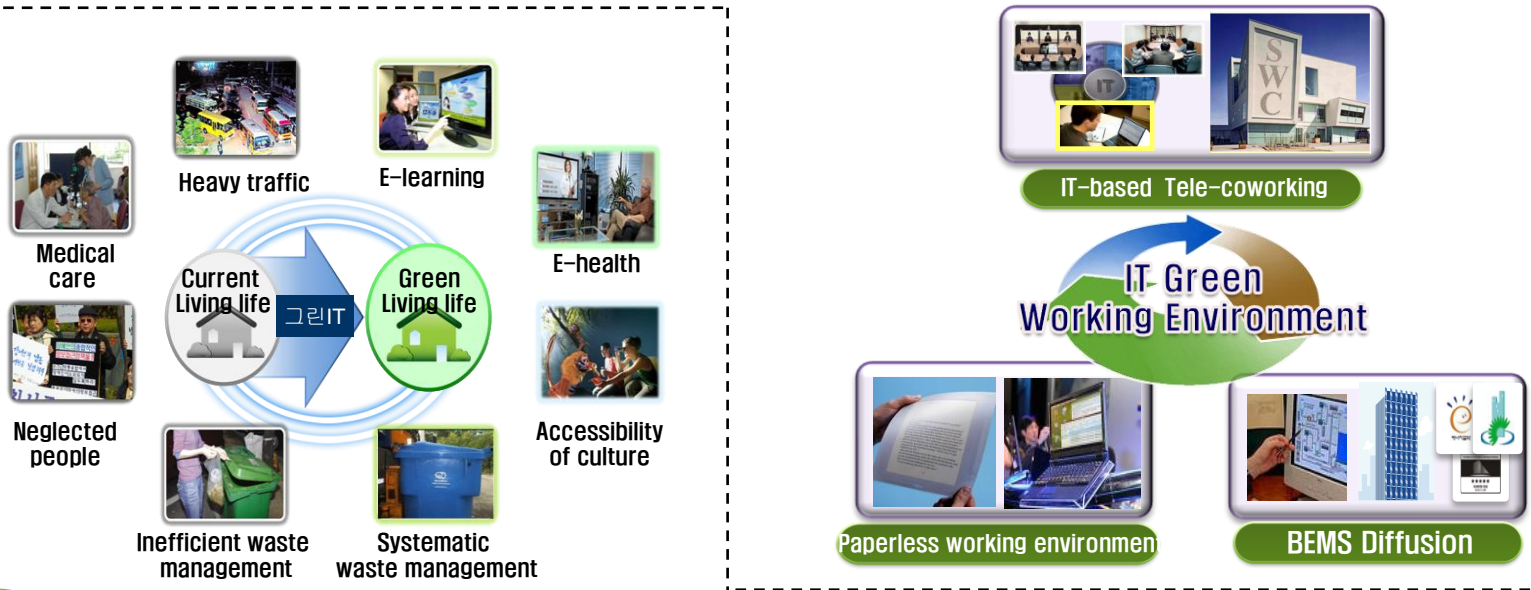
- ▶ Introduce UBcN which is 10 times faster than the current service & develop core-tech.( '13)
  - Wire 100Mbps ➡ 1Gbps, Wireless 1Mbps ➡ 10Mbps, Sensor N/W ➡ Integrated Infra.
  - Provide infra. For Realistic video meeting, Tele-education/medicine, Gathering info. environment/disaster

4

Transition to Low Carbon Working Environment by IT

► By transforming working method & adoption 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 (2013)



5

Achieve IT based Green life Transformation

► Green Living to Edu. Health, Living environment mgmt. etc by IT tech.

- saving expense : 10% by e-learning and 30% by e-health (2020)
- reducing 20% of food waste, improving 20% of energy efficiency in new buildings (2013)

6

Green manufacturing by IT convergence

► 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 mill. Tons through green IT-based production management ('13)

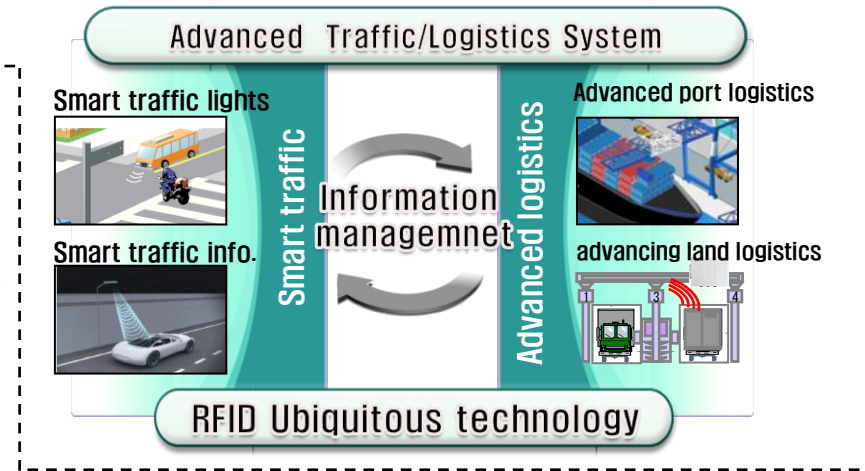
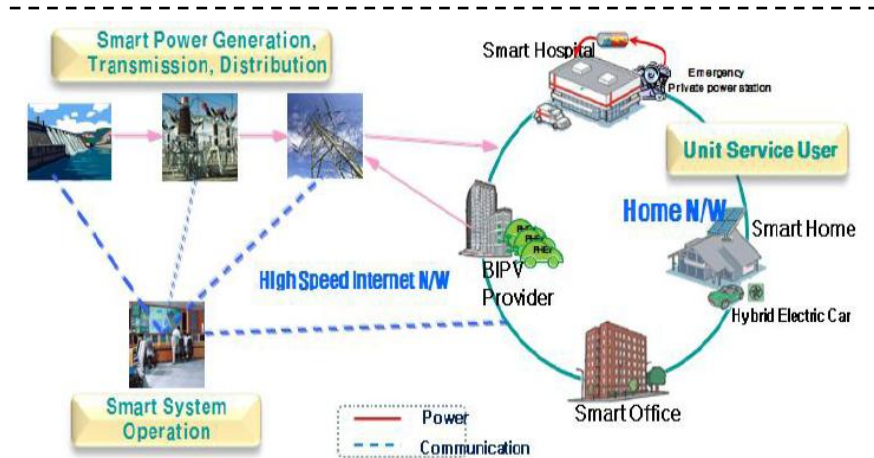


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Transformation to Smart Green Traffic/Logistics System

► Create Foundation for Green Traffic and Logistics System

- Reduce 1 Mill. Tons of CO2 by minimizing traffic bottlenecks and reduce 1.7 Mill. Tons of CO2 through efficient logistics handling ('13)



8

Build Smart Power Grid Infrastructure

► 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)

9

Smart Real-Time Environment Monitoring & Early Response Disaster System

► Establish prevention systems for early response to climate change and disasters that create large quantities of CO2 through comprehensive and systematical environment monitoring

- Increase capacity for monitoring & predicting climate change : 50%('09) ➔ 90%('18)
- Protect forest resources, which are the core carbon absorbers from forest fire ➔ 3,500 tons of CO2 reduced annually ('13)

# III. Practices

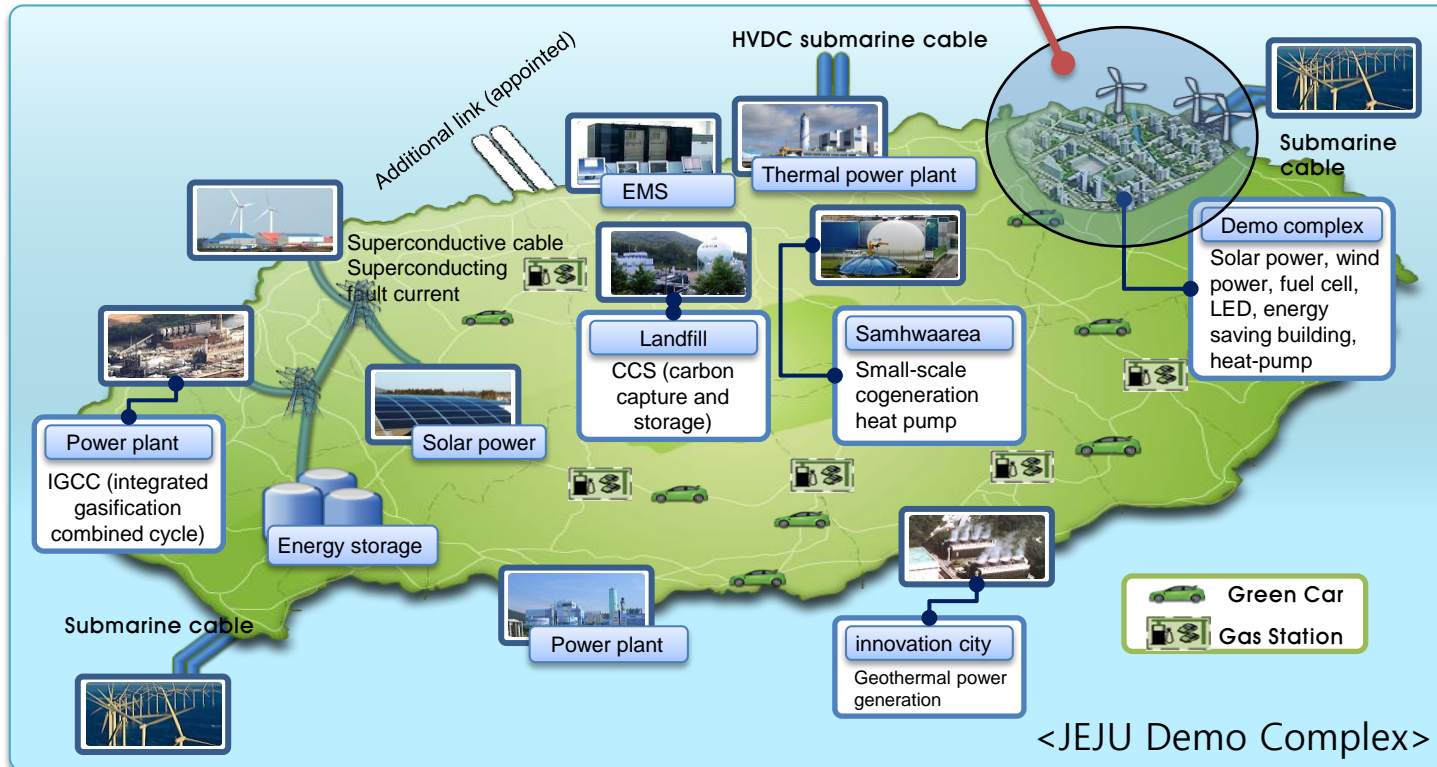




# Smart Grid Test-bed

► To ensure optimal energy efficiency, incorporates IT into an power network enable real-time, two-way comm. among suppliers, market, consumers

- Smart Power Grid
- Smart Place
- Smart Transportation
- Smart Renewable
- Smart Electricity Service



# Green IDC

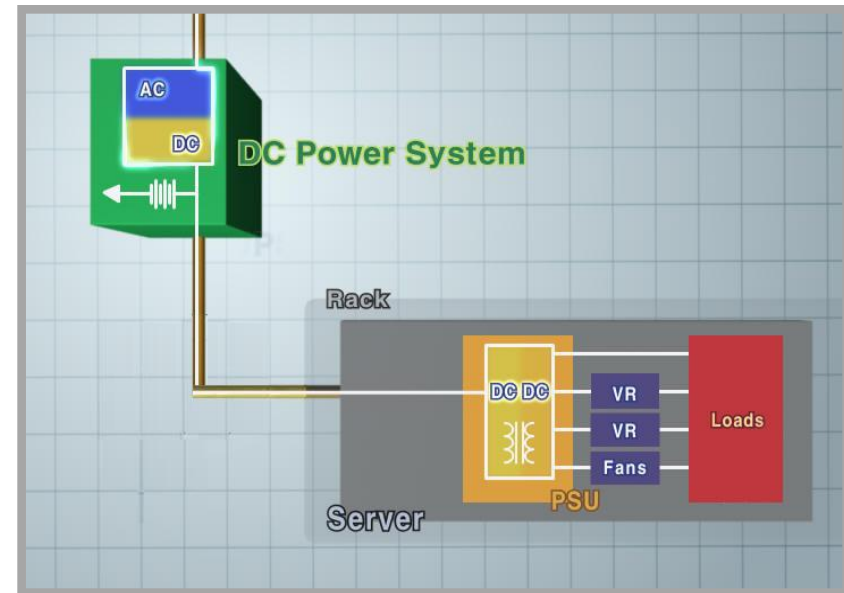
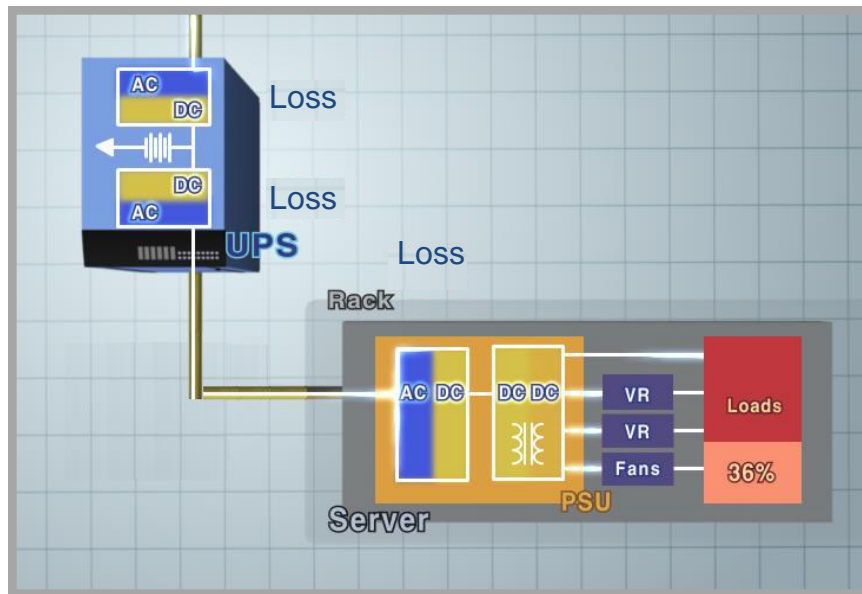
The strategy of Green IDC infrastructure is to optimize management process and module for saving energy and cost

## Changeover AC to DC power supply of Server )

ICC power - DC(Direct Current)

- South Suwon ICC('06)
- Bundang ICC / Yongdong ICC / Mokdong ICC ('09)

- improved 40% of service's reliability
- saved 40% of space for installing
- saved 20% of power consumption

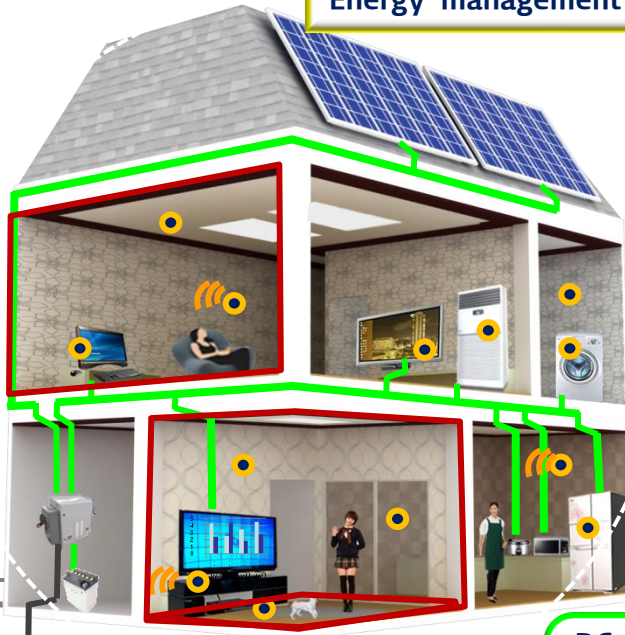


**13% ~ 25% INCREASE**  
**DC Power Efficiency**

# Green IT Home

Build zero-emission house using green IT technologies and demonstrate on real life for maximizing energy efficiency

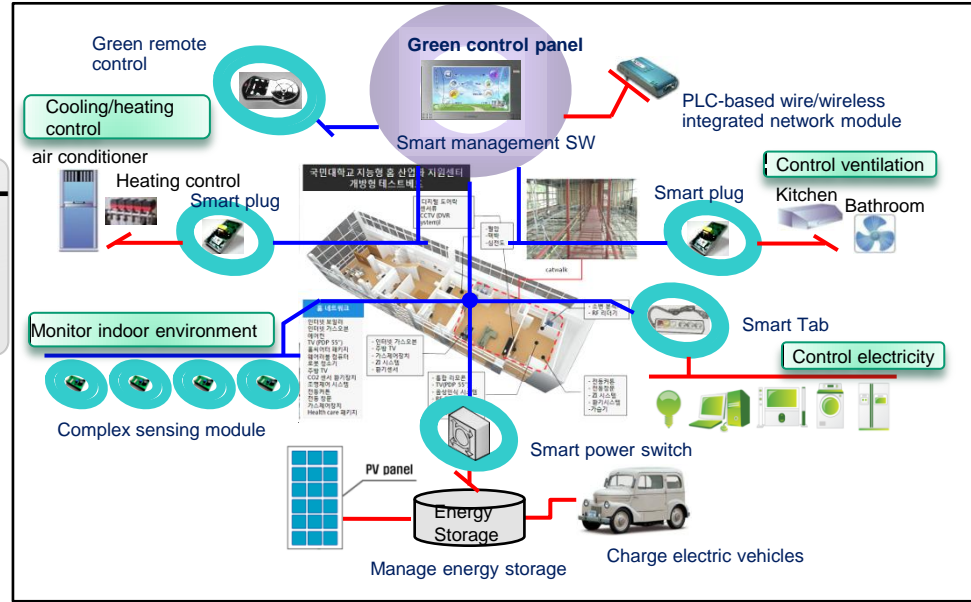
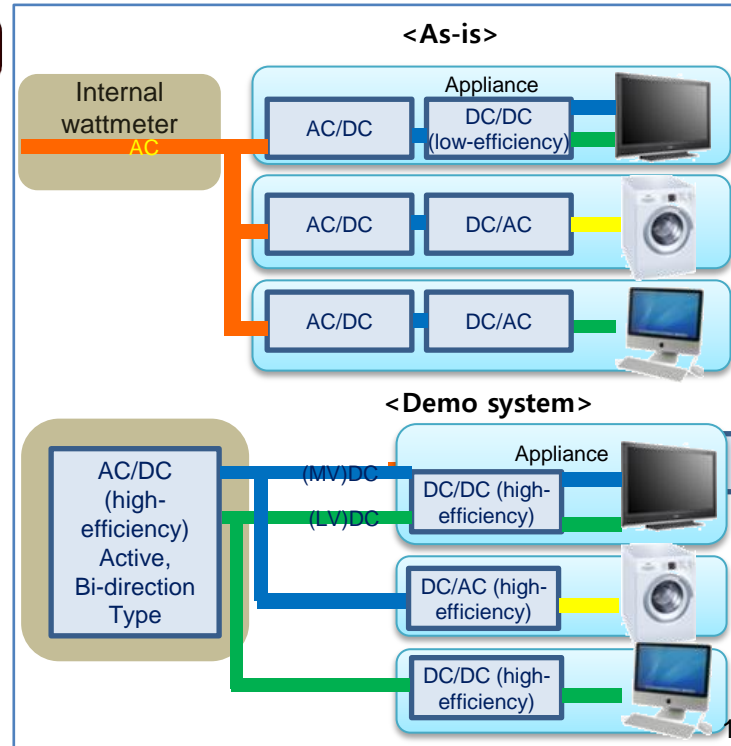
Energy management



DC distribution

50 participants from companies and proved saving over 10% of energy efficiency

Energy efficiency test





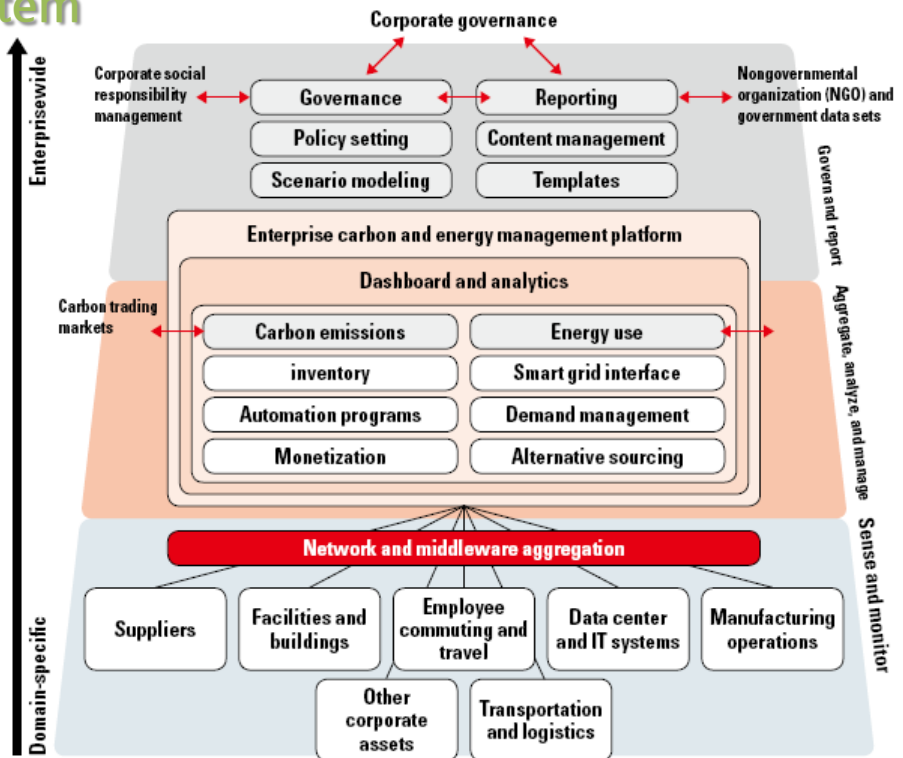
# GHG & Energy Target Management

- ▶ To set and manage the target of GHG reduction & Energy saving
- ▶ 470 companies designated as mandatory participants in its scheme
  - The criteria for designation : company whose GHG emission exceeds 125,000 tons & workplace 25,000 tons
- ▶ Serve to collect inventory data to manage national target

## Integrated IT Based Management System

- ① Build management system of energy and GHG emission through metering point management and energy map
- ② Publish EMS guidelines for reporting

**All Process  
embedded IT  
solution**



# Smart Work

## ► Establish smart work center for carbon-free commuting environment

- found and expand SWC in outer area (12('10) → 100('11) → 500('13) → the whole country('20) ]
- \* SWC applied system : video conference, computer network, security, management systems , etc.
- implement infrastructure for pedestrians and bicycle riders for carbon free commuting condition



## Effects to business environment

- Improved commuting condition (round-trip, 1/week)



- Create market of device/solution up to 1 trillion won
- Plan for distributing centers (draft)

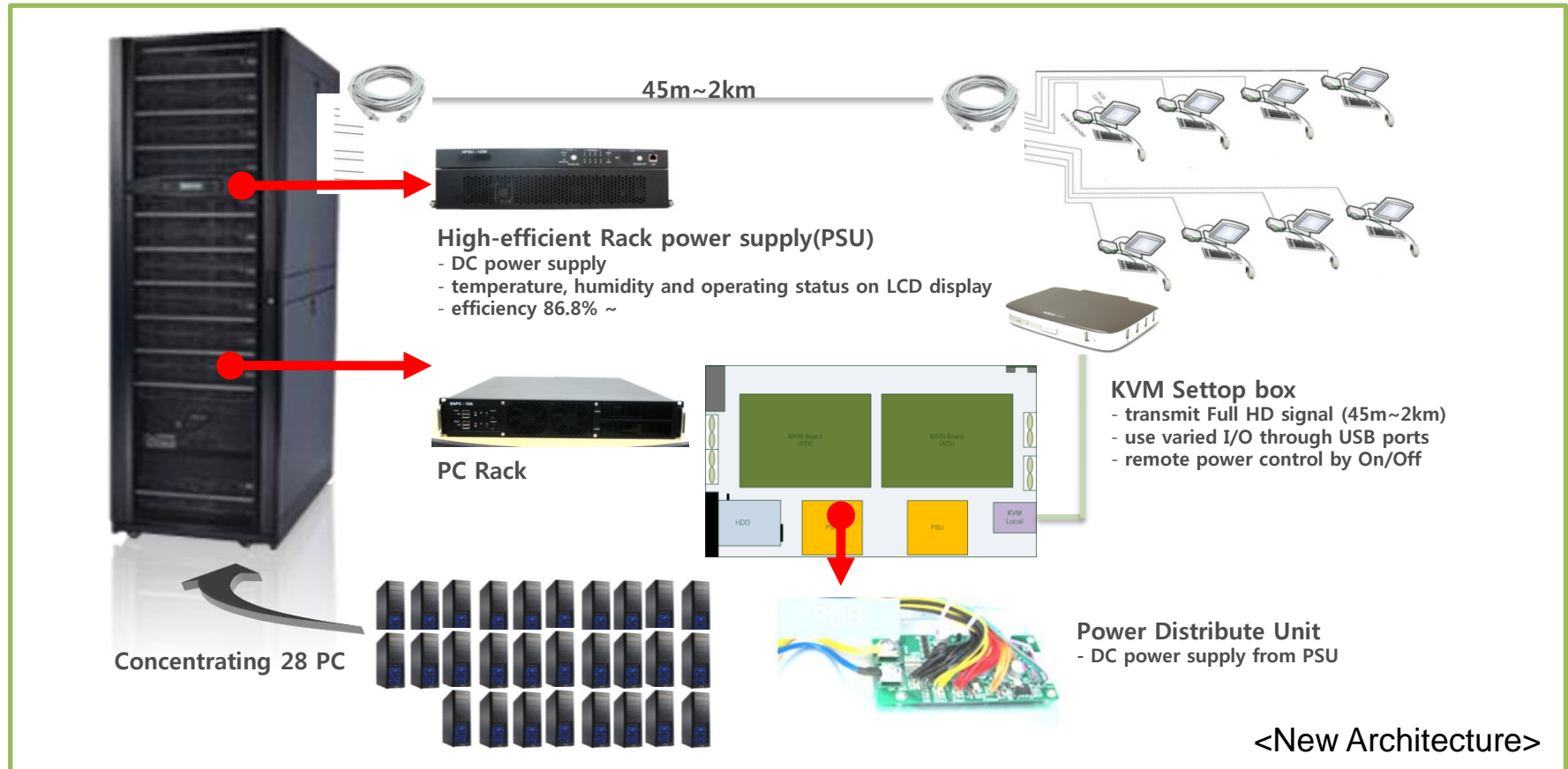
Found nationally about  
500 centers by 2013

# Green PC System

▶ Develop and expand Green PC system through modeling low power consumption PC and verifying energy efficiency and safety

- zero hazardous substance/noise,  $\frac{1}{4}$  personal space, saved 24% of PC power and saved 21% of cooling-heating after system applied

\* area for application : internet café, call center, computer room, etc.



# IV. Energy Standards





# Energy Labels & Standards

## Energy Efficiency Label and Standard Program



- **Mandatory**
- MEPS & 5-grade labeling  
\* *Minimum Energy Performance Efficiency*
- Refrigerators, Automobiles, etc (24 items)

## Major Energy related Programs

### High-efficiency Appliance Certification Program



- **Voluntary**
- LED lighting, Transformers Pumps, etc (41 items)

### e-Standby Program



- **Voluntary**
- Mandatory (from 2009)
- PCs, TVs, STBs, etc (20 items)




# A. Energy Efficiency Label and Standard


- ▶ For enhancement of energy efficiency
- ▶ To promotion high-efficiency products,
  - Public procurement service & mandatory use in public specified building
- ▶ **Mandatory Program (since 1992)**
- ▶ **energy efficiency grade label from 1 to 5, energy consumption efficiency, CO2 emissions, annual expenses of energy consumption**
- ▶ **MEPS apply to the grade under than 5<sup>th</sup>**
- ▶ **Target products : Widespread and energy intensive products**
  - **Refrigerators**, freezers, kimchi refrigerators, air conditioners, **washing machines, drum washing machines**, dish washers, **dish driers**, coolers, rice cookers, vacuum cleaner, electric fans, air cleaners, incandescent lamps, CFLs, ballasts, fluorescent lamps, 3 phase electric motors, gas boilers, external power supplies, heat pumps, commercial refrigerators, gas water heaters, automobiles (24 items)



Ballast for fluorescent lamp

Adapters, Chargers

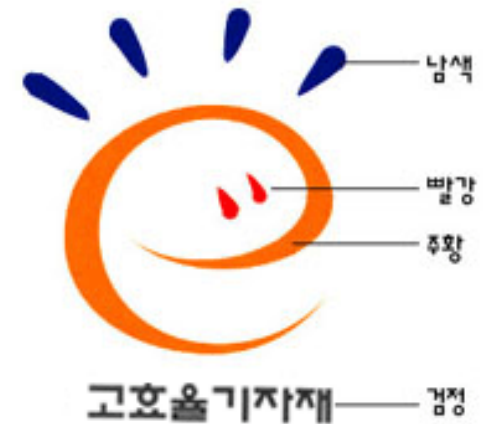

 모델명 : ABC-12345  
 최저소비효율기준 만족제품


 비교효율 : 1.09  
 모델명 : AB-232CD  
 최저소비효율기준 만족제품



## B. High-efficiency Appliance Certification

- ▶ For early stage market of high efficiency products
- ▶ To promote high energy-efficiency equipment in industry and building sectors
  - Equipment supporting rebate
  - Public procurement service
  - Mandatory use in public and specified buildings, etc
- ▶ **Voluntary program (since 1996)**
  - Attachment of **High efficiency Equipment Label**
  - Issue of **High efficiency Equipment Certificate**
- ▶ **Target Products**
  - Pumps, transformers, windows, industrial gas boilers, industrial oil boilers, oil burning water boilers, LED traffic lights, LED lightings, sensor lighting equipments, heat recovery ventilators, ventilation fans, centrifugal blowers (41 items)



## C. e-Standby Program

- ▶ For reduction of standby power
- ▶ Standby Korea 2010
  - Reduction of standby power of all products below 1 watt by year 2010
- ▶ **Voluntary** program (since 1999)
  - Attachment of **Energy Saving Label**
- ▶ **Labeling**
  - Voluntary "Energy Boy" label or **Mandatory standby warning label**
- ▶ **Target Products : Products with significant standby power**
  - TVs, set top boxes, computers, monitors, printers, multifunction devices, microwave ovens, VCRs, audios, DVD players, home gateways, fax machines, copiers, scanners, bidets, door phones, cordless phones, energy saving & controlling devices, radios, modems home gateways (20 items)



**Voluntary**  
products satisfying  
Standby standard



**Mandatory**  
Products failing  
standby standard



# End

Thank you very much for your attention