



Digital Technology Innovation for Carbon Neutrality 2050

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the Strategy for Technology Innovation for Carbon Neutrality

10 Key Technologies

- Solar/Wind

- Hydrogen

- Bioenergy

- Steel/cement

- Petrochemical

- Industrial process

- Transport efficiency

- Building efficiency

- Digitization

- Carbon Capture Utilization & Sequestration



Digital Technology Innovation



01

Efficient ICT Device and Infrastructure

02

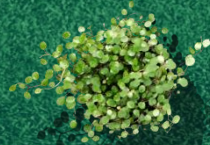
Energy Data Application

03

Distributed Energy Management

04

Next Generation Power Grid





Efficient ICT Device and Infrastructure



1) Energy harvesting and high-efficiency autonomous device technology

- Artificial IoT device

- Autonomous IoT device



2) High-efficiency communication/network technology

- 5G/6G Energy-efficient power amplifier and repeater technology

- Energy efficient wireless repeaters and base stations utilizing distributed resources

- CAPEX/OPEX Optimal Energy Grid Networking Technology
eg. By energy application and service, Security/QoS/Reliability/Availability



Efficient ICT Device and Infrastructure



3) Data center energy efficiency technology Development

- Hyper-automated autonomous PUE management technology
- Low-power, lightweight edge data center, server system technology
- Distributed edge data center control system technology
- Detailed & Separate PUE Measurement Index

2 Energy Data Application

1) Energy Data Hub Platform Technology

- Life cycle energy system data integration platform
- Energy data hub diversification analysis and collaborative analysis platform
- Integrated energy monitoring and supply and demand management system

2) Data Hub Utilization Technology

- Digital twin - AI energy service platform technology
- Industry energy data convergence and Energy data hub technology
- Development of a carbon-neutral digitalization maturity and autonomy evaluation model and technique

3 Distributed Energy Management

1) Distributed power supply operation stability and reliability securing technology

- Distributed power optimal management and operation
- Synchronous/asynchronous power generation optimal cooperative operation

2) Distributed Power Integration Technology

- Intelligent router technology
- Distributed electrification and operation technology
- Independent distributed power grid design and operation technology
- Integrated demand management and DC nano grid technology

4 Next Generation Power Grid

1) Active power grid construction/operation technology

- MVDC power distribution technology
- P2X microgrid technology
- Next-generation power distribution operation system

2) System flexibility improvement technology

- AI-based power grid operation/restore technology
- Technology to respond to large-scale renewable energy volatility
- Wide area power system monitoring and situation awareness technology
- System operation technology in preparation for two-way power transaction

Next Generation Power Grid



3) Large-capacity long-term energy storage technology

- Long-life secondary battery technology development
- Development of secondary battery for high-capacity ESS and new concept next-generation battery technology



Conclusion

