NTT Green Innovation toward 2040

~Reaching Carbon Neutrality in 2040~

IR DAY 2021　　2021/9/30

NTT Group's New Environment and Energy Vision

Addressing Environmental Issues

Improving Economic Growth

Paraconsistent

NTT Green Innovation toward 2040

Achieving Zero Environmental Impact and Improving Economic Growth at the Same Time

Reduction of Environmental Impact through Business Activities

×

Creation of Breakthrough Innovation

NTT is Innovating for a Sustainable Environment

NTT Green Innovation toward 2040

2030

80% Reduction in Greenhouse Gas Emissions (compared to FY2013)

Mobile (NTT DOCOMO) → **Carbon-Neutral**

Data Centers → **Carbon-Neutral**

2040

Carbon-Neutral

- Targets of the Above Reduction Objectives
  GHG Protocol: Scope 1 (our own direct greenhouse gas emissions) and Scope 2 (indirect emissions associated with the purchase of electricity, heat and steam that are provided by other companies)
  Mobile: 15 companies in the NTT DOCOMO Group (as of September 28, 2021)
- NTT Group's Reduction Target (Scope 1+2): Upgraded to SBT's 1.5℃ level

Towards the Achievement of Carbon Neutrality

- Lower energy consumption with **IOWN technologies:** Reduce greenhouse gas emissions **by 45%**(1) 1
- **Increased use of renewable energy:** Reduce greenhouse gas emissions **by 45%**(2) 2
- **Introduce an internal carbon pricing** system (FY2022) 3

(Change to a procurement system based on carbon prices, etc.)

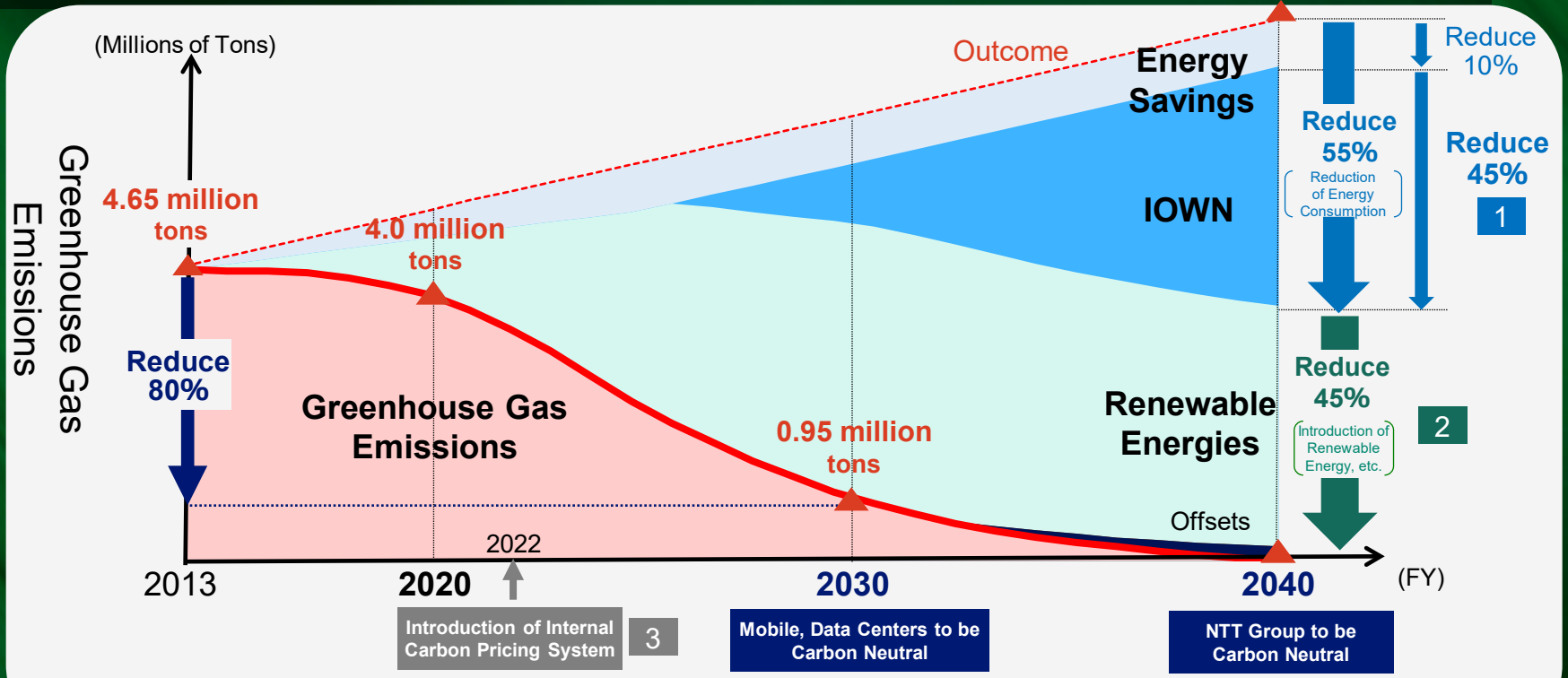


Illustration of NTT Group Greenhouse Gas Emission(3) Reductions (Domestic + Overseas)

(1) Estimated Reduction of Energy Consumption through the Introduction of IOWN (Comparison to Outcome) → FY2030: (2.0) billion kWh ((15)%); FY2040: (7.0) billion kWh ((45)%)
Percentage of Introduction of IOWN (Photonics-electronics Convergence Technologies, etc.) out of Total Energy Volume → FY2030: 15%; FY2040: 45%

(2) Estimated Introduction of Renewable Energy (including actual renewable energy through Non-Fossil Fuel Certificates) → FY2020: 1.0 billion kWh; FY2030 to FY2040: around 7.0 billion kWh
The introduction of renewable energy will have the optimal types of energy determined on the basis of each country's energy composition, etc. Approximately half of the domestic renewable energy usage is anticipated to be from energy sources owned by NTT (FY2030).

(3) GHG Protocol: for Scope 1 and 2

Transition of Energy Consumption

Energy Consumption Outcome: will be approximately doubled by FY2040

- **Approximately half of energy consumption will be reduced by introducing IOWN** 1
- **Renewable energies will be introduced for the other approximate half (1)** 2

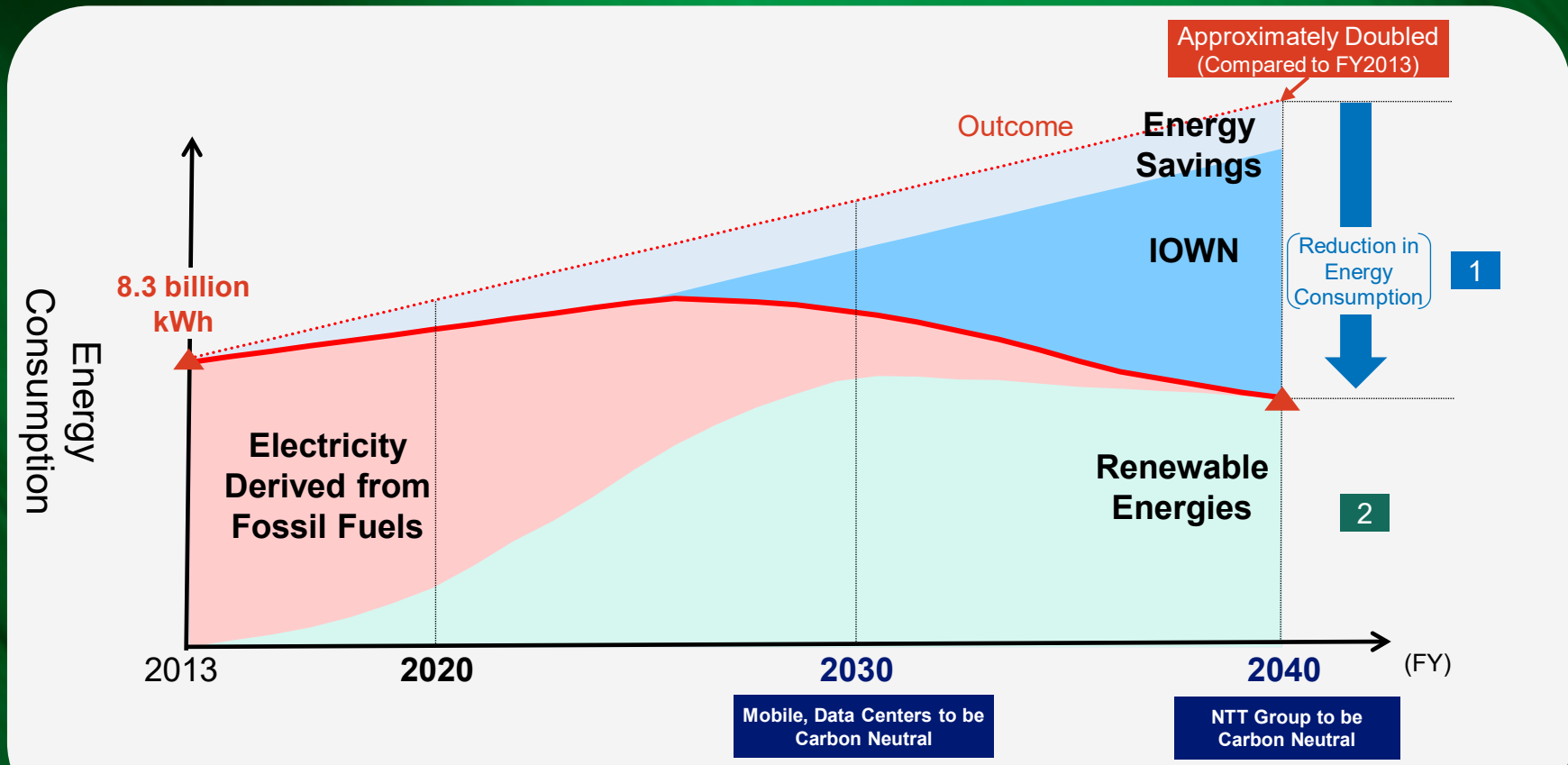


Illustration of Transition Trends in NTT Group's Energy Consumption(2) (Domestic + Overseas)

(1) Estimated Introduction of Renewable Energy (including actual renewable energy through Non-Fossil Fuel Certificates) → FY2020: 1.0 billion kWh; FY2030 to FY2040: around 7.0 billion kWh
The introduction of renewable energy will have the optimal types of energy determined on the basis of each country's energy composition, etc. Approximately half of the domestic renewable energy usage is anticipated to be from energy sources owned by NTT (FY2030).

(2) Energy consumption used in calculating greenhouse gas emissions on the previous page.

NTT's Contributions to Reducing Society's Environmental Impact

- **Expanding adoption of IOWN technologies from the telecommunications field into other industries**
  - Contribute to the **reduction of greenhouse gases**(1) in Japan and the world
    - Japan ⇒ Reductions: over 0.02 billion tons; Reduction Rate: over 4%
    - World ⇒ Reductions: over 0.3 billion tons; Reduction Rate: over 2%
  - Further **accelerate DX**(2) (e.g. digital twin computing)
  - Promote greenhouse gas reduction across the entire supply chain

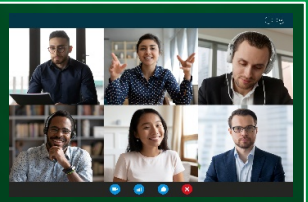
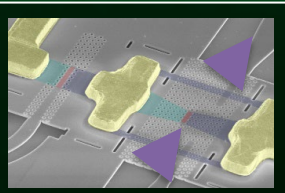
- **Providing new services that contribute to carbon neutrality**

- **Strengthening development and expanding introduction of NTT Group's Renewable Energy Plan**
  - Promotion of local energy production for local consumption

(1) Conditions for Reduction Estimates
- Target: beginning in FY2040
- Adoption Rate of IOWN for Electric Semiconductors etc. (Photonics-electronics Convergence Technologies, etc.): approximately 50%
- CO_2 Emission Factor: Japan・・・0.185kg-CO_2/kWh; World・・・0.130kg-CO_2/kWh

(2) CO_2 Reduction Potential: approximately 50% (2030; Target: World, calculated based on GeSI and IEA estimates)

(Reference) NTT's Main Initiatives

	Reduction of Environmental Impact through Business Activities	Creation of Breakthrough Innovation
Green by ICT Contributions to Reducing Society's Environmental Impact	➢ **Reducing Society's Environmental Impact**  ✓ Further acceleration of DX and promotion of Remote World ✓ Promotion of regional urban development and the introduction of new social infrastructure development ✓ Promotion of greenhouse gas reduction across the entire supply chain ✓ Provision of new services that contribute to carbon neutrality ✓ Contribute to local production and consumption of energy, through smart grids based on battery farms ✓ Expansion of green electricity retail	➢ **Creation of Innovative Environmental Energy Technology**  ✓ Use of 4D digital platform for future predictions / optimal use of urban assets* ✓ Optimal operation of fusion reactors (ITER/QST) ✓ Lightning charging ✓ Applied genome-editing technology for "Green" (Collaboration) * Energy, transportation, logistics, etc.
Green of ICT Reducing NTT's Own Environmental Impact	➢ **Introduction of IOWN and Expansion of Renewable Energy**  ✓ Reduction of energy consumption through the introduction of IOWN ✓ Expansion of the development and usage of renewable energy ✓ Introduction of an internal carbon pricing system ✓ Issuance of green bonds	➢ **Achievement of Ultra-Low Power Consumption**  ✓ Photonics-electronics Convergence Technologies (IOWN All Photonic Network) ➢ **Creation of Decentralized Technology** ✓ Photonic disaggregated computing ✓ Space integrated computing network

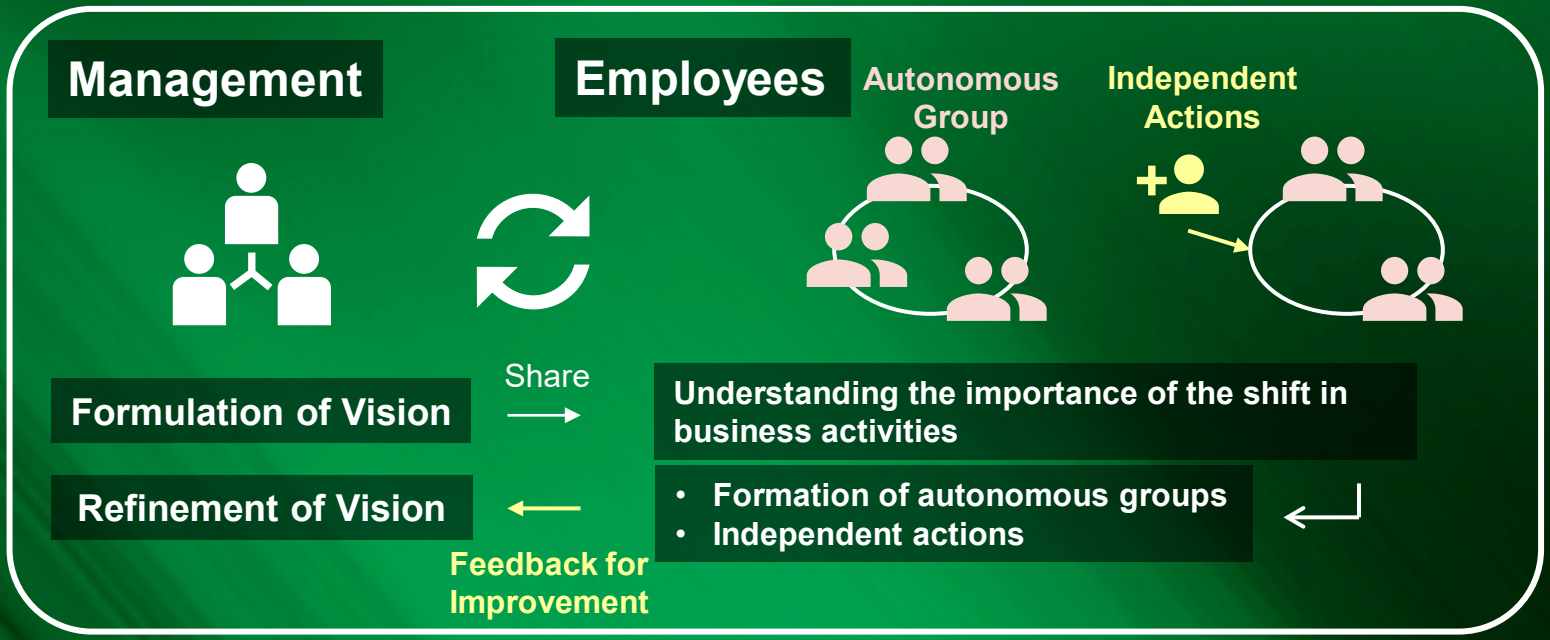
(Reference) Shift Our Business into Decarbonized and Circular Style

Resource/Energy Consumption-Based Business Style

Decarbonized Business Style

Circular Business Style

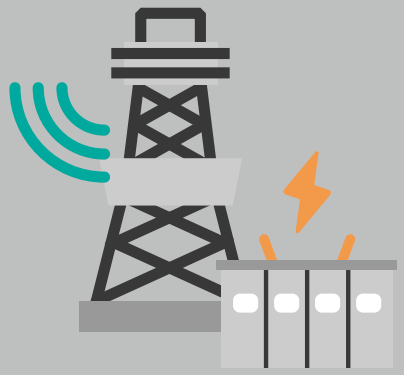
Comprehensive Initiatives



Toward realizing a carbon neutral society

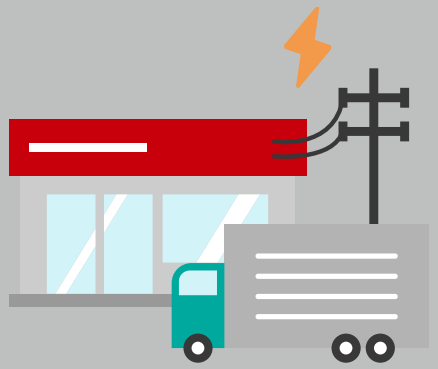
NTT docomo

The power consumed by a smartphone is surprisingly large.



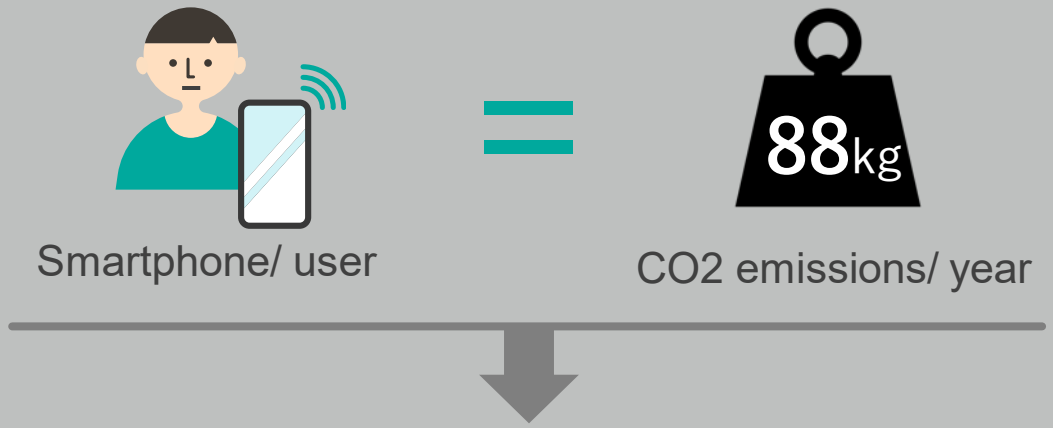
Base station operation

Battery charging



Manufacturing and delivering to sales locations, etc.

The telecommunications industry as a whole emits vast amounts of CO2.



Some 180 million mobile devices are currently used in Japan.

The total CO2 emission/ year is equivalent to what is produced by

10 Million

*Based on the amount of CO2 emitted by a private family car in one year from driving.

The telecommunications industry as a whole emits vast amounts of CO2.

Smartphone/ user

CO2 emissions/ year

The telecommunications industry has a great responsibility.

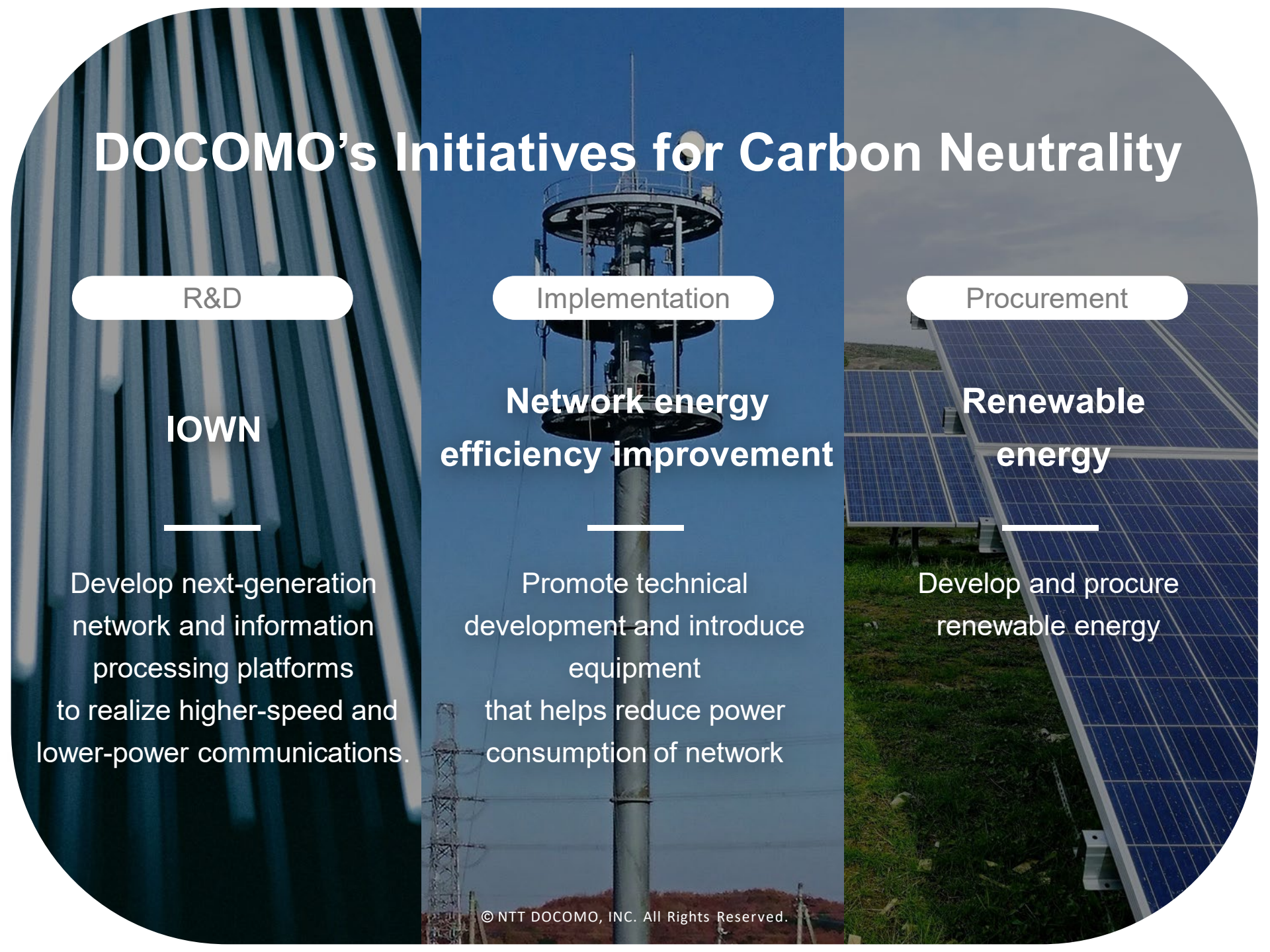
Some 180 million mobile devices are currently used in Japan.
The total CO2 emission/ year is equivalent to what is produced by

10 Million 

*Based on the amount of CO2 emitted by a private family car in one year from driving.

DOCOMO will tackle CO2 emission reduction by applying cutting-edge technologies for improved energy efficiency and procuring clean renewable energies.

DOCOMO’s Initiatives for Carbon Neutrality



R&D

IOWN

Develop next-generation network and information processing platforms to realize higher-speed and lower-power communications.

Implementation

Network energy efficiency improvement

Promote technical development and introduce equipment that helps reduce power consumption of network

Procurement

Renewable energy

Develop and procure renewable energy

Network energy efficiency improvement

- Enhancement of base station sleep function
- Rollout of 5G low-power consumption equipment, etc.[1]
- Equipment integration through density enhancement of base station equipment (High-density BDE*)[2]
- Direct power supply from high-voltage direct-current equipment to reduce transmission loss
- Active rollout of intelligent air conditioning control system

*1 Base station Digital processing Equipment

Active use of renewable energies

In cooperation with NTT Anode Energy Corporation, DOCOMO procures renewable energy from various resources including photovoltaic power plants.

*The images above are for illustrative purposes only and the actual service/product may look different.

Initiatives for carbon neutrality of value chain

docomo Shop

Promotion of green energy

Promoting green initiatives through installation of solar panels at docomo Shop, etc.

Supplier

CO2 emissions reduction

Actively pursuing the procurement of eco-friendly products from suppliers of mobile devices and communications equipment, etc.

DOCOMO will achieve carbon neutrality by 2030

*Reduction of CO2 emissions generated through our business activities (covering scope 1 & 2 of GHG protocols)
*Including the amount of real renewable energy through Non-Fossil Certificates (NFCs) for renewable energy.

グリーン5G

Green 5G

High-Speed and Green 5G

5G offers improved energy efficiency compared to previous generations.

On top of it, DOCOMO's 5G is powered by green energy.

Let's start doing good for our planet with Green 5G !

*The images above are for illustrative purposes only and the actual service/product may look different.

ドコモでんき
Green

docomo Denki Green

Electricity you use in everyday life to be derived 100% from green energy

Because electricity is an essential necessity for our lives, we have been thinking about how we can offer an environment-friendly solution that can serve your daily needs and lessen the impacts on the earth.

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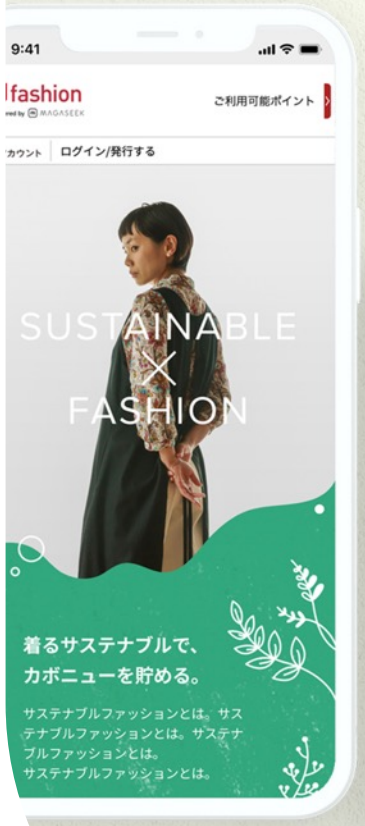
Earth-friendly initiatives launched/in the pipeline!

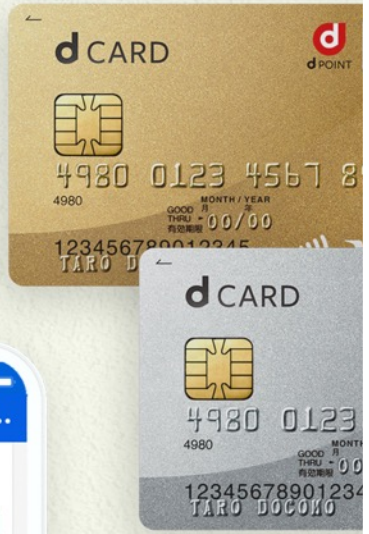
Sustainable x d fashion



ESG themes added to point investment service

THEO GREEN

Recycled material x d CARD



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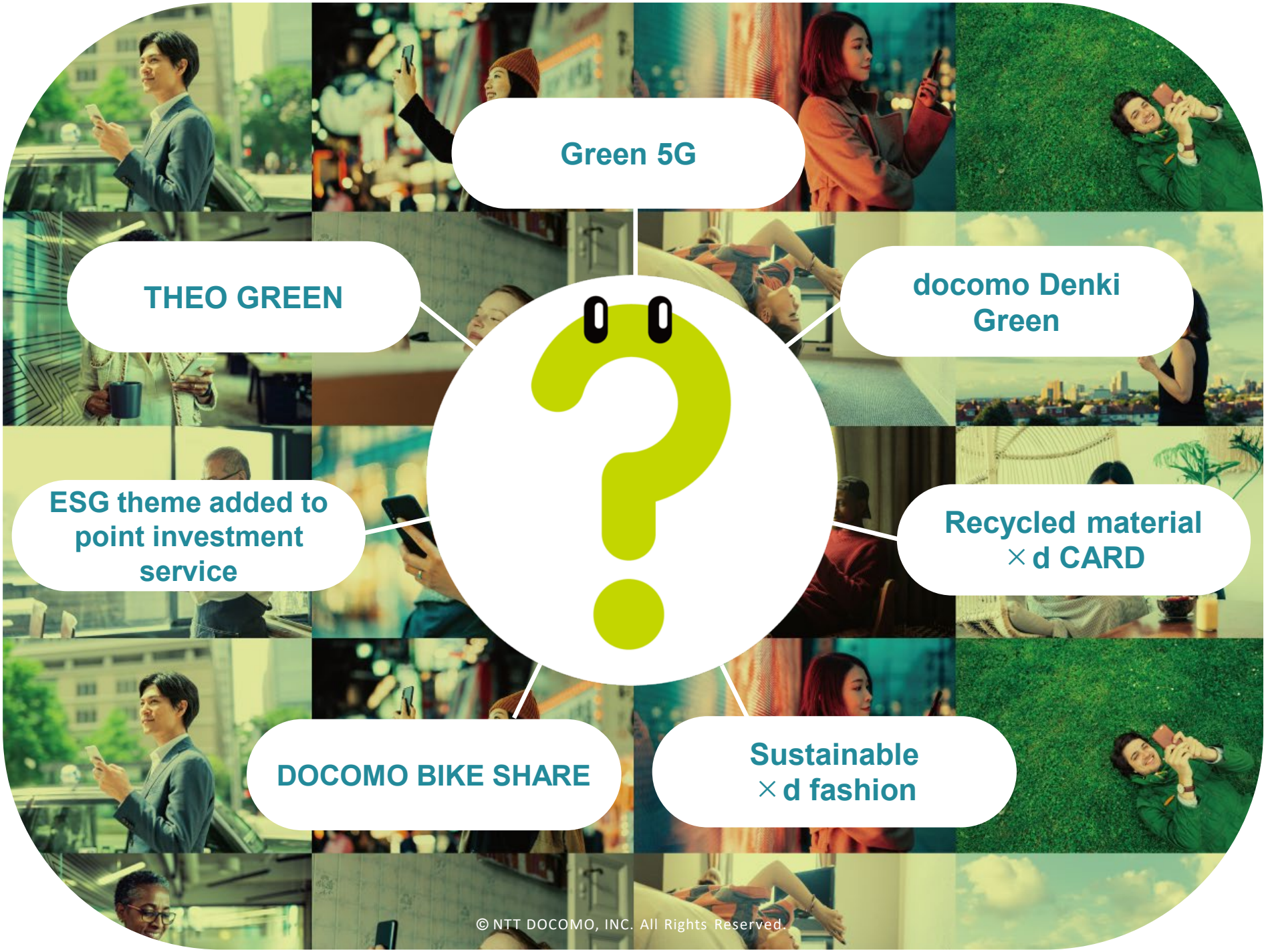
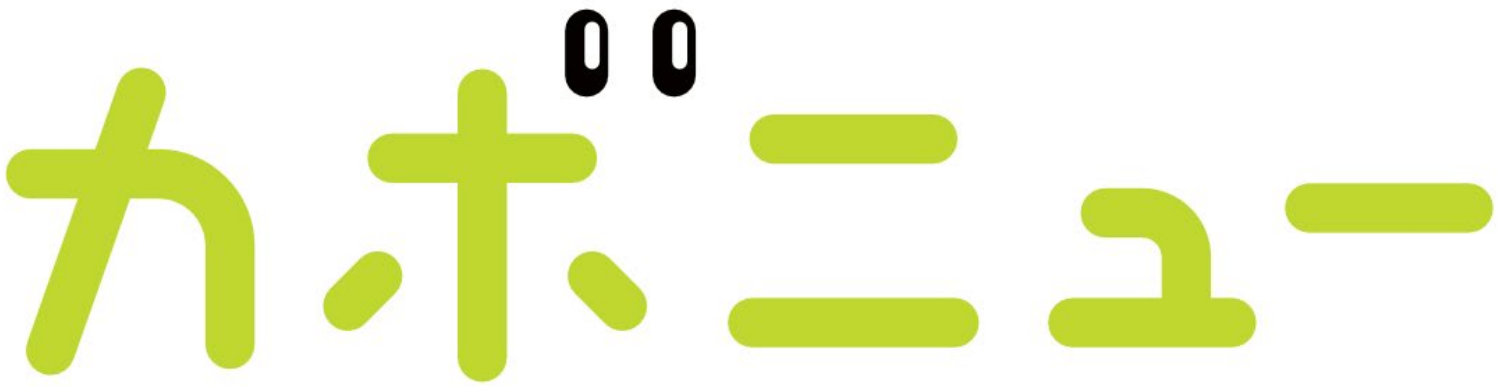
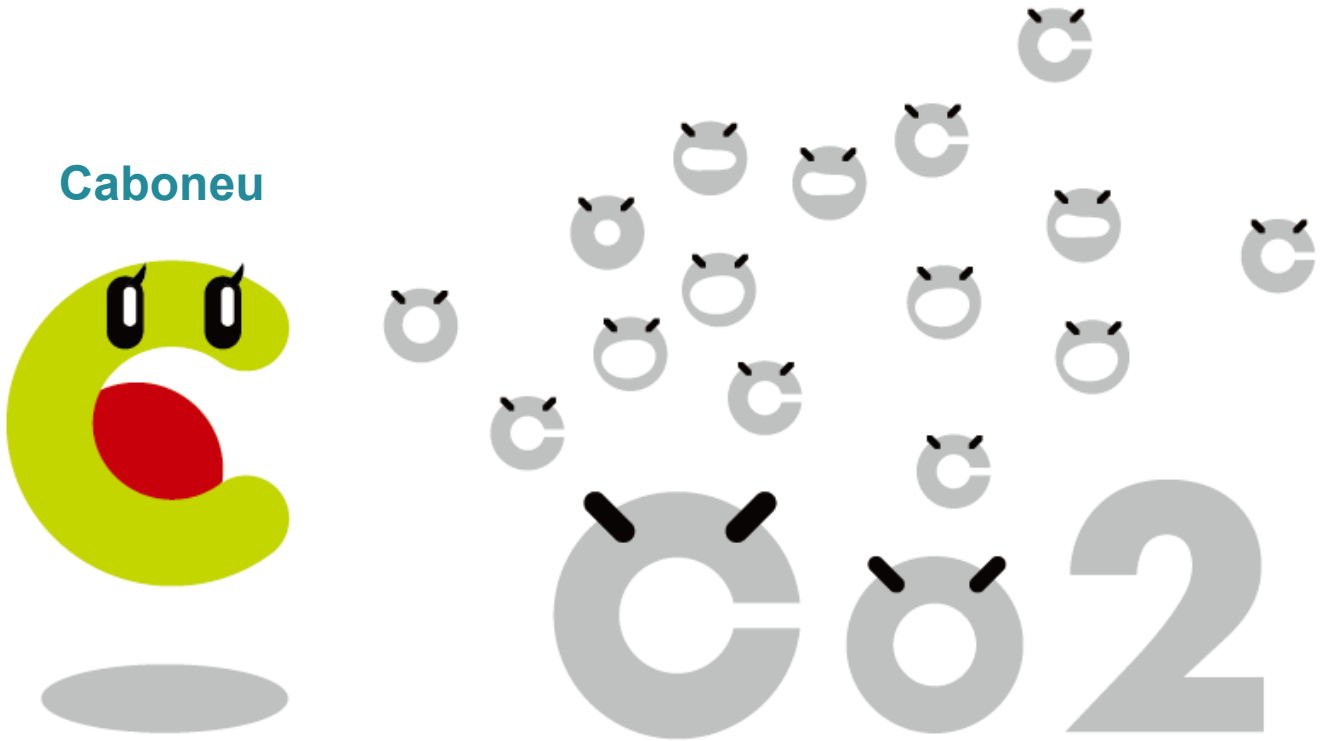
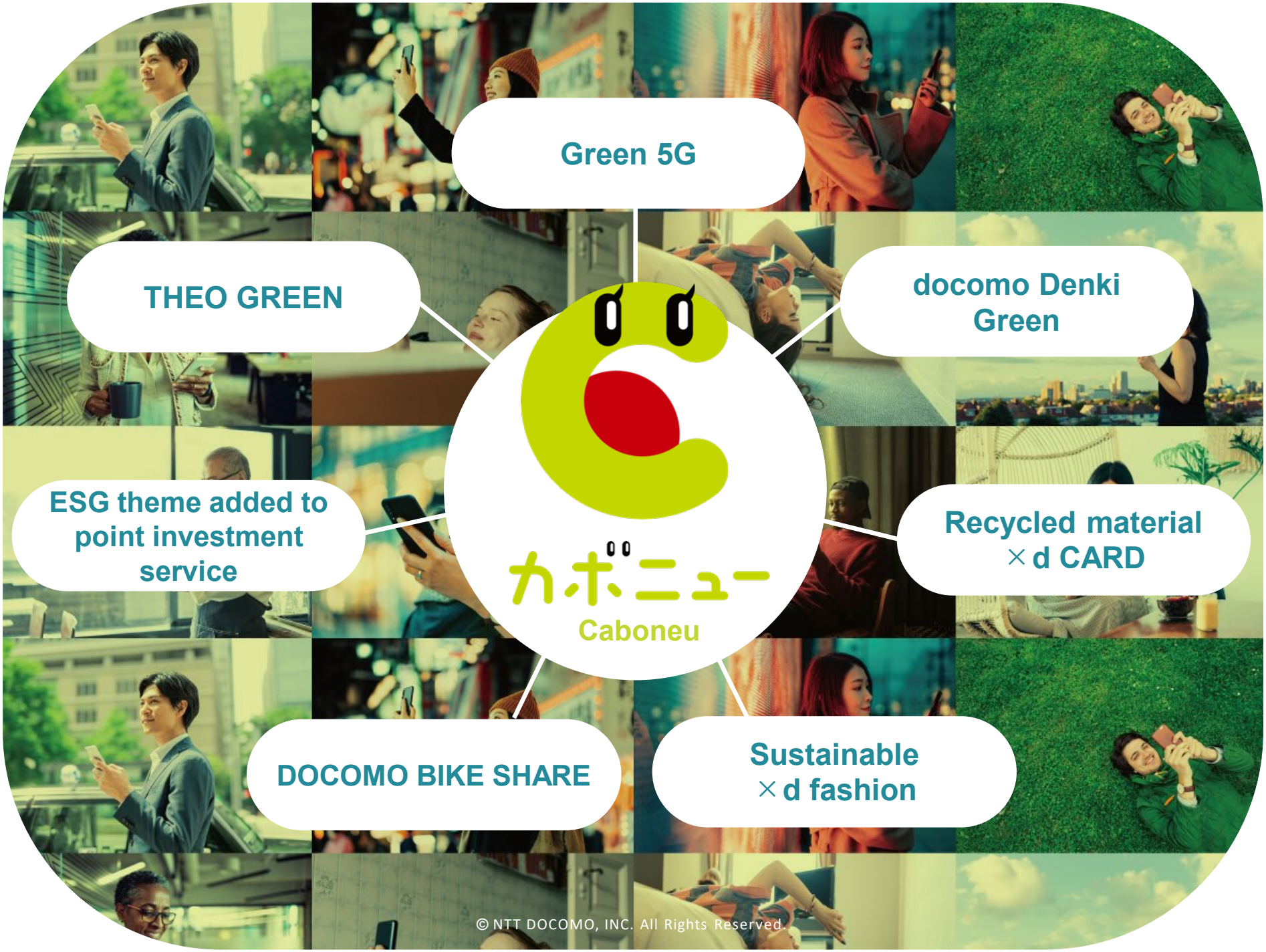


Play kind for our planet. “Caboneu”



Created a new character, “Caboneu,” who eats CO2 to communicate our carbon neutrality initiatives in an easy-to-understand way





Caboneu Platform

A platform that connects
you with DOCOMO and
our partners for playful
carbon neutral actions
and visualizes your contribution.

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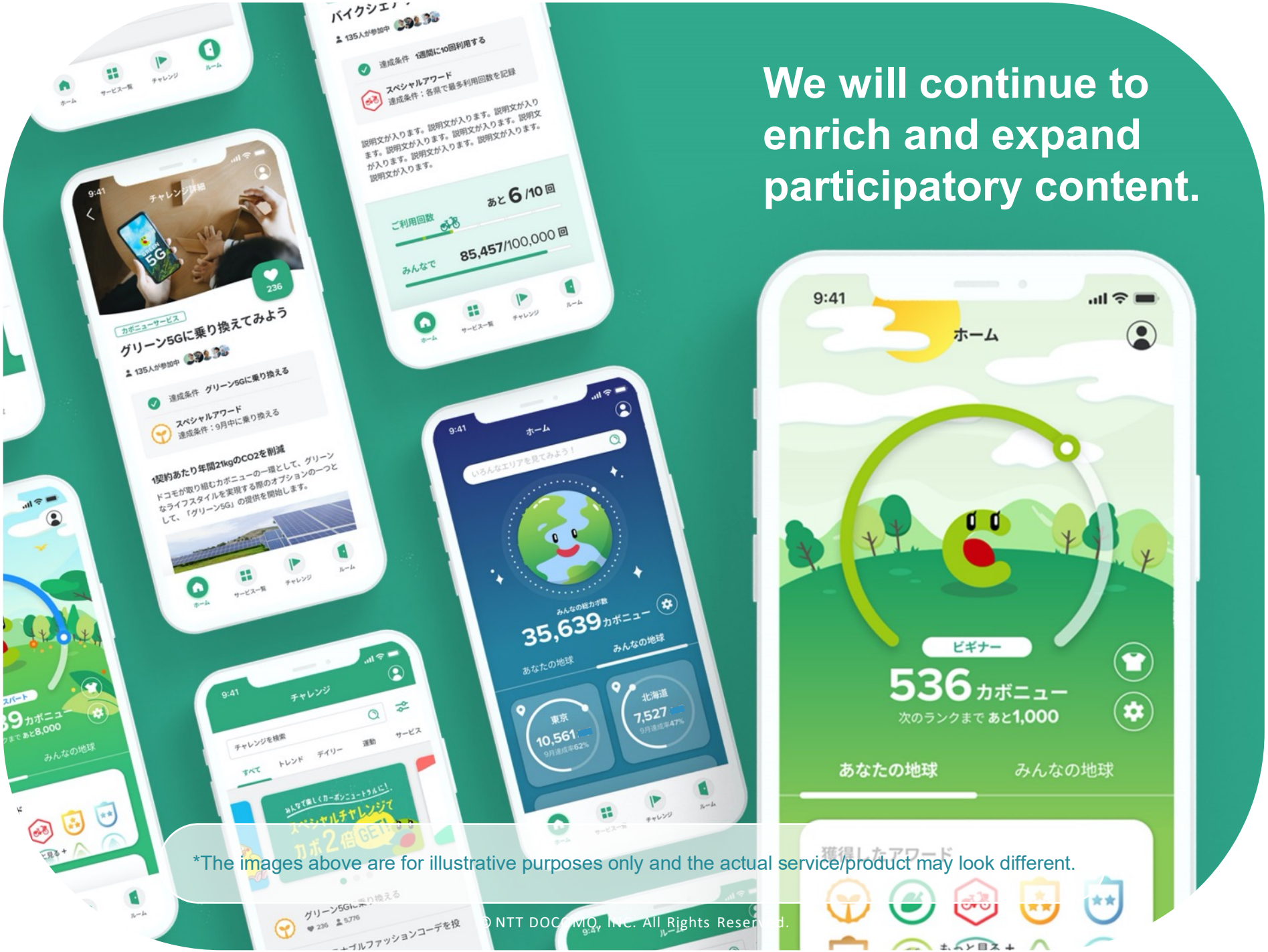

Caboneu cycle to save our planet together

Changing worlds with you.

Saving
our planet
with you.

appendix

THEO GREEN

Choose THEO GREEN to support green companies

Support companies that will build our future by selecting stocks of ESG-orientated corporations that are friendly to both our planet and society!!

Planned for launch: September 28, 2021

＊THEO GREEN is a feature that can be accessed by users of THEO+docomo service. With THEO Green, of the three functional portfolios provided by THEO, the Growth Portfolio will be composed primarily of ESG-related ETFs. Customers can switch to THEO GREEN at their own discretion (up to 10 times a year.) THEO+docomo is a service provided by Money Design Co., Ltd. in collaboration with NTT DOCOMO Inc., and NTT DOCOMO handles THEO+docomo as an intermediary of financial instruments.

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ESG themes added to point investment service

Start investing for the future using d POINTs

Invest in ESG-concious themes for earth-friendly and smart fund management

Planned for launch:
Mid- October 2021

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Sustainable × dfashion

The standard “going forward”

Let’s start from what we can do,

e.g., fashion suggestions that incorporate “sustainability” into our everyday life.

Launch:
September 27, 2021

*The images above are for illustrative purposes only and the actual service/product may look different.

Recycled material × d CARD

A new d CARD made of eco-friendly materials

By using recycled material sourced from waste plastic for d CARDs, we will reduce CO2 emissions generated in the manufacturing process

Planned for launch: 2023 or later

*The images above are for illustrative purposes only and the actual service/product may look different.

Towards the Expansion of Renewable Energies

September 30, 2021

NTT Anode Energy

What We Have Been Working On for Decarbonization

◆ Proactively developing solutions for decarbonization, not just for NTT Group companies, but for customers as well

✓ Providing customers with renewable energies that are generated at NTT Group's renewable energy power plants

NTT Group's Renewable Energy Power Plants

Providing Renewable Energies

Customers Striving for Decarbonization

- Furukawa Electric Co., Ltd. (from April 2021)
- Seven & i Holdings Co., Ltd. (from March 2021)
- Daiichi Sankyo Chemical Pharma Co., Ltd. (from December 2020)
- Kumahira Seisakusho (from November 2020)

✓ Expanded the offering "EnneGreen®*"

*Service of Ennet to support CO2 reduction of customers as well as procurement of renewable energies

Ennet
Innovating with ICT

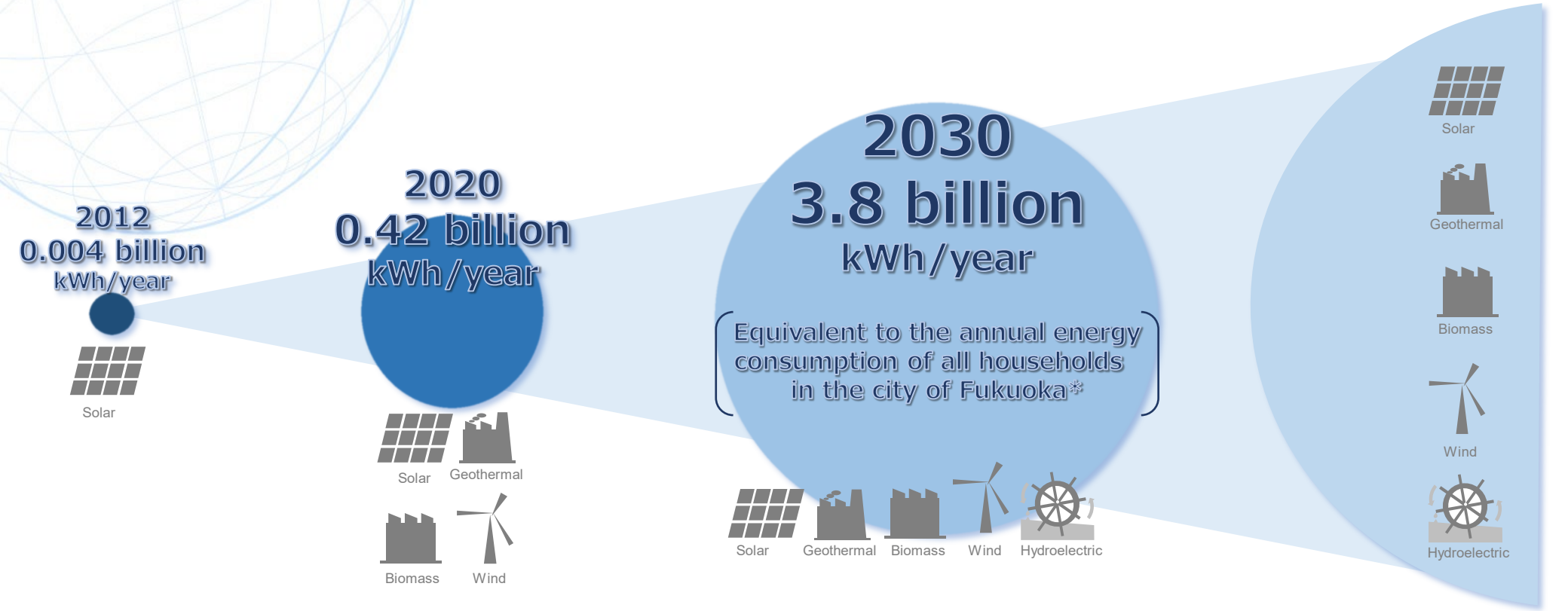
Launched in 2017
0.001 billion kWh/year
(one contract)

2019
0.1 billion kWh/year
(approx. 900 contracts)

July 2021
1.6 billion kWh/year
(approx. 2,600 contracts)

Initiatives for Renewable Energy Power Plants

- NTT Group owns various telecommunications facilities all over Japan, and consumes approximately 1% of Japan's total electricity
- Will further promote the development of renewable energy power plants to utilize not only for customers, but also for NTT Group's decarbonization

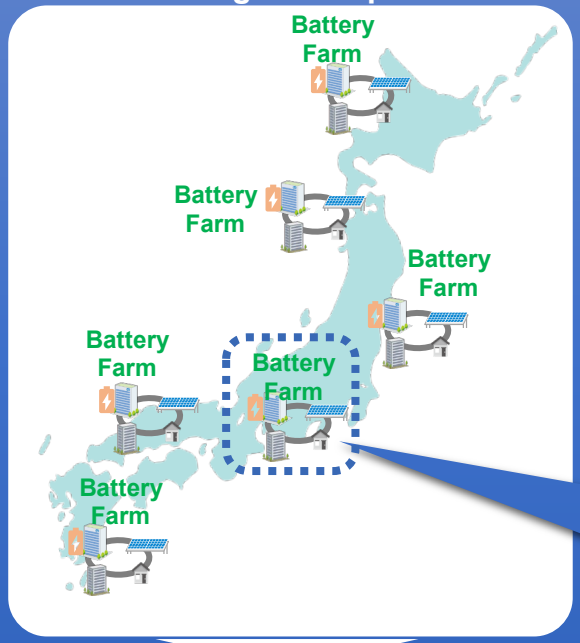


* Company estimate based on the Ministry of the Environment's "CO2 Emission Fact-Finding Survey of the Household Sector in 2019 (Confirmed Value)"

Towards the Local Generation for Local Consumption of Renewable Energies

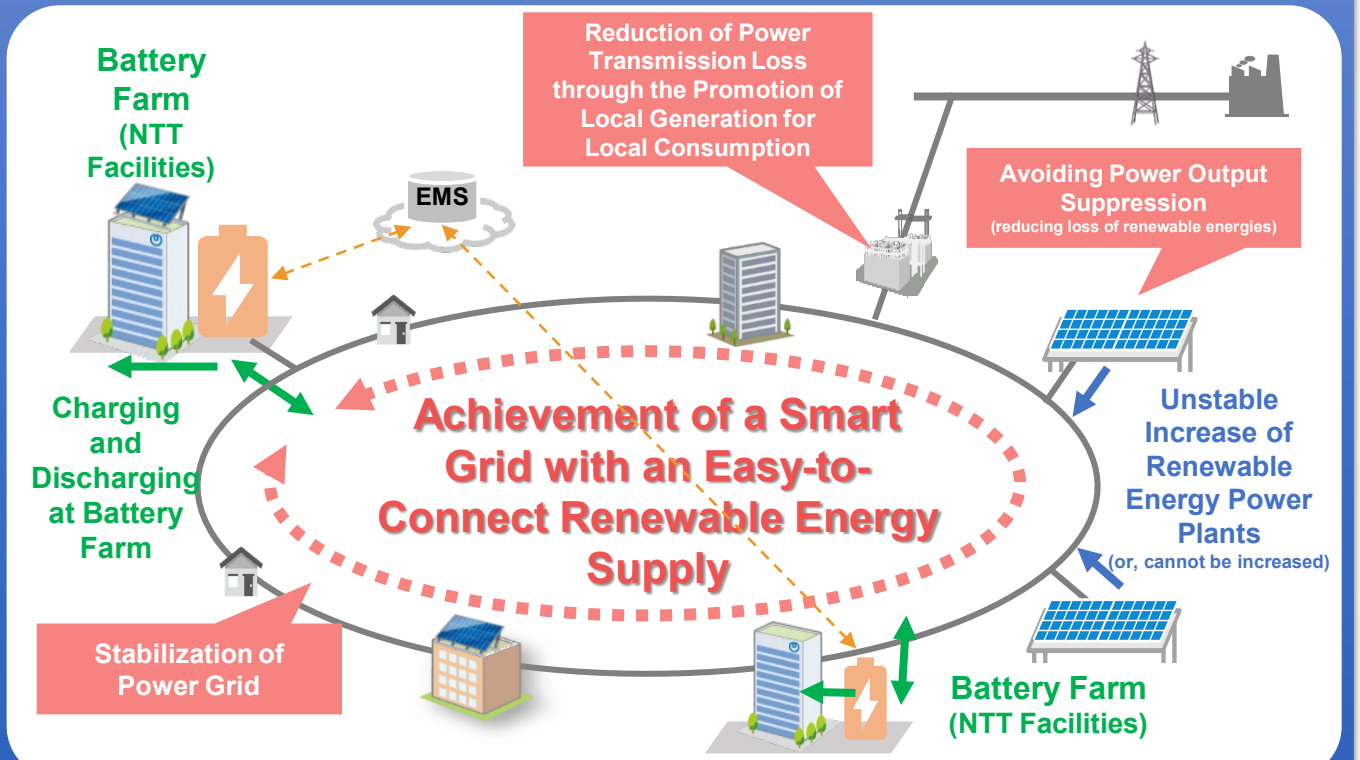
- Contribute to the spread and expansion of renewable energy power plants that help with the local generation for local consumption of energy, by leveraging NTT facilities that are located throughout Japan as “Battery Farms”
- Aim to achieve a smart grid together with partners by reducing social costs (reducing power transmission loss, etc.) through the promotion of local generation for local consumption

Battery Farms Located throughout Japan



Promotion of Local Generation for Local Consumption; Reduction of Social Costs

Illustration of Usage of “Battery Farms”



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* "E" in this material represents that the figure is a plan or projection for operation.

** "FY" in this material indicates the fiscal year ending March 31 of the succeeding year.

*** "1Q" in this material represents the three-month period beginning on April 1 and ending on June 30, "2Q" represents the six-month period beginning on April 1 and ending on September 30, "3Q" represents the nine-month period beginning on April 1 and ending on December 31, and "4Q" represents the twelve-month period beginning on April 1 and ending on March 31.