How Huawei's Solutions Address the Challenges of Powering ICT Network
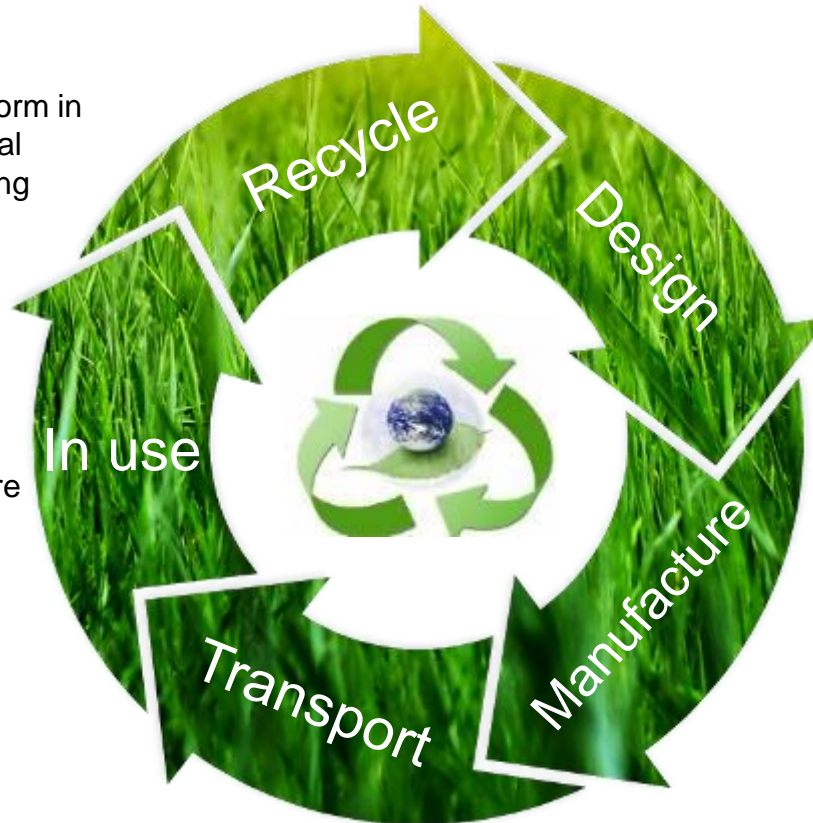
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HUAWEI TECHNOLOGIES CO., LTD.

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Reducing environmental impact throughout product life cycle

- Global recycle platform in partnership with local professional recycling companies and organizations

- A total of 8,000 base stations powered by hybrid resources were deployed in 2010

Recycle

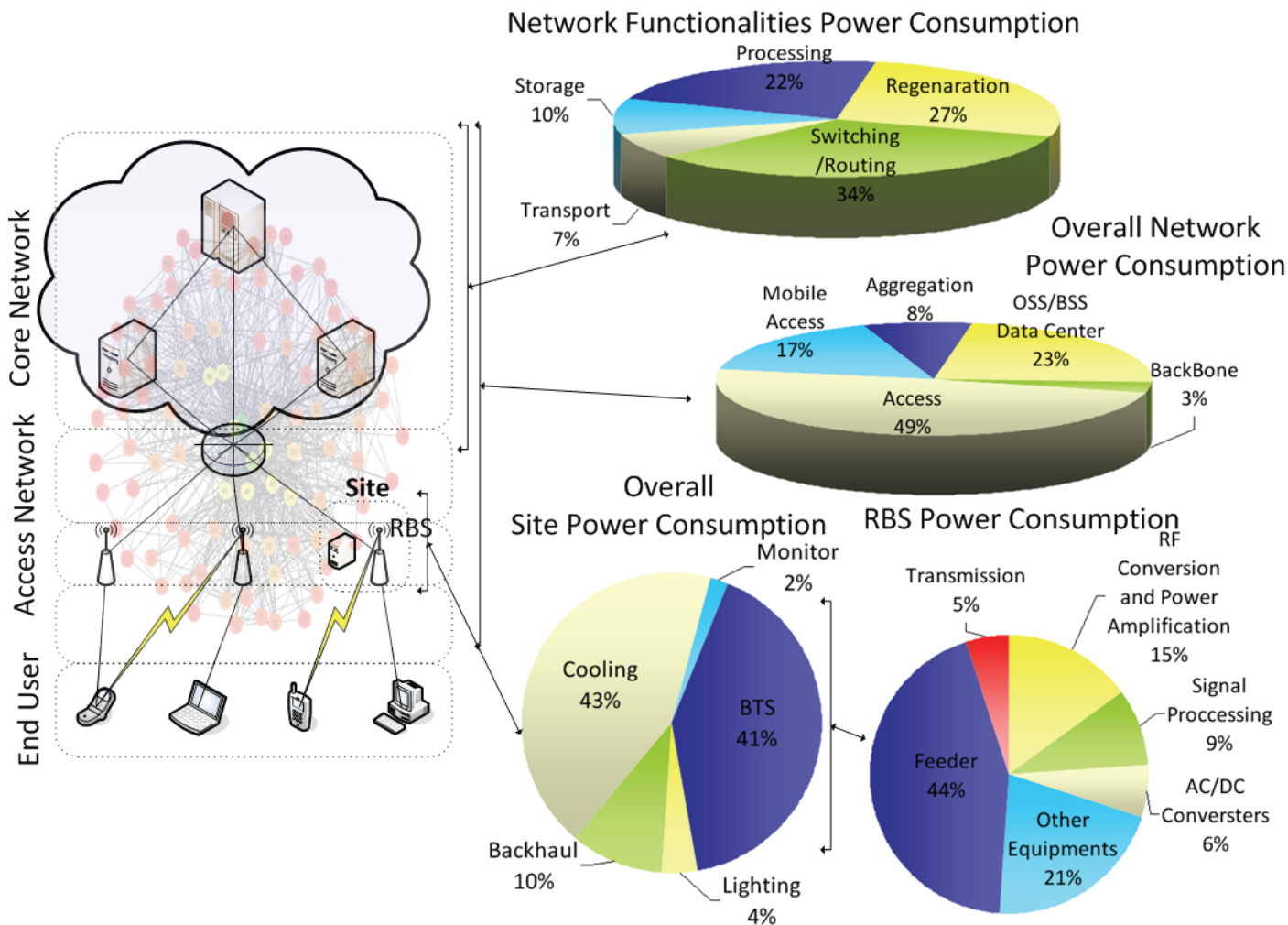Design

In use

Manufacture

Transport

- Reusable green packages

- Active participation in industry standards : ITU-T, ATIS , ETSI , JRC ,Energy Star and CCSA etc.
- Set up internal Eco-Design label certification standards
- Conduct LCA for major products

- Reduction of 30% CO_2 emissions in two years
- Green Product Certification Program and Green Supply Chain Certification Program
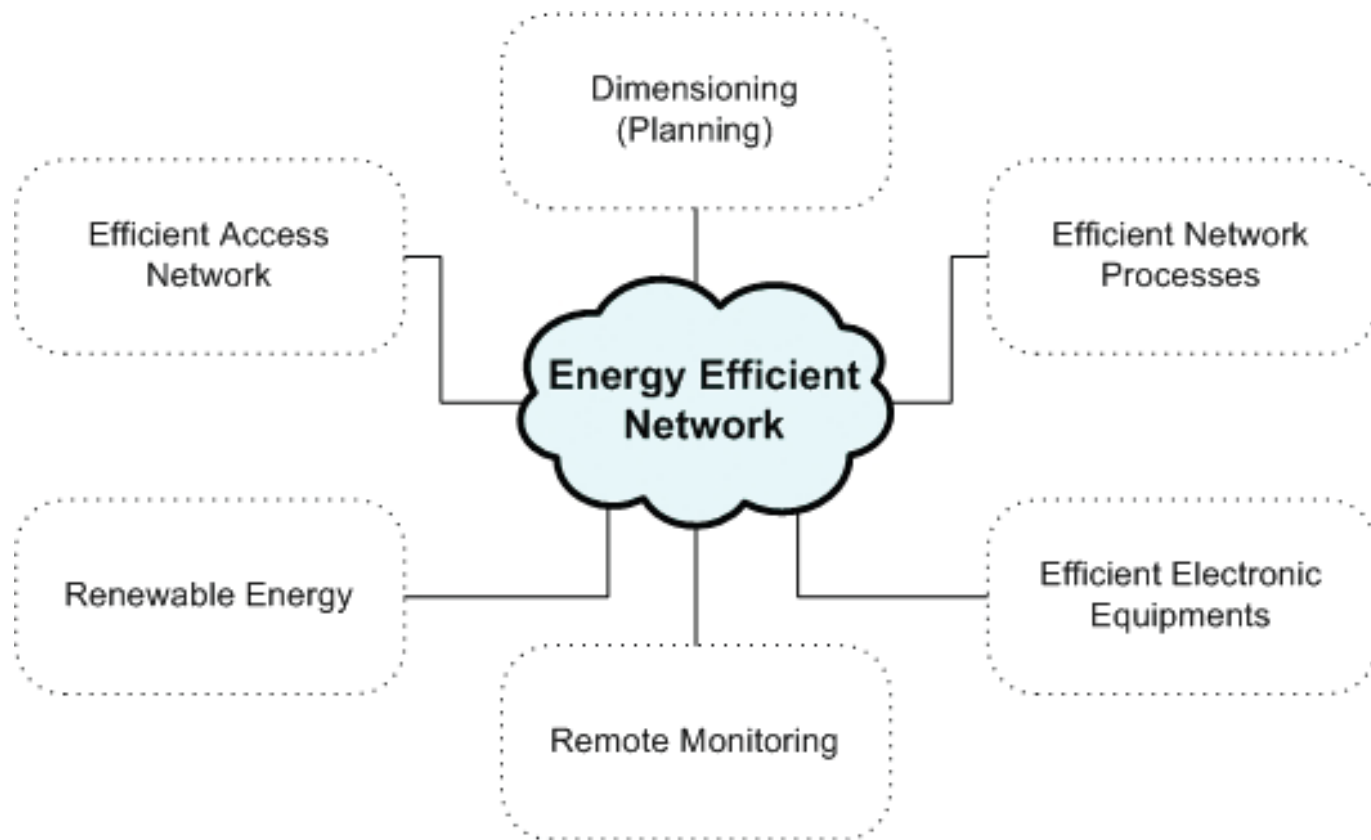
~70% of carbon emissions occur in the operating phase of communications products
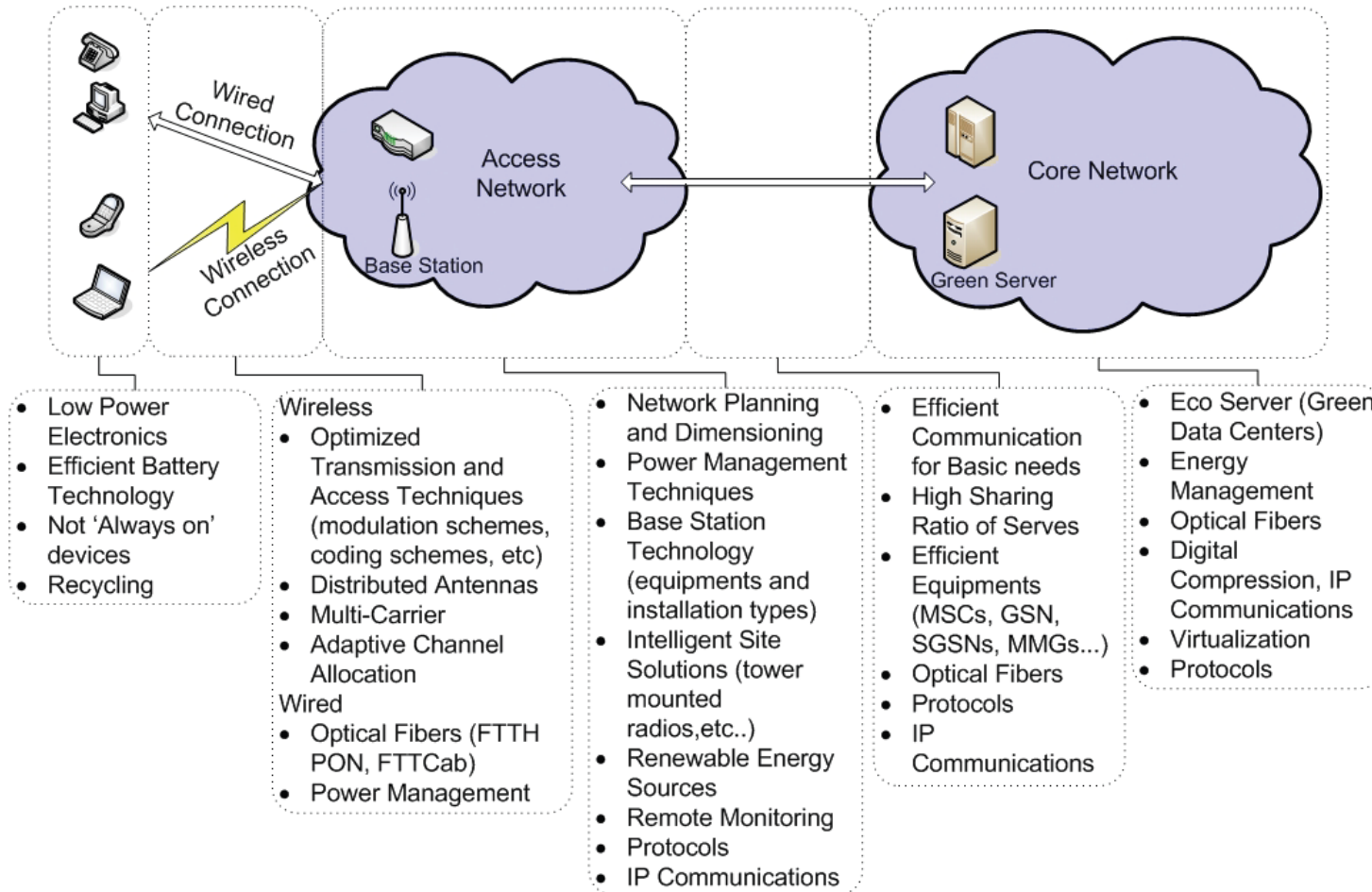
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Power consumption in different layers of the network.

Network Functionalities Power Consumption
Processing 22%
Regenaration 27%
Storage 10%
Switching /Routing 34%
Transport 7%

Overall Network Power Consumption
Mobile Access 17%
Aggregation 8%
OSS/BSS Data Center 23%
BackBone 3%
Access 49%

Overall Site Power Consumption
Monitor 2%
Cooling 43%
BTS 41%
Backhaul 10%
Lighting 4%

RBS Power Consumption
Transmission 5%
RF Conversion and Power Amplification 15%
Signal Proccessing 9%
AC/DC Converters 6%
Other Equipments 21%
Feeder 44%

Main factors of energy efficient networks

Energy efficient solutions of telecommunication networks

Case study: high density BTS helps China Mobile reduce energy consumption and footprint
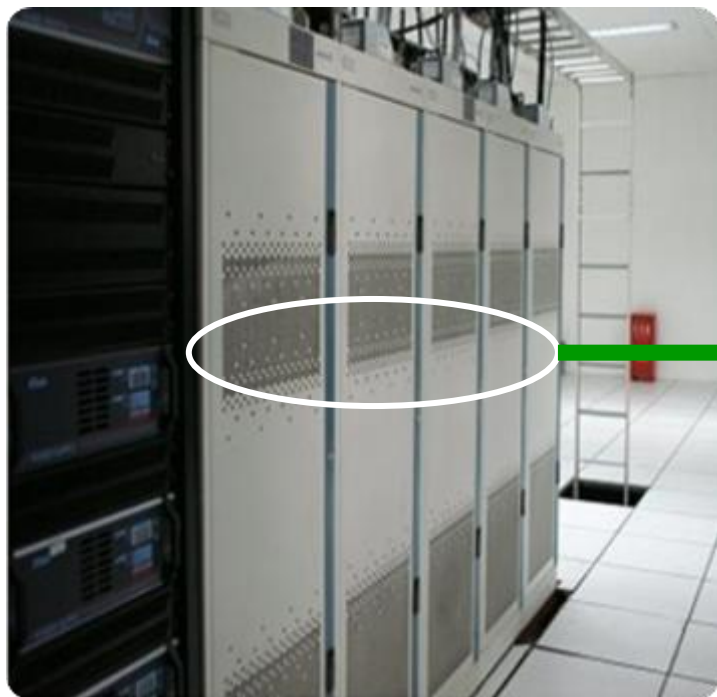
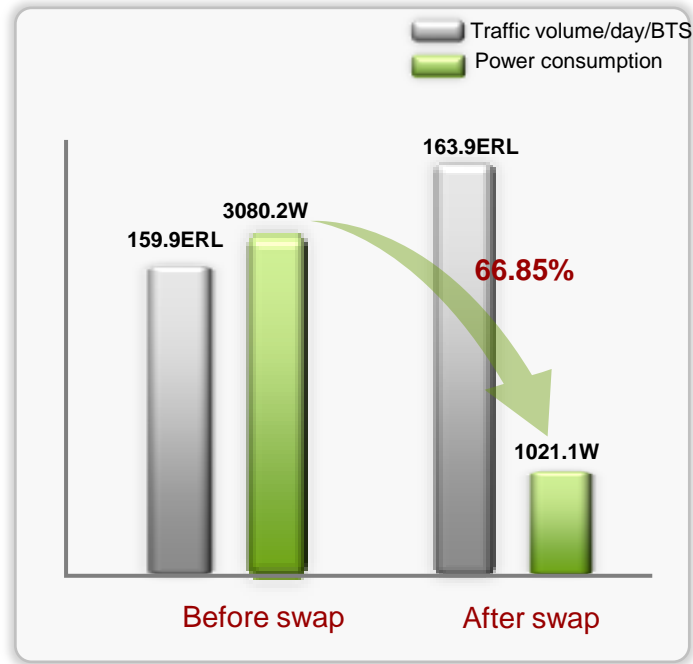Before swap, 5 racks   After swap: 1 rack

- Reduce 80% footprint
- High density & high energy efficiency (shutdown tech.) enable ~30% power savings

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Case study: Vodafone Spain cuts power consumption by 66.85%

SingleRAN

GSM/UMTS/LTE DBS

Power consumption savings of 66.85%

Traffic volume/day/BTS
Power consumption

163.9ERL

159.9ERL
3080.2W

66.85%

1021.1W

Before swap   After swap

- Substantially cutting power consumption, while ensuring network performance
- Enable Vodafone Spain to save over 1.98 million euros/1000 base stations annually (estimated based on the power fee in Spain)

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Case study: Telefonica significantly cuts energy consumption through dynamic traffic control
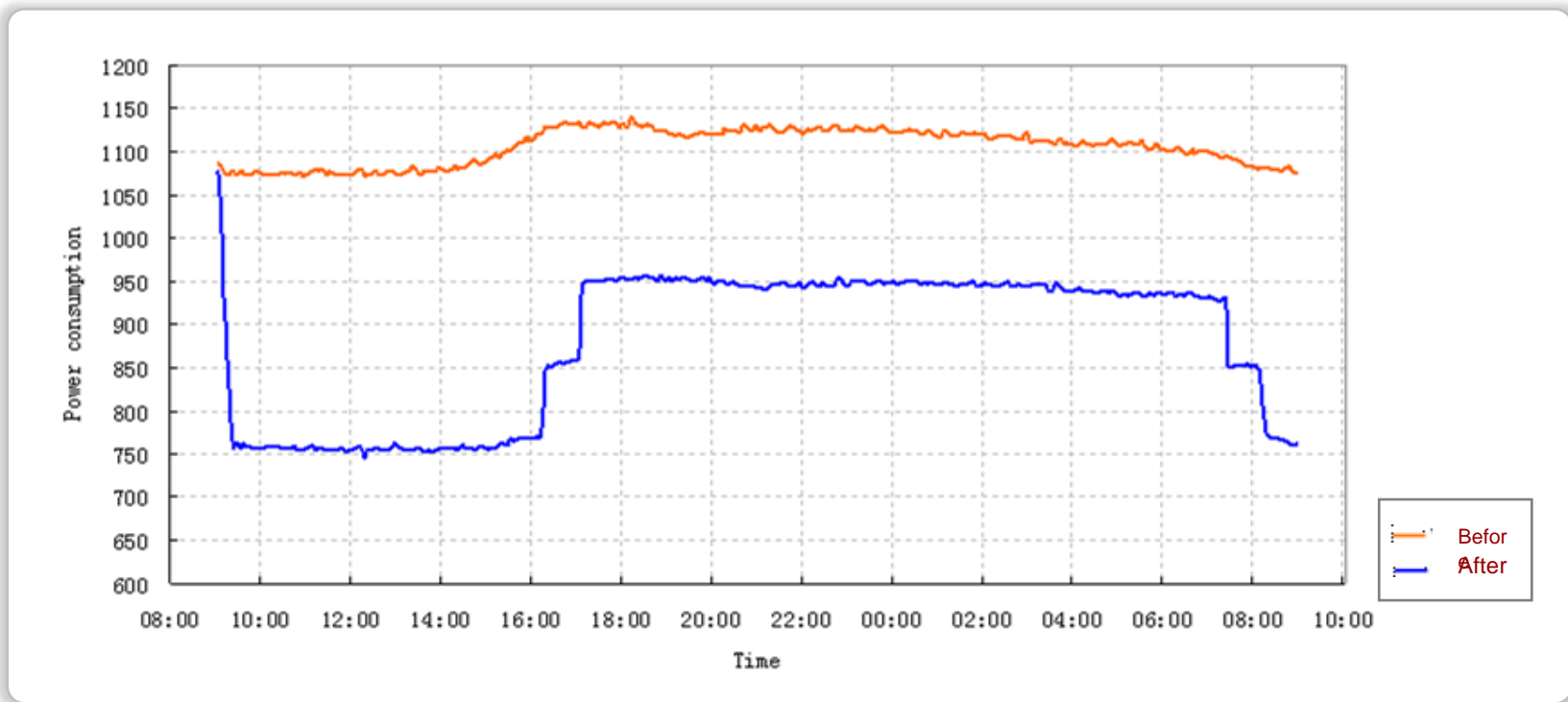
- Before dynamic traffic control adopted: 26.44127 kWh
- After dynamic traffic control adopted: 21.03408 kWh
- Result: 20.45% energy consumption cut

Infrastructure solution

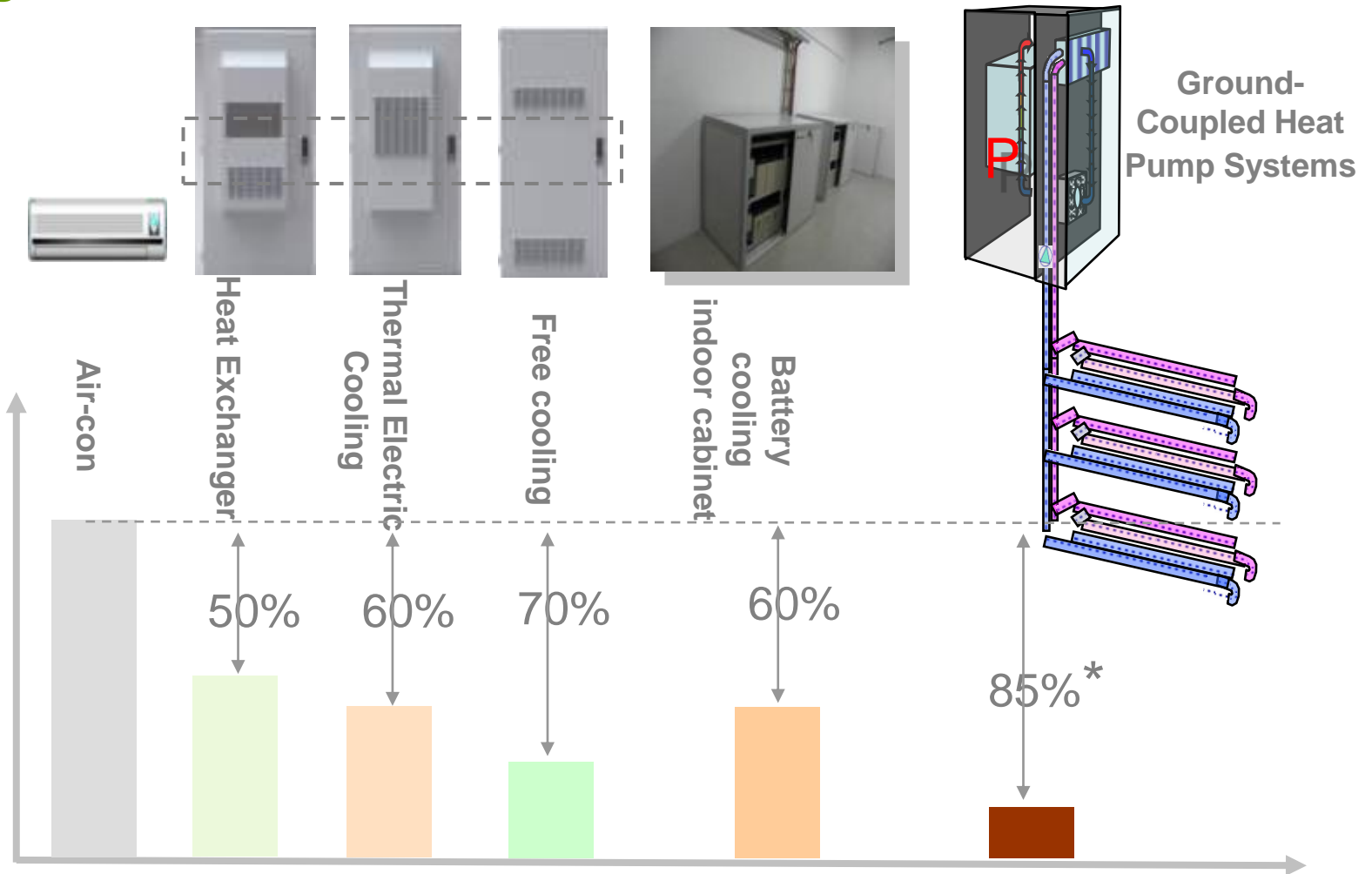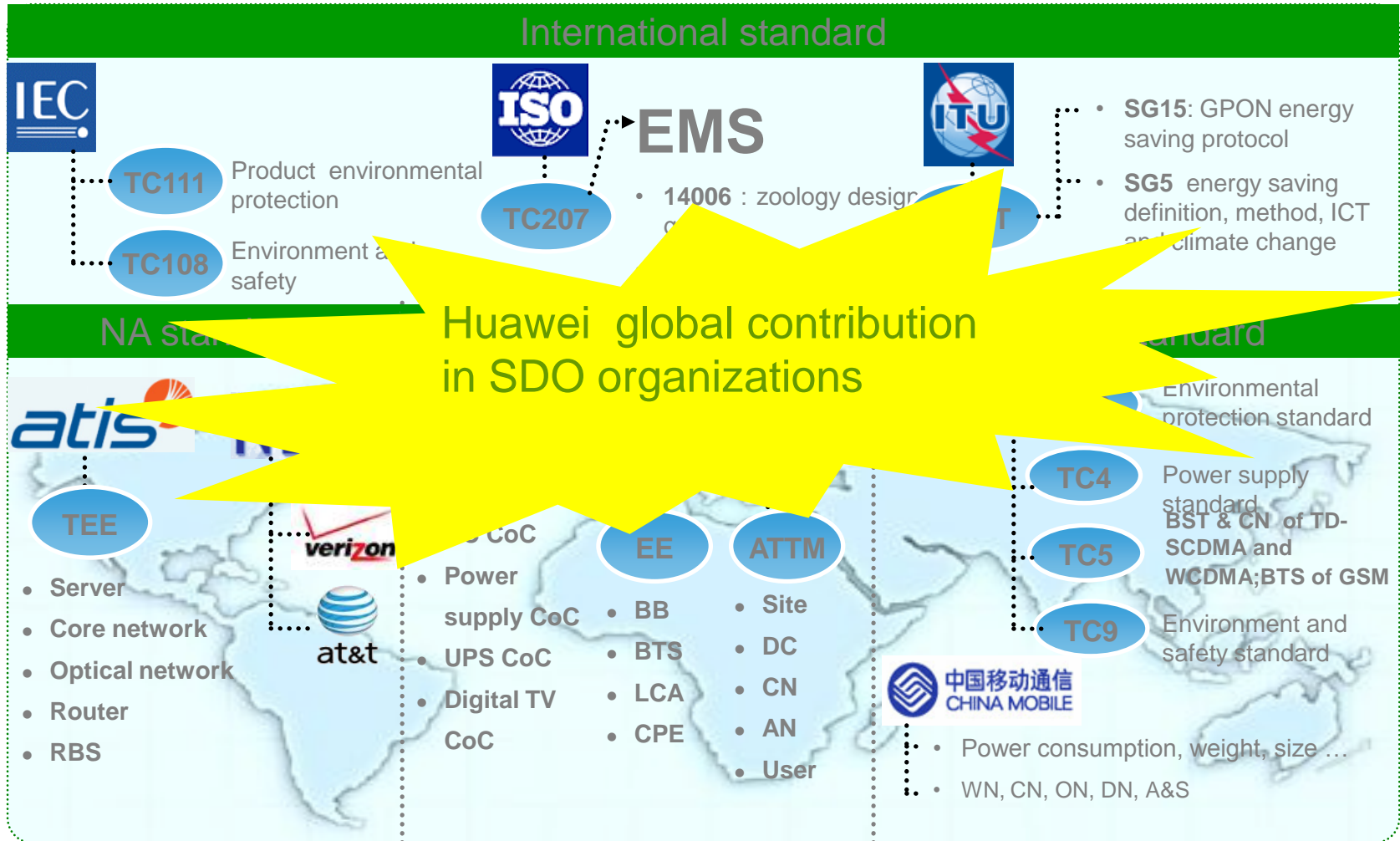## Cooling Solution for Different Scenarios

Ground-Coupled Heat Pump Systems

P

Air-con

Heat Exchanger

Thermal Electric Cooling

Free cooling

Battery cooling indoor cabinet

50%

60%

70%

60%

85%*

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The need of standardardization

IEC

TC111 — Product environmental protection

TC108 — Environment and safety

ISO

TC207

EMS

- **14006** : zoology design

ITU

- **SG15**: GPON energy saving protocol
- **SG5** energy saving definition, method, ICT and climate change

NA standard

atis

TEE
- Server
- Core network
- Optical network
- Router
- RBS

verizon

at&t

- CoC
- **Power supply CoC**
- **UPS CoC**
- **Digital TV CoC**

EE
- **BB**
- **BTS**
- **LCA**
- **CPE**

ATTM
- **Site**
- **DC**
- **CN**
- **AN**
- **User**

Environmental protection standard

TC4 — Power supply standard **BST & CN of TD-SCDMA and WCDMA;BTS of GSM**

TC5

TC9 — Environment and safety standard

中国移动通信 CHINA MOBILE

- Power consumption, weight, size …
- WN, CN, ON, DN, A&S

Huawei global contribution in SDO organizations

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Thank you

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