
Contribution of FMBC to reducing carbon emission

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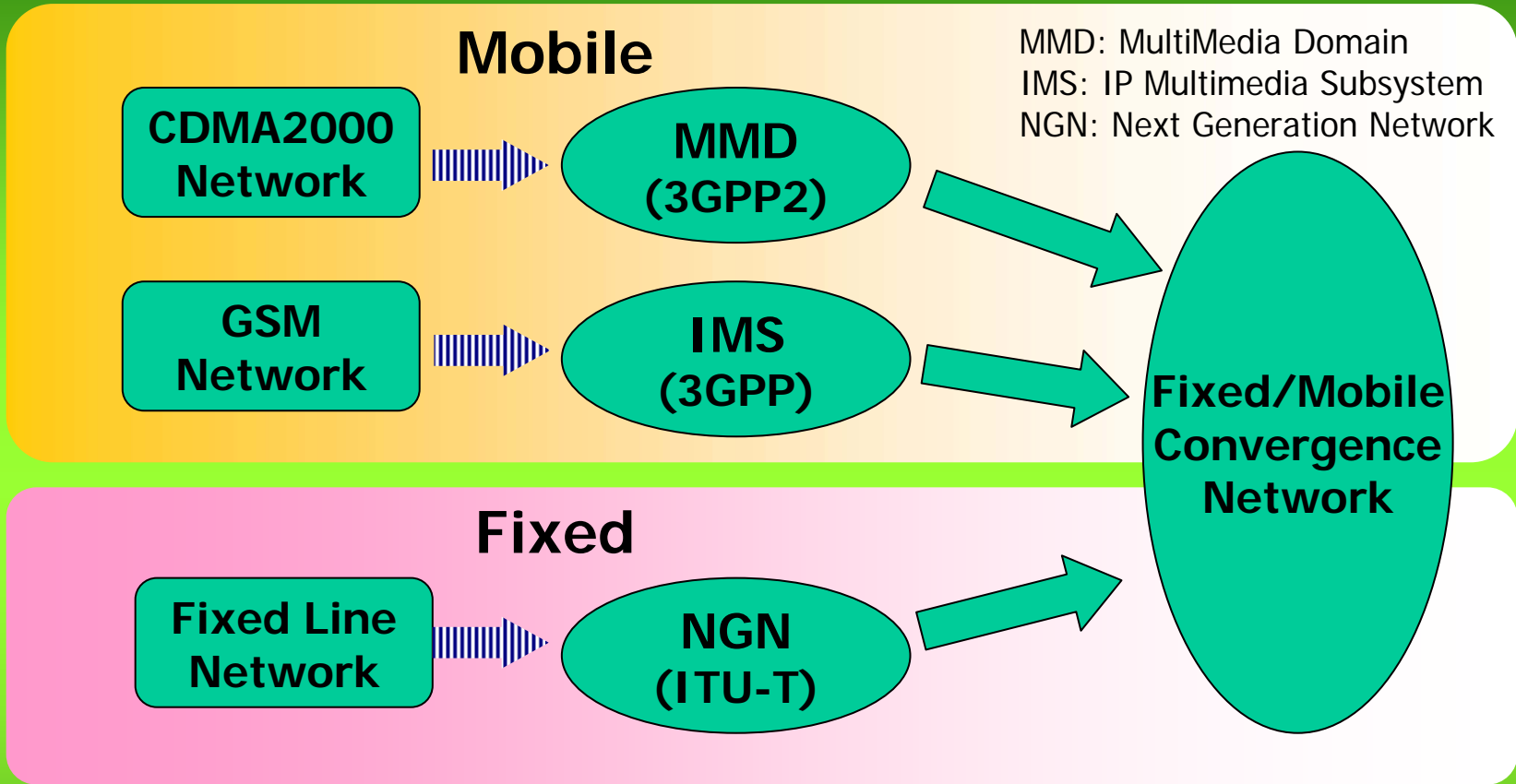
16 April 2008

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1. Trend of Broadband service in Japan

Migration of Core Network to FMBC

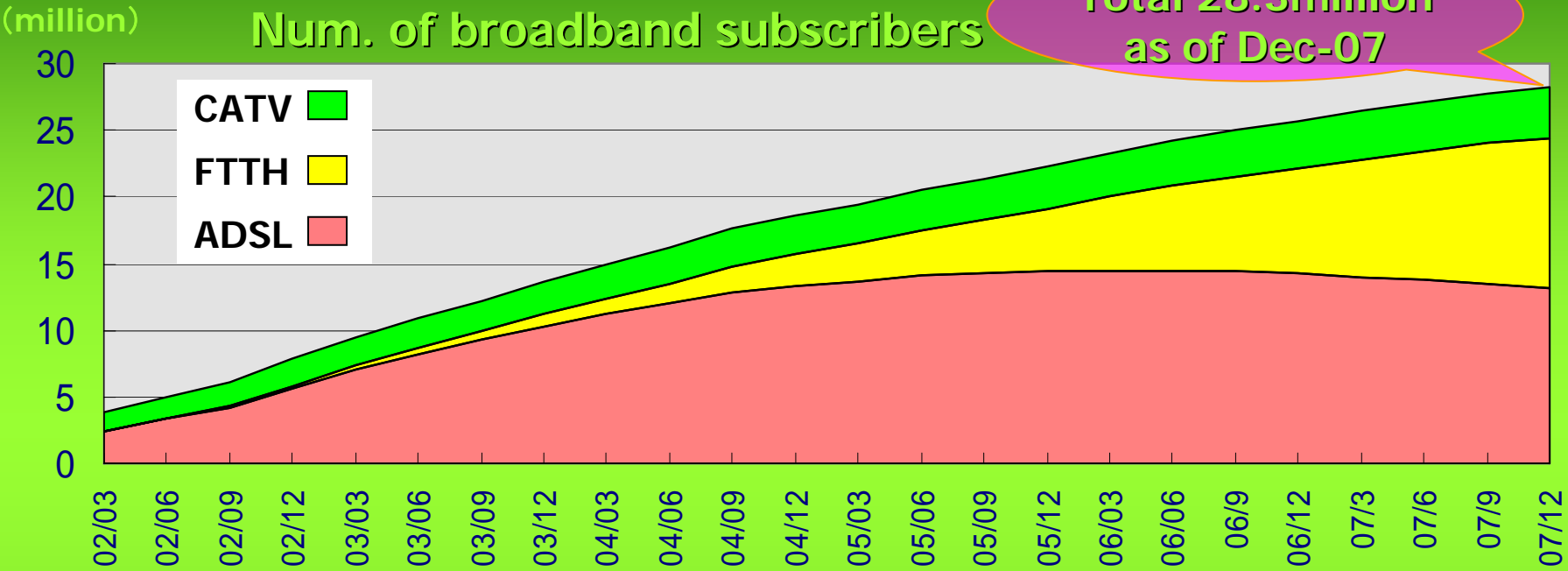


FMBC: Fixed Mobile Broadcast Convergence

Macro Trend in fixed broadband market

Num. of broadband subscribers

Total 28.3million as of Dec-07



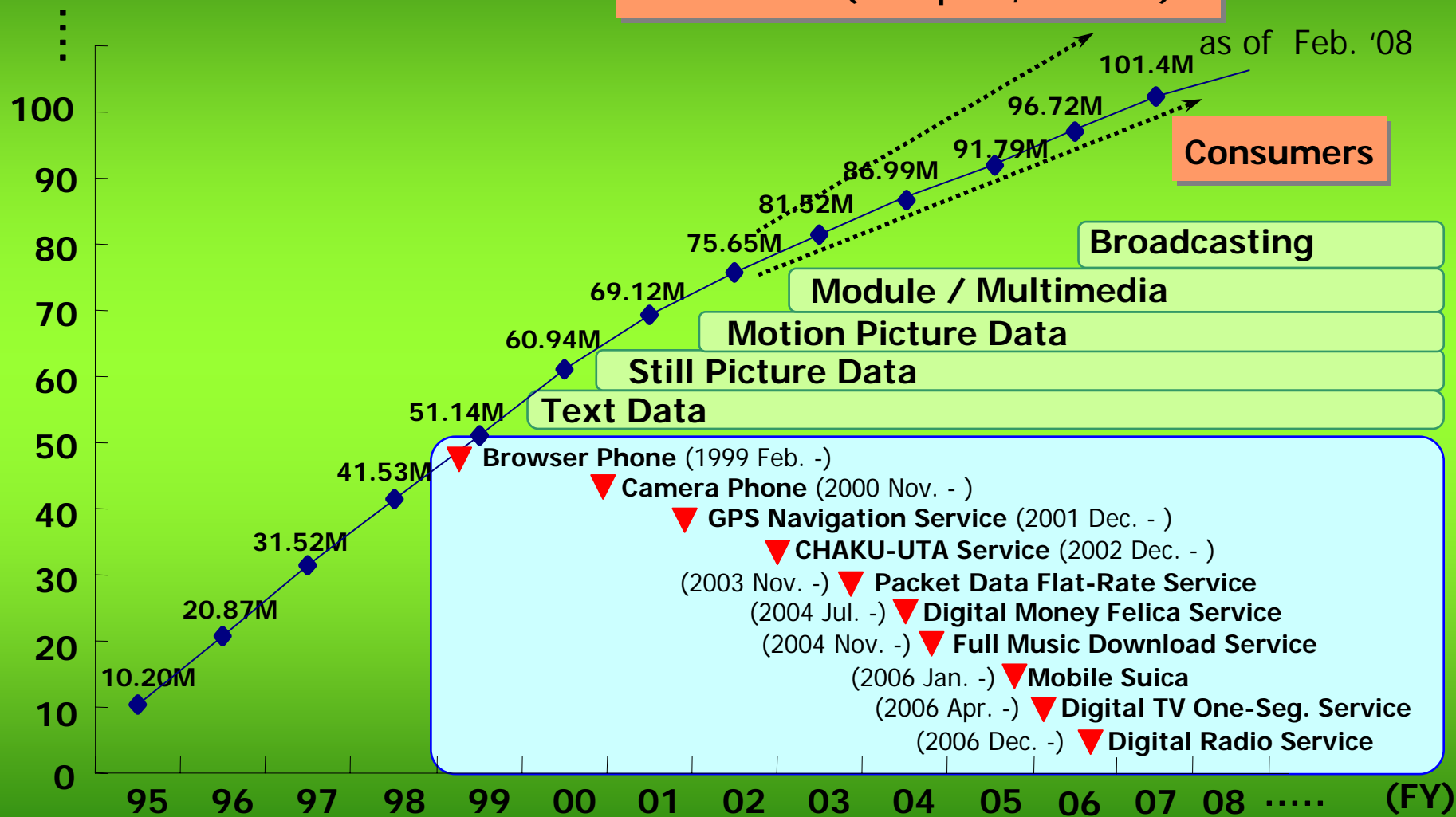
From MIC's press release

KDDI's related services

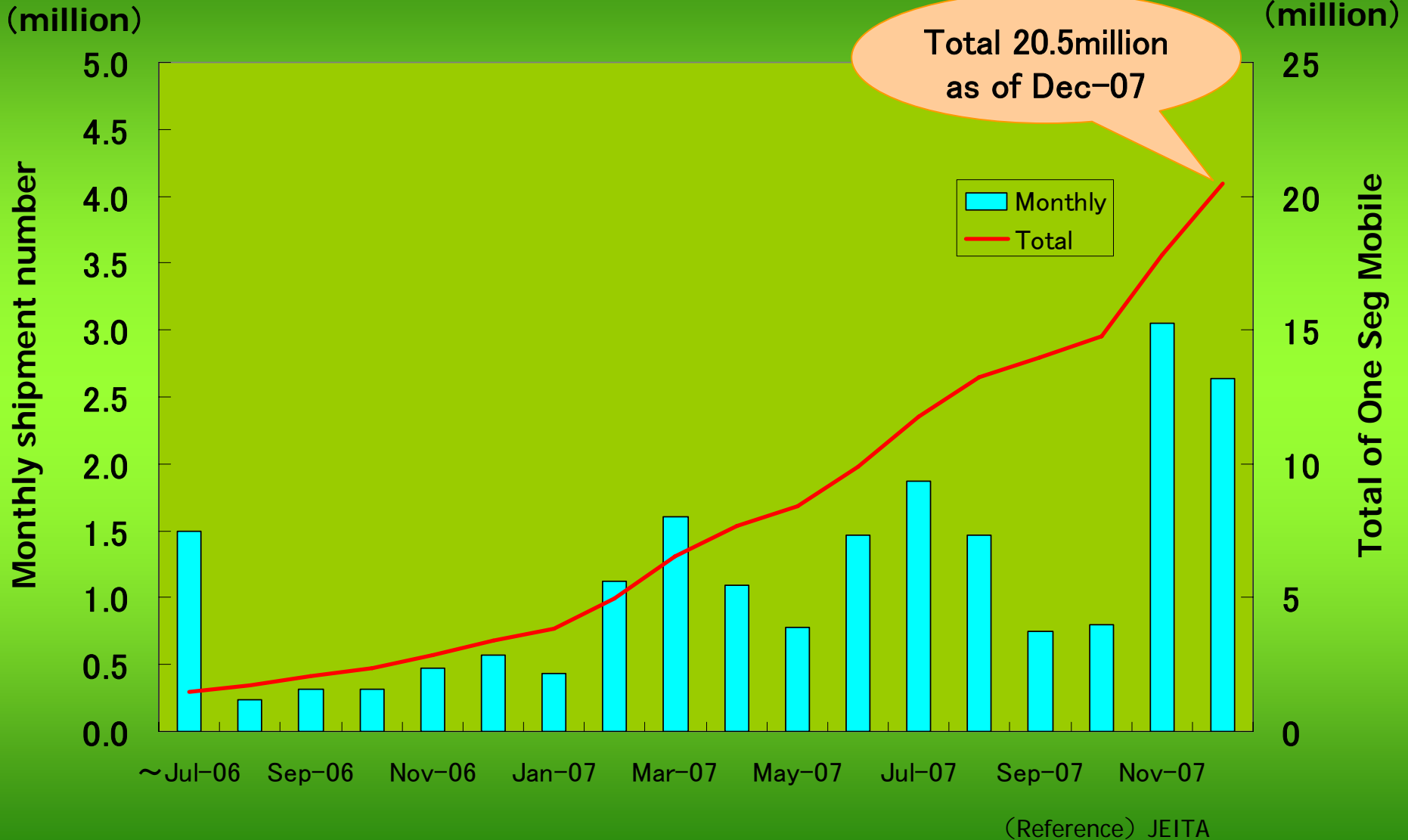


Macro Trend of Mobile Market Evolution in Japan

(M users)



Rapid growth of One Seg Mobile Market



2.KDDI Environmental Conservation Activities

- ① Global warming Countermeasure
- ② R&D of fuel battery for mobile phones
- ③ Solar Power Generation
- ④ Development of High efficiency Amplifier for mobile base station
- ⑤ Development of Next generation battery for mobile base station

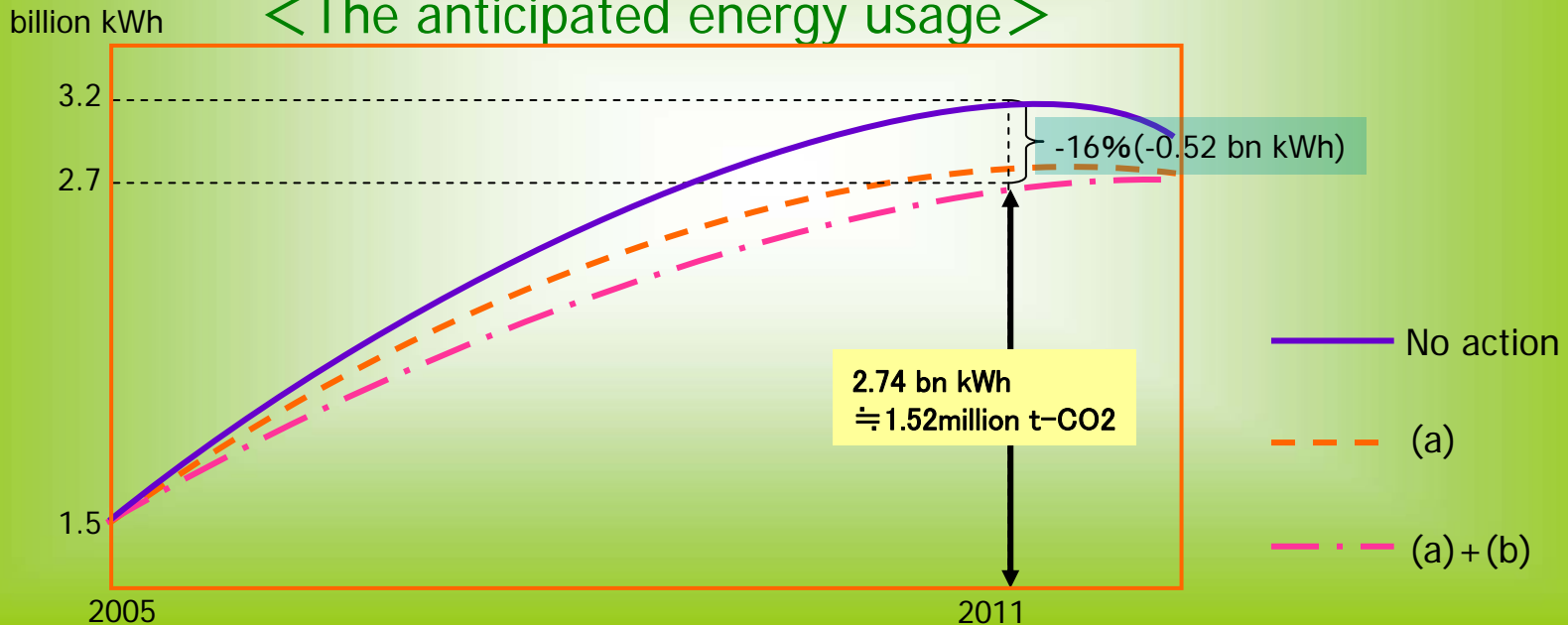
① Global Warming Countermeasure

The anticipated energy usage amount for 2011 shall be undercut by 16%(0.52 bn kWh) and the total emissions of greenhouse gases shall be limited to 1.52 million tons (CO2 equivalent).

The principal countermeasure

- (a) Introduction of mobile base stations with high efficiency.
- (b) Introduction of efficient Facilities at Network Centers and Data Centers; such as inverter type air conditioners, Solar Energy Generation, etc

<The anticipated energy usage>



② R&D of small fuel battery for mobile phones
 ③ Solar Power Generation

R&D of fuel battery for mobile phones



- Built-in A5509T
- Output power about 300mW
 - Capacity 3.5 times more than existing battery



- Built-in W32H Easily filled with pen-type cartridge
- Output power about 300mW

Solar Power Generation



Shikotsu Lake Skyroad Mobile base station (10kW)

- Yamaguchi Satellite Communications Center (3kW + 30kW)
- Isihikita-tohge Mobile base station (4kW)
- Naka Chanbetsu North Mobile base station (7.5kW)
- Sandan-taki Mobile base station (10kW)



Oyama 2nd Network Center (150kW)

④ Development of High efficiency Amplifier for mobile base station

Improvement of Efficiency
(14%⇒28%)

- ① Reduction of Power consumption
(50% Improved)
- ② Reduction of Cost
(i.e. Power supply, Battery)

Reduction of Calorific value

Reduction of Air conditioner Cost

Downsizing & Weight Saving

Saving of Space

Improvement of Failure rate

Reduction of OPEX (Operation Expense)

High efficiency
Amplifier



⑤ Development of Next generation battery for mobile base station

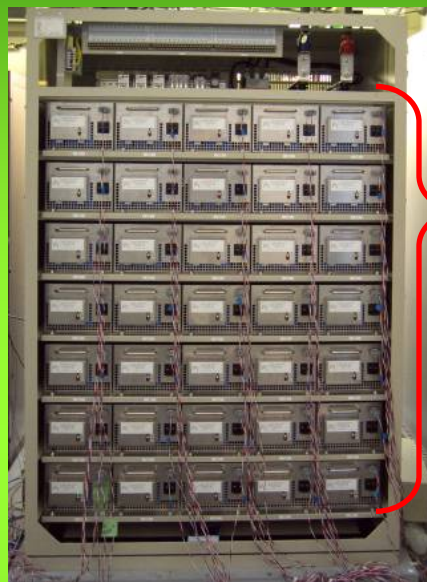
27V-Pb battery system (2000Ah)



Cell
Weight: 58kg
Capacity: 23.3ℓ
287x165x493(mm)

System
Gross weight: **1500kg**
@ 58kg × 26
Capacity: **0.6m³**
@ 23.3ℓ × 26

27V-Li-ion battery system (1750Ah)



Module
Weight: 17kg
Capacity: 13.2ℓ
160x220x375(mm)

System
Gross weight: **600kg**
@ 17kg × 35
Capacity: **0.46m³**
@ 13.2 × 35

Merits of Li-ion battery (vs. Pb battery)

- Light weight : **1/3~1/2**
- Down sizing : **1/2~3/4**
- No use of environmental restricted material
- Excellent properties of electric charge and discharge

⇒ **Enable down-sizing of battery**

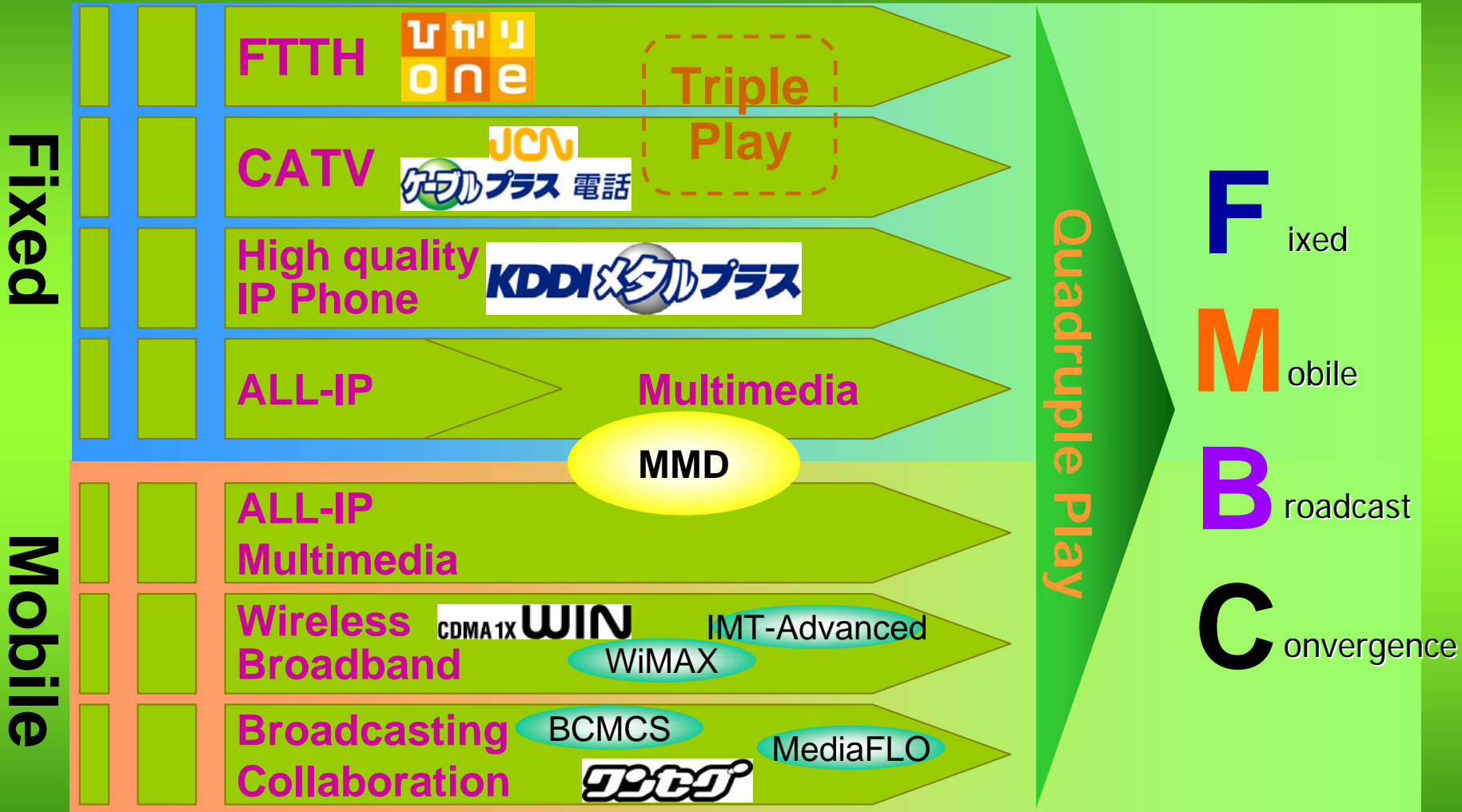
3. Expectations for FMBC

-FMBC KDDI's action

-Example of FMBC scenario

- ① Electronic paper service
- ② Telework / Mobile work
- ③ Stable supply of Electric Power

KDDI's FMBC action



FMBC's Environmental Contribution

Merit 1: Traffic Leveling

Distributing downloadable contents to the mass during low traffic.

Merit 2: Distribution Cost

Shared use of single channel

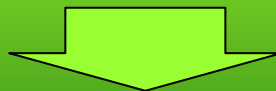
⇒ Simultaneous mass distribution

⇒ Smaller number of facilities than unicast distribution

Merit 3: Cross-Media Service

(One-Segment × Mobile Handset) promotes e-Commerce

⇒ Digital Content and Electronic Money



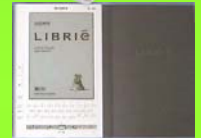
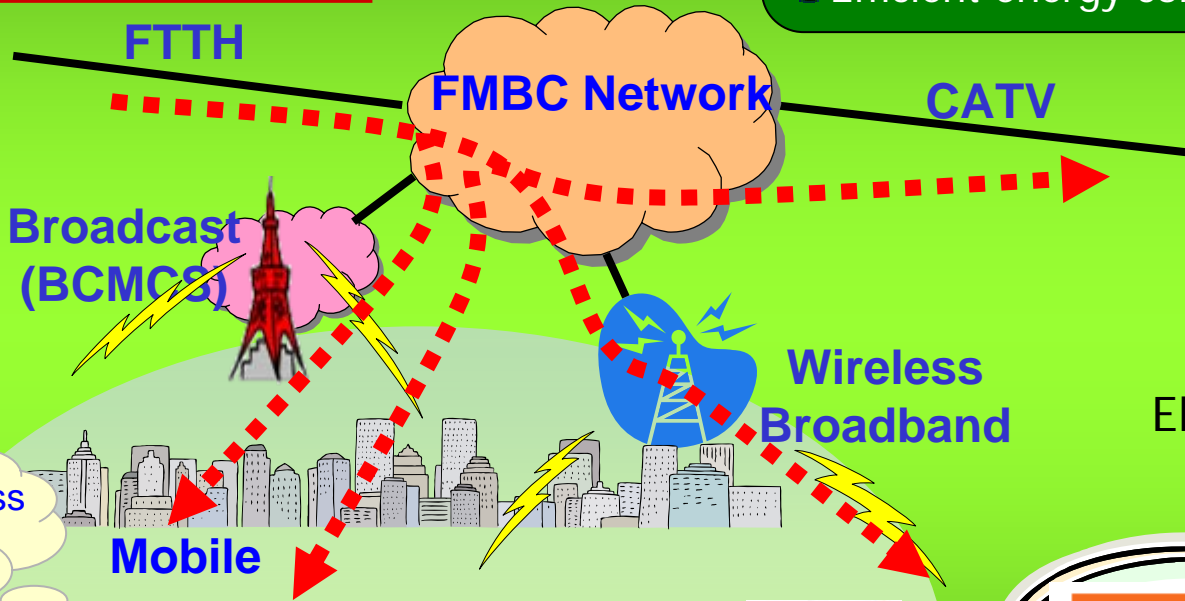
Reduction of carbon emission

Example of FMBC scenario (1) Electronic paper service by BCMCS

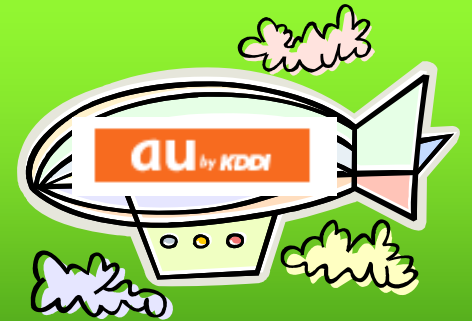
Simultaneous Broadcast of
Newspapers, Book,
Advertisement and so on



- Reduce consumption of products
- Reduce transportation cost of people and products
- Efficient energy consumption



Electronic Book



Electronic Advertisement



Electronic Newspaper



Electronic Book

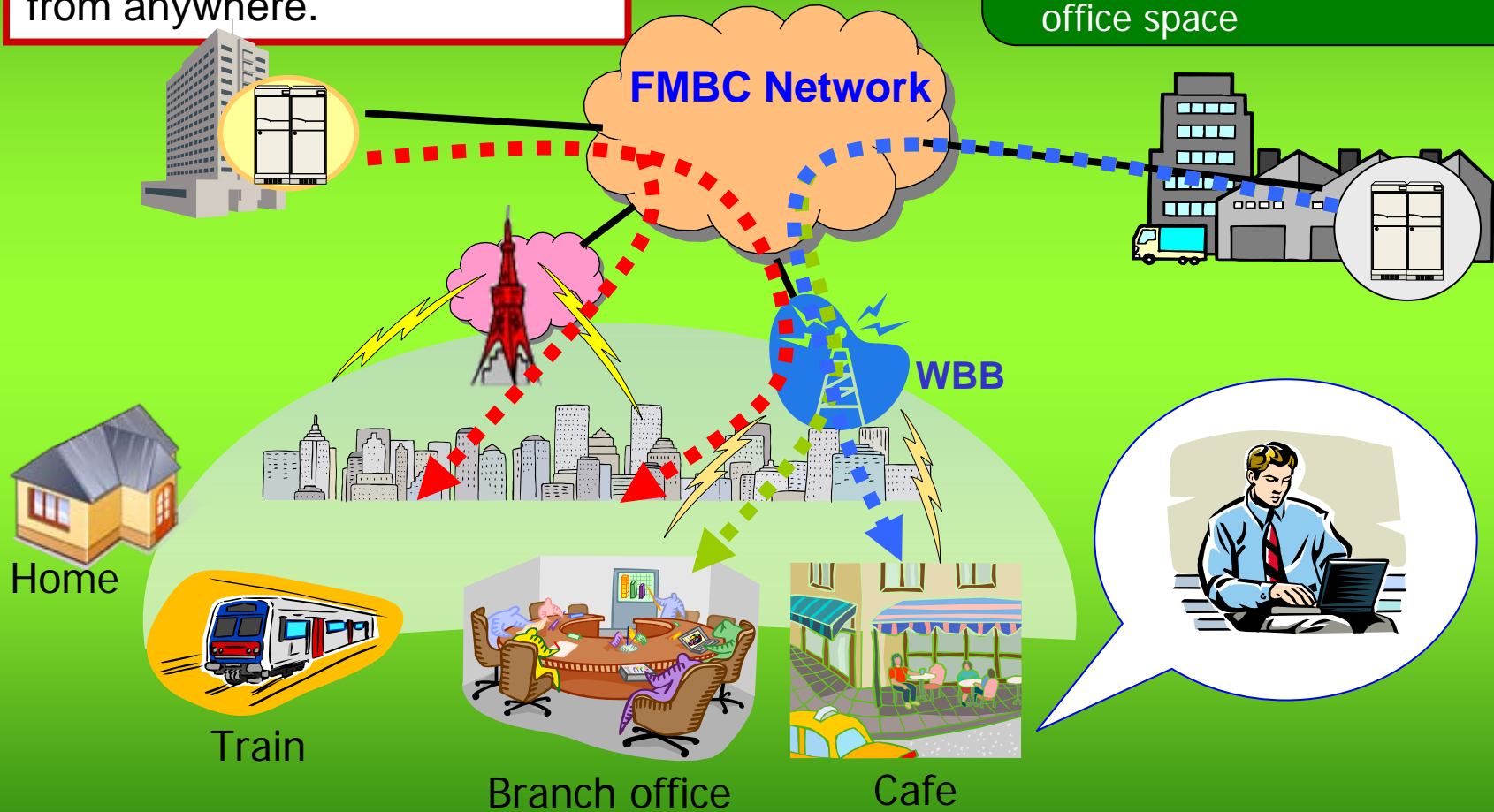


Telework / Mobile work

Access to Thin Client Servers in Data Centers and/or Offices from anywhere.



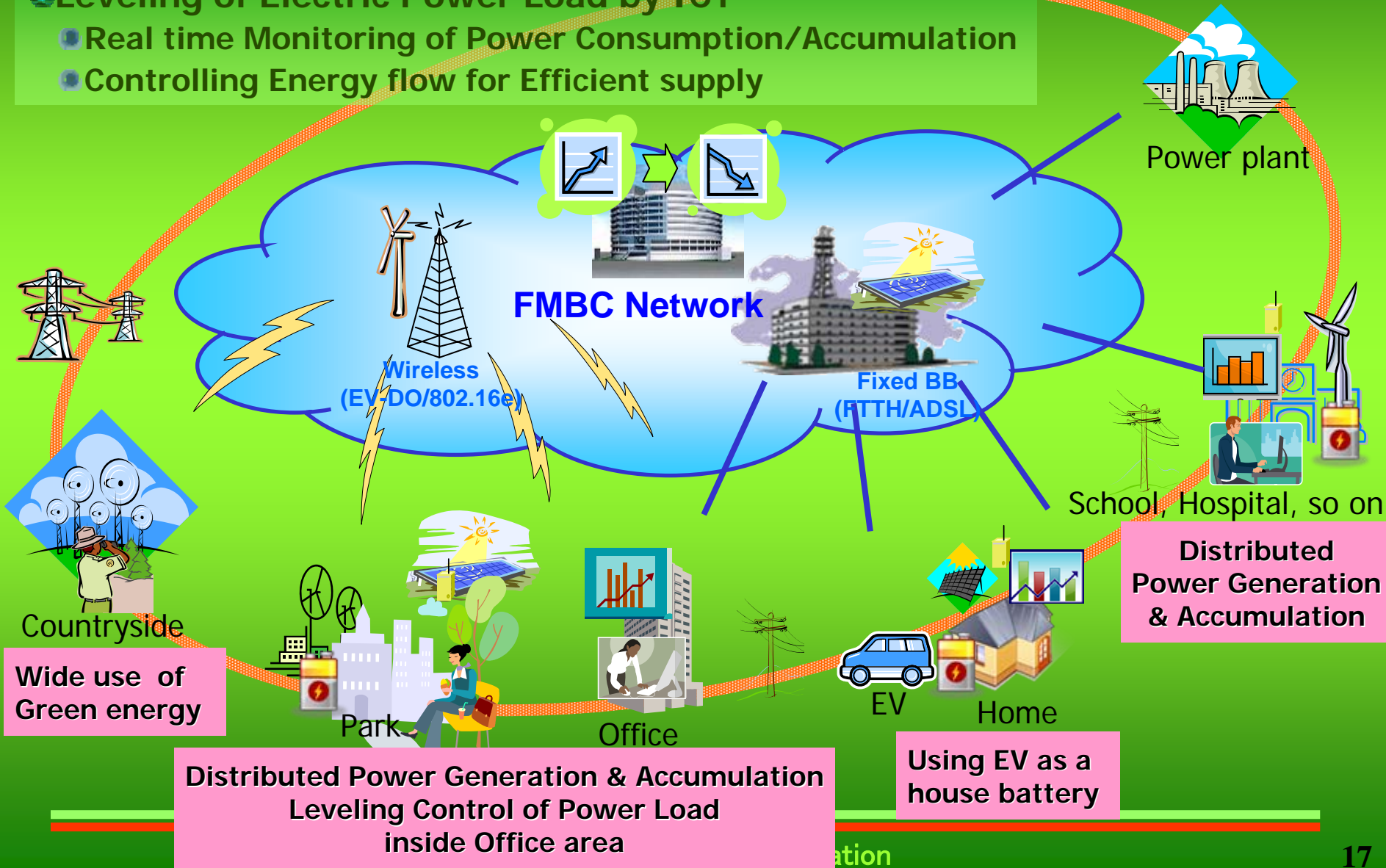
- Reduce transportation cost of people and products
- Raise business efficiency/ Reduce office space



Stable supply of Electric Power

Leveling of Electric Power Load by ICT

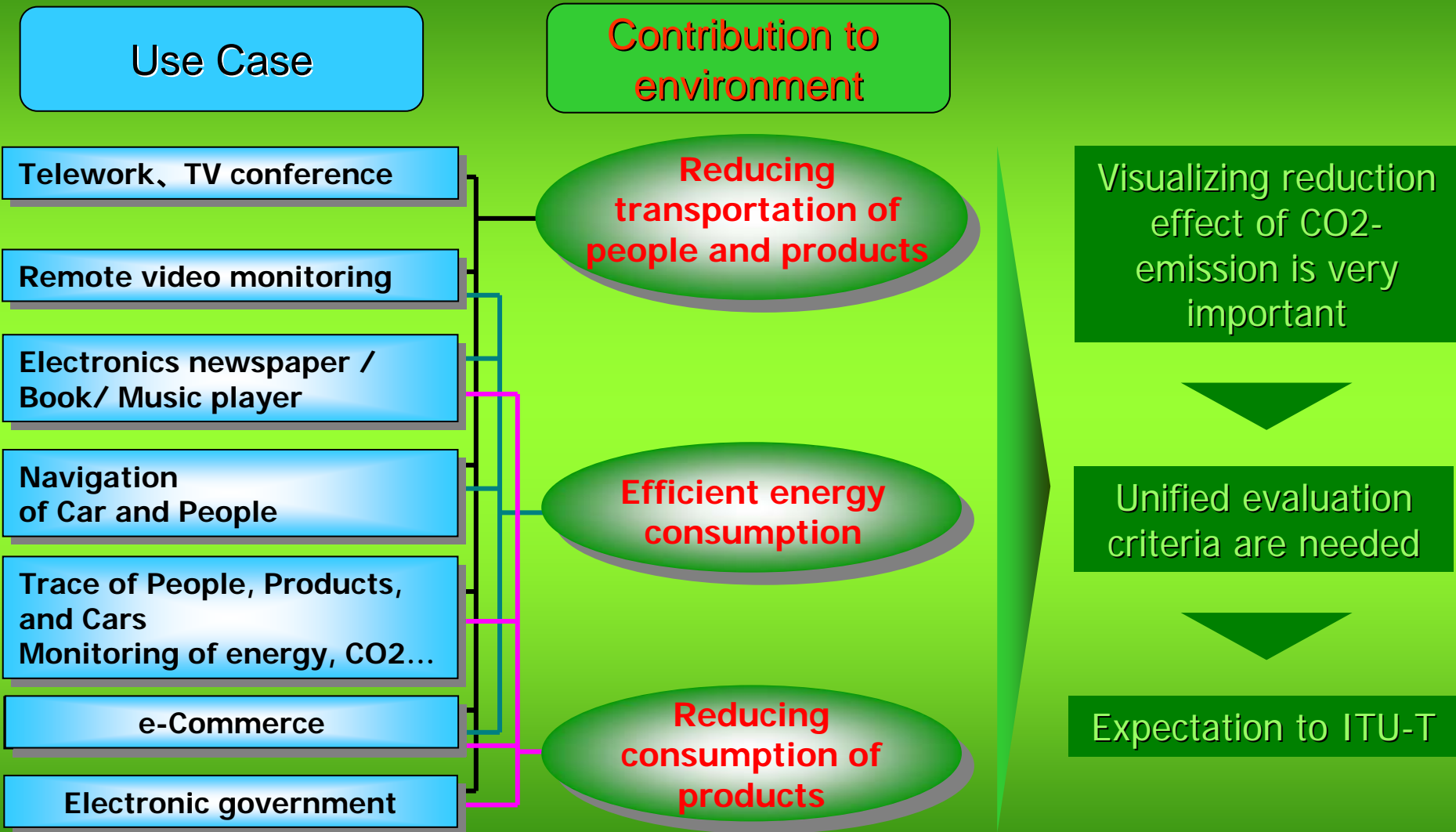
- Real time Monitoring of Power Consumption/Accumulation
- Controlling Energy flow for Efficient supply



4. Summary

- ① Contribution of FMBC to Environmental Conservation
- ② Promotion of environment conservation
- ③ FMBC + α

Contribution of FMBC to Environmental Conservation



Promotion of Environmental Conservation

- Spreading and promoting Environmental Information: (CGM, Mobile, BCMCS)
- Streaming Environment Conservation Contents: (Broadband)
- Visualizing CO2 emission: (Sensor network)
- Visualizing Energy consumption: (HEMS, BEMS, ITS)
- Digitizing flow of Money, People, Products: (e-Commerce)

