

# NEC's Environmental Management

NEC Group's environmental Client Zero Strategy that contributes to the green transformation of our customers and society

February 17, 2025

Noritaka Taguma

Corporate Executive Vice President and CSCO (Executive Officer)

NEC Corporation

# Noritaka Taguma

- October 1965 Born in Narita City, Chiba Prefecture
- April 1988 Joined NEC Corporation, assigned to the Radio Wave Application Systems Division  
Contributed to land, sea and air defense initiatives and new business development such as the ETC\*1 project
- April 2019 Executive Vice President, Public Infrastructure Business Unit
- April 2022 Executive Vice President and CPO\*2  
President, NEC Platforms, Ltd.
- April 2024 Corporate Executive Vice President and CSCO\*3  
(Executive Officer) (to present)

\*1 Electronic Toll Collection system

\*2 Chief Product Officer

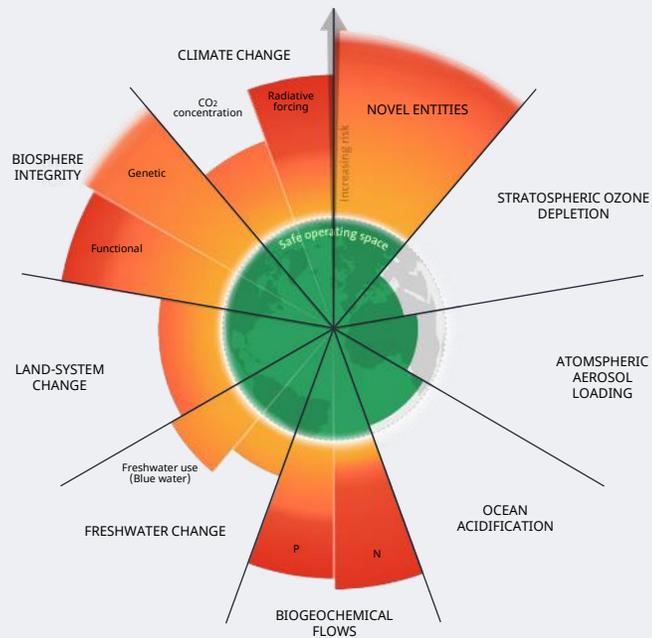
\*3 Chief Supply Chain Officer



# Intensification of Environmental Issues and Impact on Business Management

Human activity is placing a strain on Earth's carrying capacity, and environmental issues are escalating. According to a survey by the World Economic Forum, environmental risks have a significant impact on corporate management.

## Planetary Boundaries



Excerpt from the 2023 update to the Planetary Boundaries

## Global Risks Ranked by Severity

### Short-term (Next 2 years)

- 1st Misinformation and disinformation
- 2nd Extreme weather events
- 3rd State-based armed conflict
- 4th Societal polarization
- 5th Cyber espionage and warfare
- 6th Pollution
- 7th Inequality
- 8th Involuntary migration or displacement
- 9th Geocentric confrontation
- 10th Erosion of human rights and / or civic freedoms

■ Environmental ■ Technological ■ Geopolitical ■ Societal

### Long-term (Next 10 years)

- 1st Extreme weather events
- 2nd Biodiversity loss and ecosystem collapse
- 3rd Critical change to Earth systems
- 4th Natural resource shortages
- 5th Misinformation and disinformation
- 6th Adverse outcomes of AI technologies
- 7th Inequality
- 8th Societal polarization
- 9th Cyber espionage and warfare
- 10th Pollution

Based on excerpts from the Global Risks Report 2025 by the World Economic Forum, compiled by our company

# The Complexity of Environmental Issues

Environmental problems are unevenly distributed and unequal, and it is difficult to demonstrate causality in a logical and quantitative way, making it difficult to act. For this reason, it is important to make use of ICT for the visualization and for the action.

## Regional Disparities

Conflicting views at conferences like COP between developing and developed countries



## Intergenerational Inequality

Responsibility to Future Generations



# The Four Key Focus Areas for Environmental Initiatives



## Why NEC

NEC established a specialized environmental organization in 1970 and began implementing environmental measures for its own operations. NEC adds value by using ICT in all parts of the world, from the ocean floor to outer space. NEC is also contributing to the visualization and countermeasures for environmental issues.

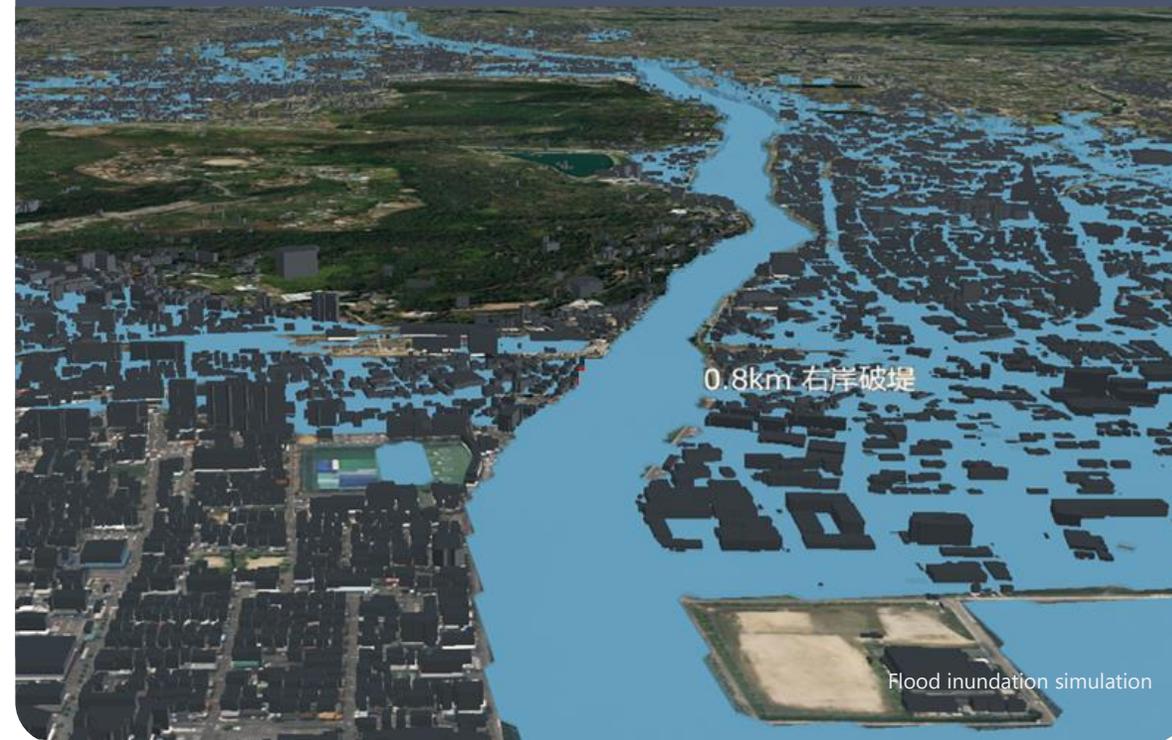
### Environmental Solutions Using Satellite Technology

Visualizing CO<sub>2</sub> levels with the TANSO Satellite and monitoring illegal logging areas in the Amazon with the DAICHI Satellite



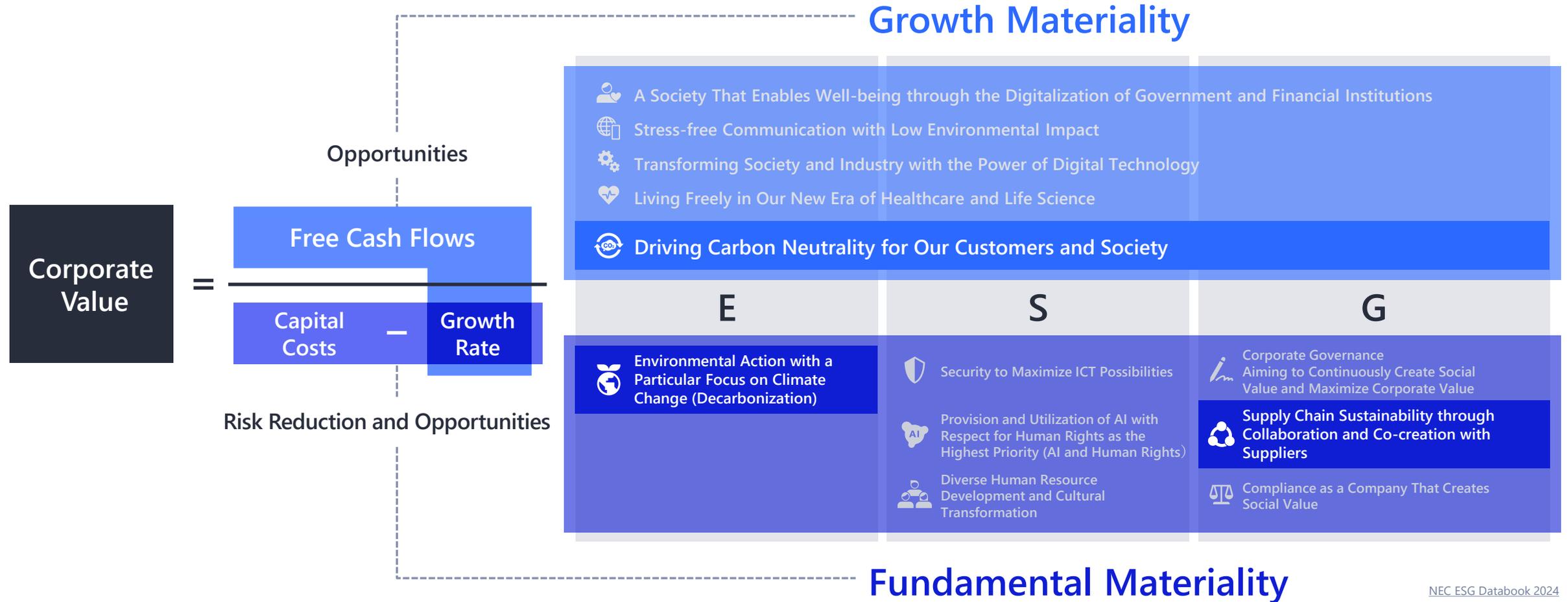
### Disaster Prevention Solutions for Safeguarding Communities

Contributing to the visualization of natural disasters, public awareness, and the implementation of measures by local governments



# Integrating financial and non-financial aspects in management for sustainability

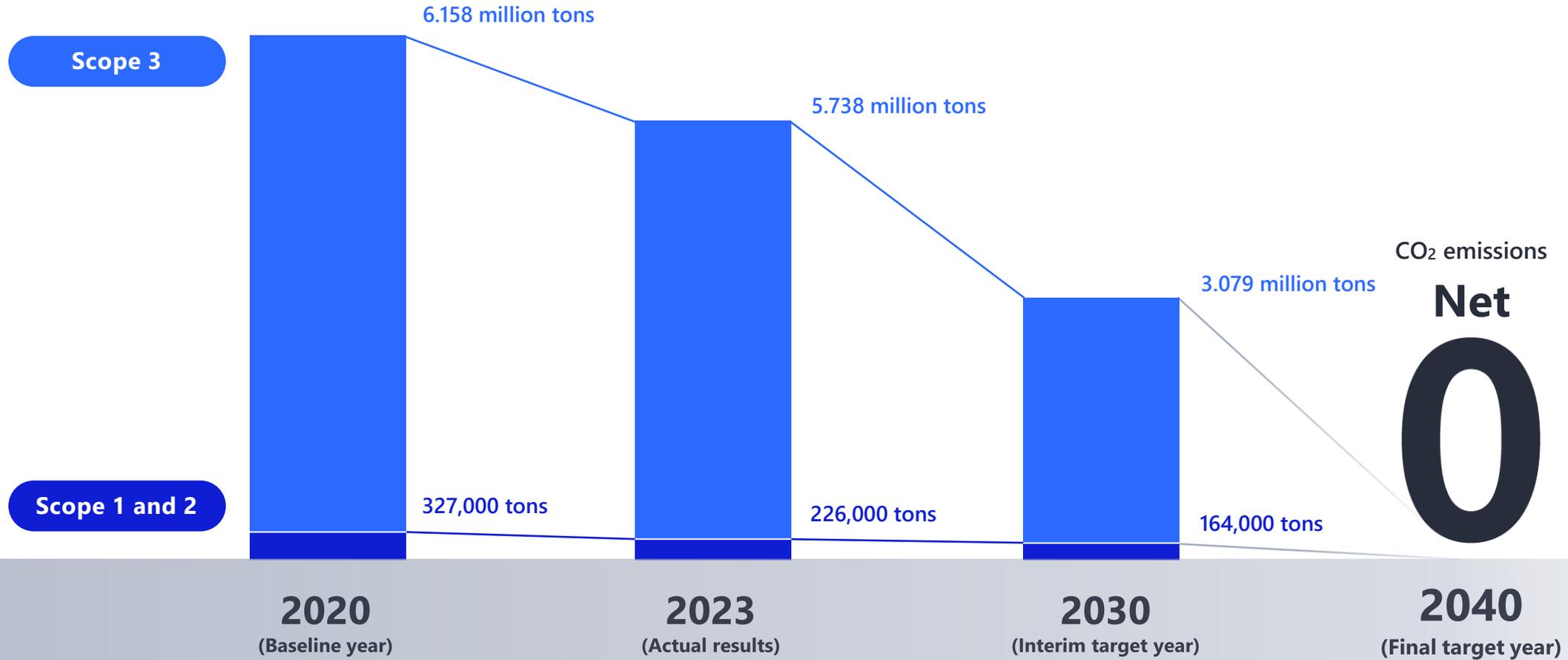
Environmental initiatives play a crucial role in both mitigating risks and creating opportunities. By leveraging our strong track record, we unlock new business opportunities and drive corporate value.



NEC ESG Databook 2024

# Our Environmental Initiatives

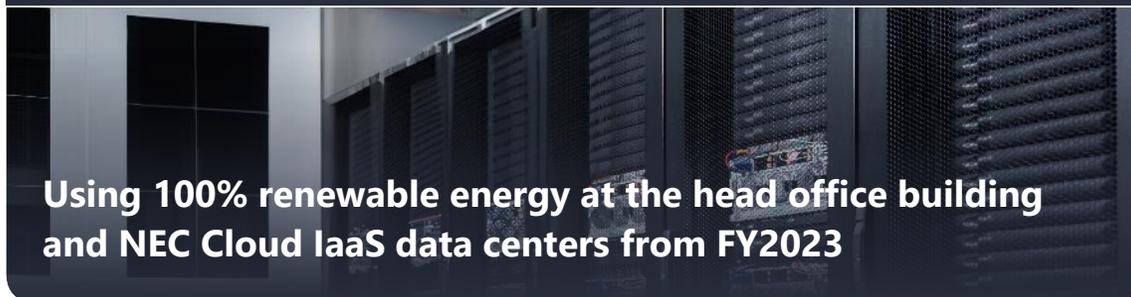
## NEC Group's Carbon Neutrality Target for 2040



# NEC Group's Environmental Initiatives

## Scope 1 and 2

Expanding Renewable Energy to Achieve Targets



## Scope 3

Driving Supplier Engagement to Achieve Emissions Reduction

Working together with suppliers to achieve our goals

In FY2025, three of our suppliers are expected to obtain SBT certification

Steps to advancing CO<sub>2</sub> emissions reduction initiatives



Collaborating with Sumitomo Mitsui Banking Corporation to support CO<sub>2</sub> reduction across the supply chain

Reflecting efforts to reduce costs through data collaboration, financial support, etc.



Financial function, customer base, and more

Orchestrating a brighter world

Track record in carbon neutral initiatives

NEC signa basic agreement contract with Sumitomo Mitsui Banking Corporation for collaboration in carbon neutral business (in Japanese only)

# Environmental Considerations for Products and Services

## Eco Symbol Star



### Creation and Promotion of Environmentally Friendly Top-runner Products

- Fulfills strict criteria for being a top-runner product in environmental terms
- Eco-Symbol Star Criteria (must meet at least one of the following)
  - Climate change mitigation: 50% CO<sub>2</sub> reduction compared to conventional products
  - Technological superiority: Contributing significantly to environmental impact reduction through NEC's proprietary technologies
  - Resource circulation: Over 80% bioplastic content
  - Recognized with internal and external environmental awards

## Eco Symbol



### Product Environmental Performance Improvement

- Eco-Symbol Criteria (must meet the following multiple criteria)
  - Life Cycle Thinking (visualization of power consumption/CO<sub>2</sub> emissions)
  - Prevention of global warming (reduction of power consumption in comparison with conventional products, etc.)
  - Greening (management of chemicals in products, etc.)
  - Resource recycling (use of eco-plastics, etc.)
  - Information disclosure (disclosure of power consumption reduction methods)
  - Competitive advantage (acquired eco-label other than Type II)

## Eco Products

### Basic Environmental Requirements

- Must undergo product assessment
- Must meet the Eco Product standards  
(Environmental impact considerations, energy-efficient design, RoHS compliance, resource conservation, ease of disassembly, long-term usability, etc.)

# Eco-friendly Data Centers

Developing green data centers using proprietary air conditioning technology and 100% renewable energy. For high performance computing (HPC) environments, we now accept water-cooled servers.

## Realizing Data Centers Powered by 100% Renewable Energy

We provide non-fossil credits to customers who request them, based on the amount of electricity they use, to support Scope 3 emissions reductions.

NEC Kanagawa Data Center  
(Phase Two Building)



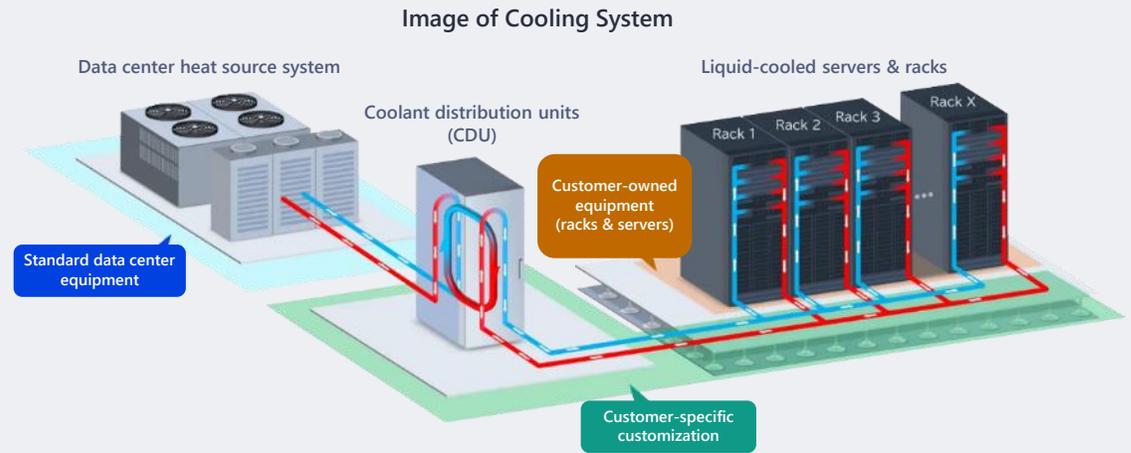
NEC Kobe Data Center  
(Phase Three Building)



[NEC opens new buildings for green data centers in Kanagawa and Kobe, and provides new services](#) (in Japanese only)

## Power Consumption Reduction Through Liquid-cooled Servers

Optimizing cooling efficiency with direct liquid cooling in high-performance server environments for DX and AI utilization



[NEC begins accepting liquid-cooled servers at major data centers](#) (in Japanese only)

# Optimizing Power Efficiency in Generative AI Usage

As the generative AI market continues to expand, rising power consumption has become a growing concern. NEC has developed technology to maximize the performance of its generative AI, NEC cotomi, and enhance the computational efficiency of GPUs.

## Eco-friendly Generative AI “NEC cotomi”

By strengthening the NEC cotomi, we have been able to bring out the performance of the generated AI and doubled the computational efficiency of the GPU



Reduces power consumption when using generative AI and ameliorates GPU shortages and power issues associated with the growing demand for AI



**Helping customers reduce their Scope 3 emissions**

NEC strengthens its generative AI, NEC cotomi, for specialized business use, maintaining high speed and achieving world-class accuracy (in Japanese only)

# Evaluation From Outside of the Company

CDP  
Climate Change and Water Security

6 years in a row with top rating



NEC named to the CDP "A List" for advanced Climate Change and Water Security initiatives six years in a row

"World's Most Sustainable Companies of 2024"  
A joint survey by TIME magazine and Statista

World No. 2



NEC ranked No. 2 in TIME Magazine's list of the "World's Most Sustainable Companies of 2024" (in Japanese only)

## Issuance of Sustainability-linked Bonds

FY2025 **30** billion yen raised  
Through issuance of two maturities for 5 and 10 years

FY2024 **40** billion yen raised  
Through issuance of two maturities for 5 and 10 years

FY2023 **110** billion yen raised  
Through issuance of three maturities for 5, 7, and 10 years

NEC finalizes issuance terms for its third sustainability-linked bond (in Japanese only)

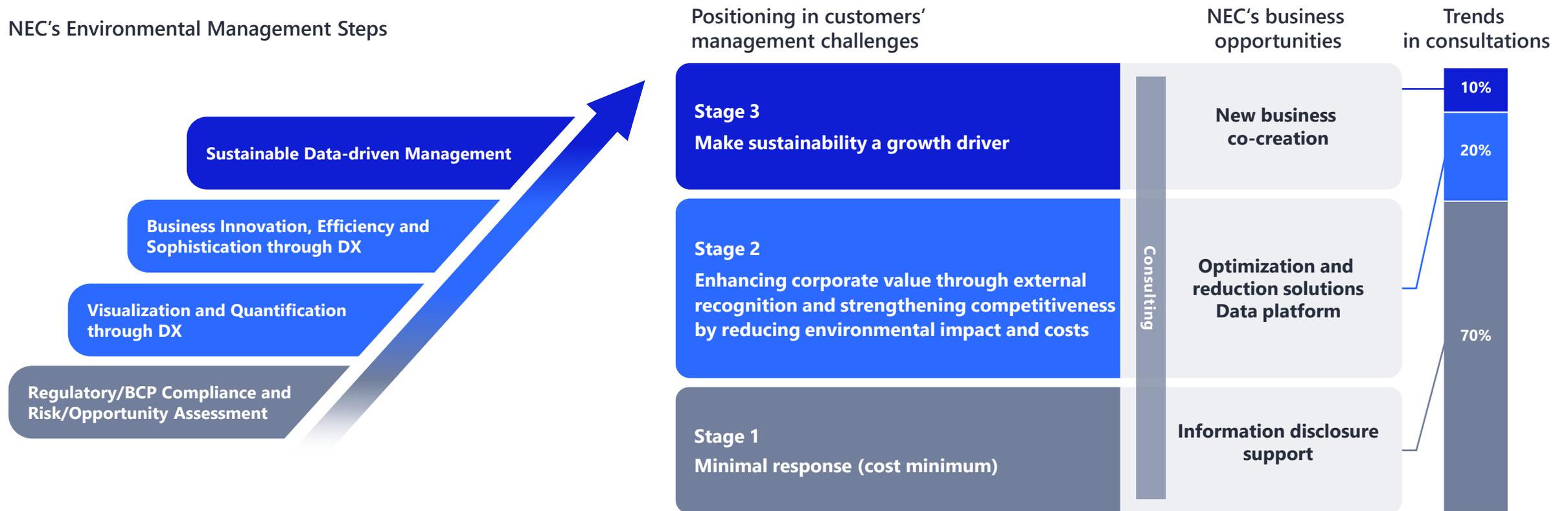
# Environmental Management Challenges and Vision: The Environmental Client Zero Strategy

Moving away from analog, personalized responses through digitization is key. Drive business innovation by visualizing issues and results. Achieve data-driven management that integrates financial and non-financial data.



# Understanding of the Environmental Business Market (1/2)

The introduction of regulations and carbon taxes is making customer challenges in the environmental domain more complex and more directly connected to management issues. At each stage, these challenges present business opportunities for NEC.



## Understanding of the Environmental Business Market (2/2)

Due to the effective mandate of TCFD by the Tokyo Stock Exchange Prime Market, the product carbon footprint disclosure requirements from European battery regulations, and the SSBJ response, information disclosure requests are expanding and becoming more sophisticated. Consequently, customer challenges are becoming more complex, leading to a sharp increase in the need for problem-solving consulting rather than just tool implementation.

### Key Changes in Consultation Topics

Consultation on environmental issues Over 100 cases each year from 2021 to 2024



# NEC BluStellar

Innovation that lights the way forward and helps us shape the future

## Business Model

NEC BluStellar Customer Agendas

Segmented DX concepts based on customers' purposes, needs and DX strategy. These field-tested processes and case studies ensure value creation across the DX journey.



## Technology

NEC BluStellar Technologies

NEC BluStellar's products, asset groups, offerings and technologies, consolidate world-class AI, security, and other strengths of NEC and our partners, along with our accumulated knowledge and know-how.

## Organization / Talent

NEC BluStellar Programs

Transformation means change. Companies will need to develop new skills, processes and functions. These initiatives support NEC BluStellar customers to ensure that the necessary resources (e.g. people partners & programs) to succeed are in place.

# Solving Environmental Management Challenges with the NEC BluStellar Model

Customers' Management Challenges



## Business Model

NEC BluStellar Customer Agendas



Implement with Client Zero

Validate value through co-creation

Expand the market through standardization

## Technology

NEC BluStellar Technologies

- Sensing (satellite/optical fiber)
- Analytical AI (e.g., Image analysis) / Generative AI
- Security/Trust

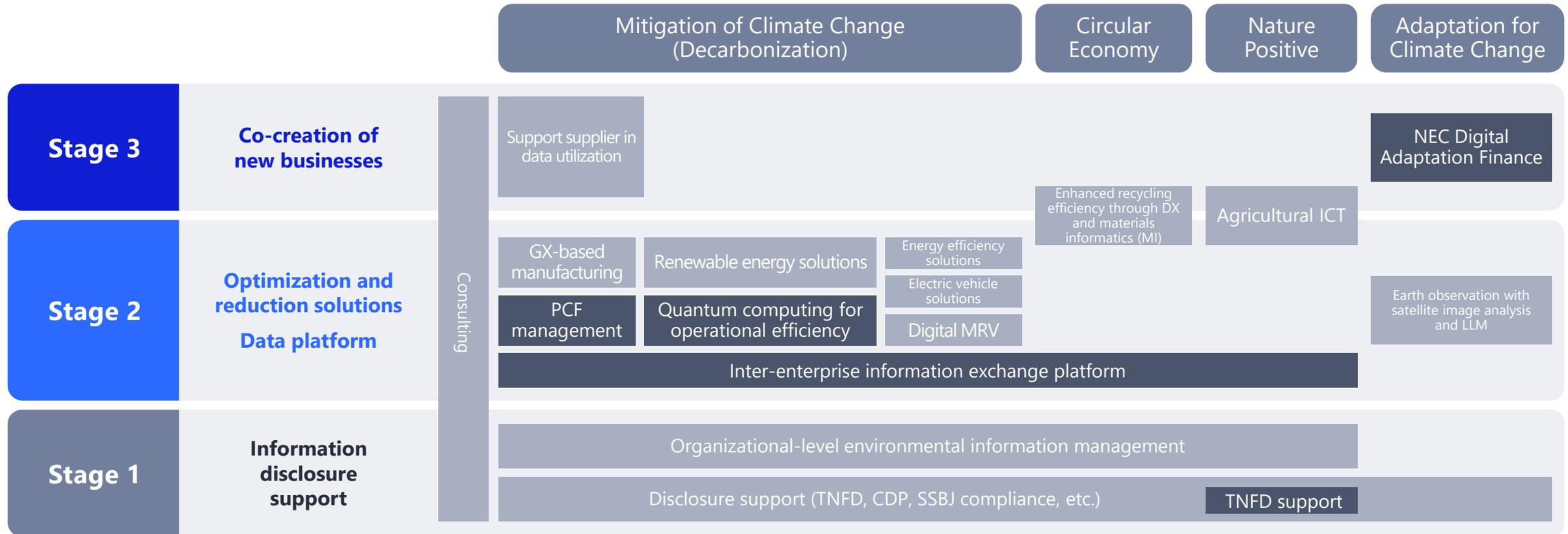
## Organization / Talent

NEC BluStellar Programs

- Environmental management knowledge/Talent
- Disaster prevention/Mitigation
- Rule-making/Standardization

# Overview of Environmental Business Initiatives

NEC's Client Zero and co-creation initiatives drive the implementation of DX-based solutions, enabling us to build deep expertise and technology. We strive to be a valuable partner, delivering tailored value in response to evolving customer needs and market changes.



Environmental Solutions: Solutions & Service (in Japanese only) s

Note: Some solutions are currently in the planning and development stage

# Nature Positive : TNFD Disclosure

We were the first in the domestic IT industry to publish the TNFD report. It showed the potential contribution of NEC's ICT along with a risk assessment of business activities. Our practical expertise gained through Client Zero has been highly valued and we have been asked to provide consulting services to a wide range of manufacturing and construction companies.

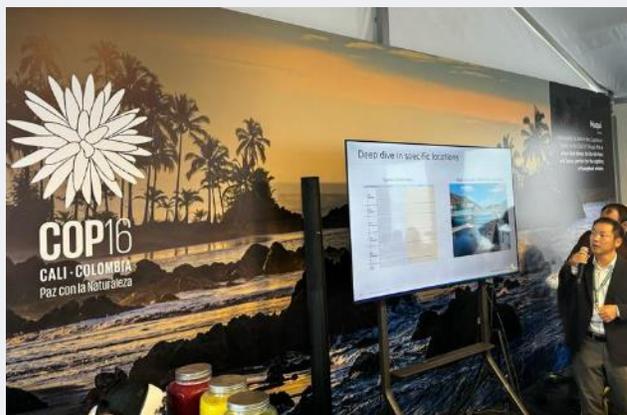
## Industry Leader in Its Implementation Internally and Its Communication Externally

NEC became the first company from the domestic IT industry to issue a TNFD report



[NEC publishes TNFD Report \(2nd Edition\)](#)

Introduced at many international conferences.  
Collaborating with the world's rule makers.



## Provision of Services to Customers

A joint venture between ABeam Consulting and Sumitomo Corporation has started to provide practical know-how.

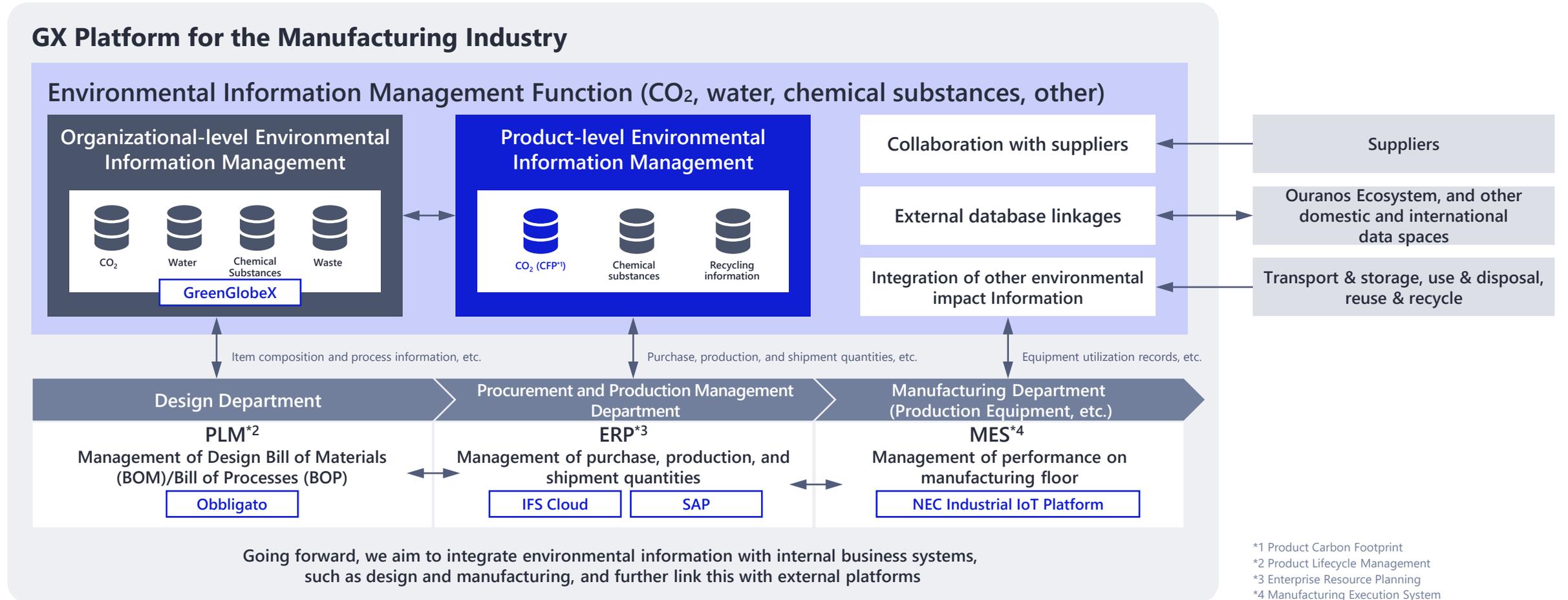


Established in March 2024

Sumitomo Corp. and ABeam Consulting Form New Corporate GX Support Company

# Mitigation of Climate Change (Decarbonization): CO<sub>2</sub> Visualization at the Product Level

The management of environmental information such as CO<sub>2</sub> emissions is expanding from organizational units such as companies to product units. Our Client Zero initiatives identify business problems. Contributing to standardization activities in the JEITA Green x Digital WG.



# Mitigation of Climate Change (Decarbonization) : Business Efficiency through Quantum Computing

Optimization using quantum computing technology improves the operational efficiency of logistics and manufacturing industries and reduces CO<sub>2</sub> emissions. Quantitative verification of the reduction effect of the Client Zero initiative at a Group company.

Optimization of Delivery Efficiency for Maintenance Parts
NEC Fielding

Automatically create the optimal delivery plan from a vast array of combinations, including delivery times, areas, and methods

Background and Challenges

- Each day, hundreds of maintenance tasks are scheduled in the metropolitan area
- There are few personnel skilled in creating efficient delivery plans

Quantum annealing  
Solving an enormous combination of 10753 possibilities

Effect of Implementation

Delivery efficiency

20

Approximately % improvement

NEC and NEC Fielding introduce a delivery planning system for maintenance parts utilizing quantum computing technology

Optimization of Production Planning
NEC Platforms

Achieve automation of complex production planning and improve equipment utilization rates

Background and Challenges

High-mix, low-volume production	Numerous combinations	Reliance on individual expertise
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Quantum annealing  
Solving an enormous combination of 4×1030 possibilities

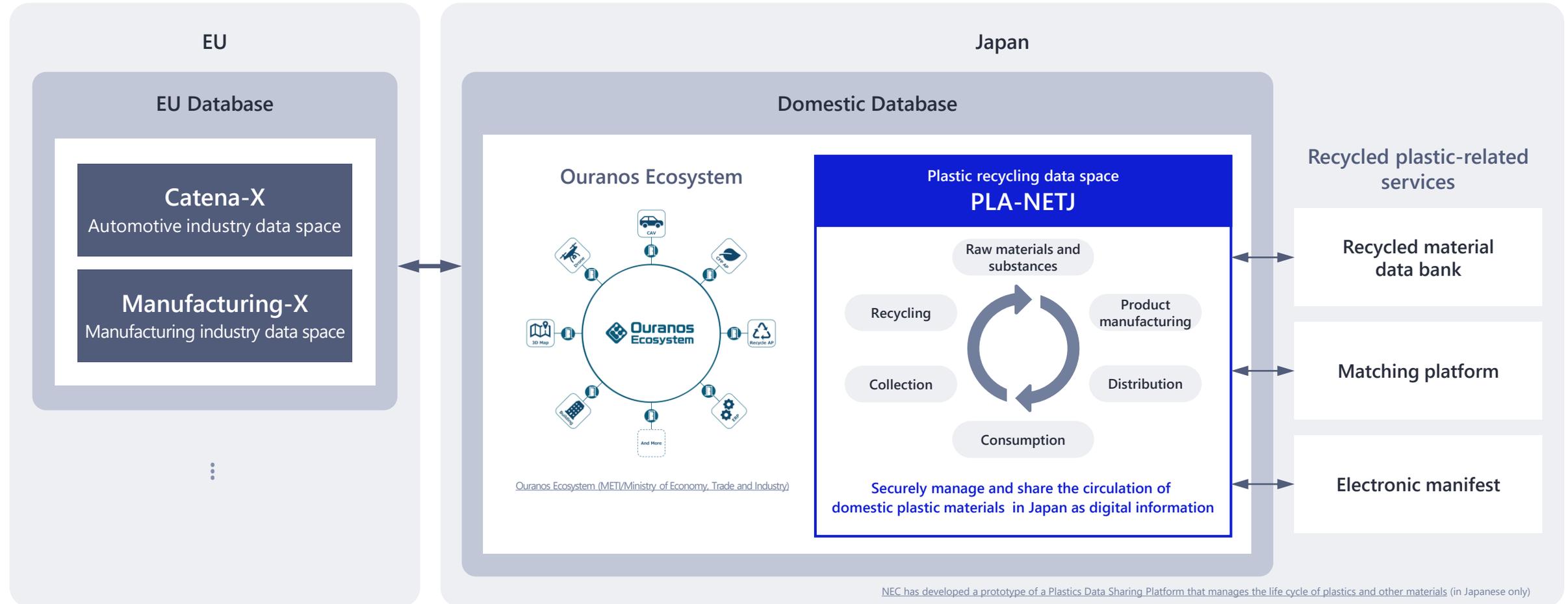
Effect of Implementation

Setup labor hours	Equipment utilization rate	Planning labor hours
50	15	90
% reduction	% improvement	% reduction

NEC and NEC Platforms introduce a production planning system for ICT equipment utilizing quantum computing technology at four NEC Platforms business sites

# Circular Economy: Initiatives for an Inter-enterprise Data Sharing Platform

For the realization of a circular economy, secure information exchange between domestic and international companies is essential. Developed an information exchange platform for the domestic plastics industry in cooperation with other companies and countries.



# Adaptation for Climate Change: NEC Digital Adaptation Finance

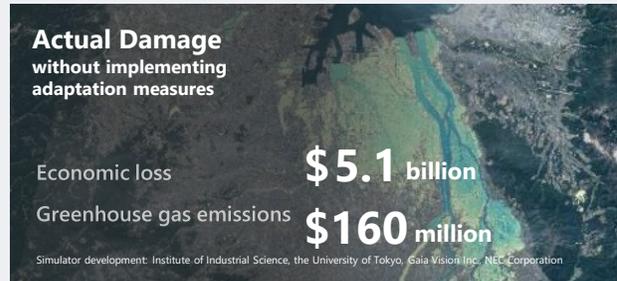
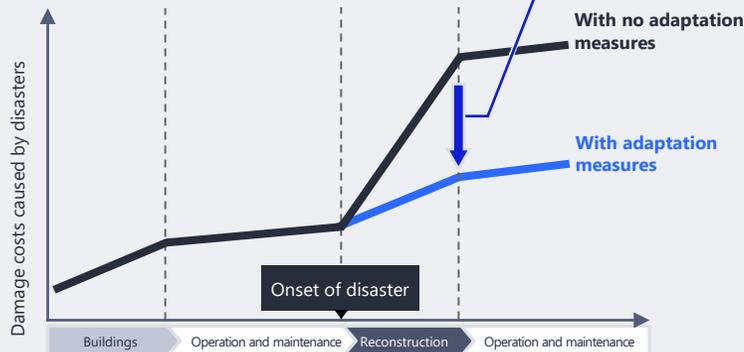
We propose leveraging digital technologies to visualize the impact of adaptation measures, driving increased investment (adaptation finance) to support their implementation. To advance this initiative, we established the Japan Consortium for Adaptation Finance, through which we collaborate with members and partners to develop a range of financial products.

## Adaptation Value Delivered by Disaster Prevention Solutions

Using digital twins to visualize the benefits of adaptation measures for disasters

Example of calculation based on a flood in Japan

Mitigation value (Economic loss) **\$4 billion**  
 Environmental value (Greenhouse gas emissions) **\$120 million**  
**\$4.1 billion** Adaptation value

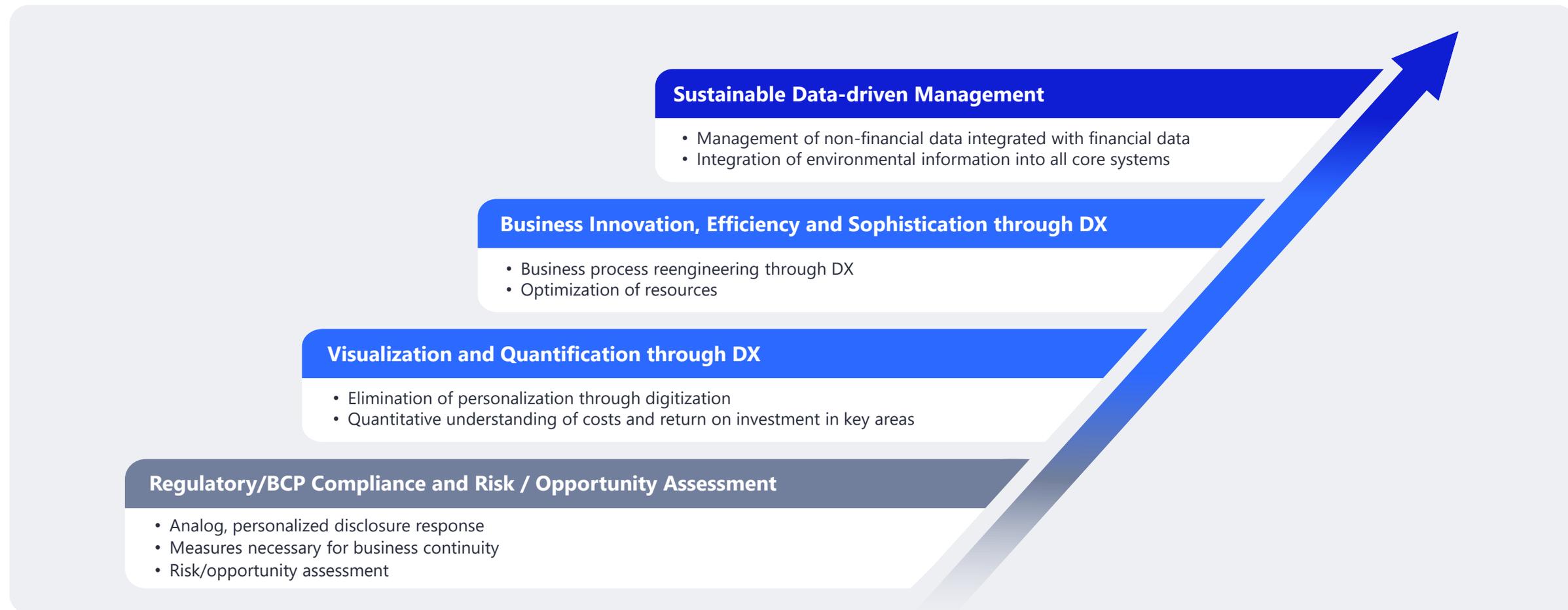


Adaptation finance (in Japanese only)



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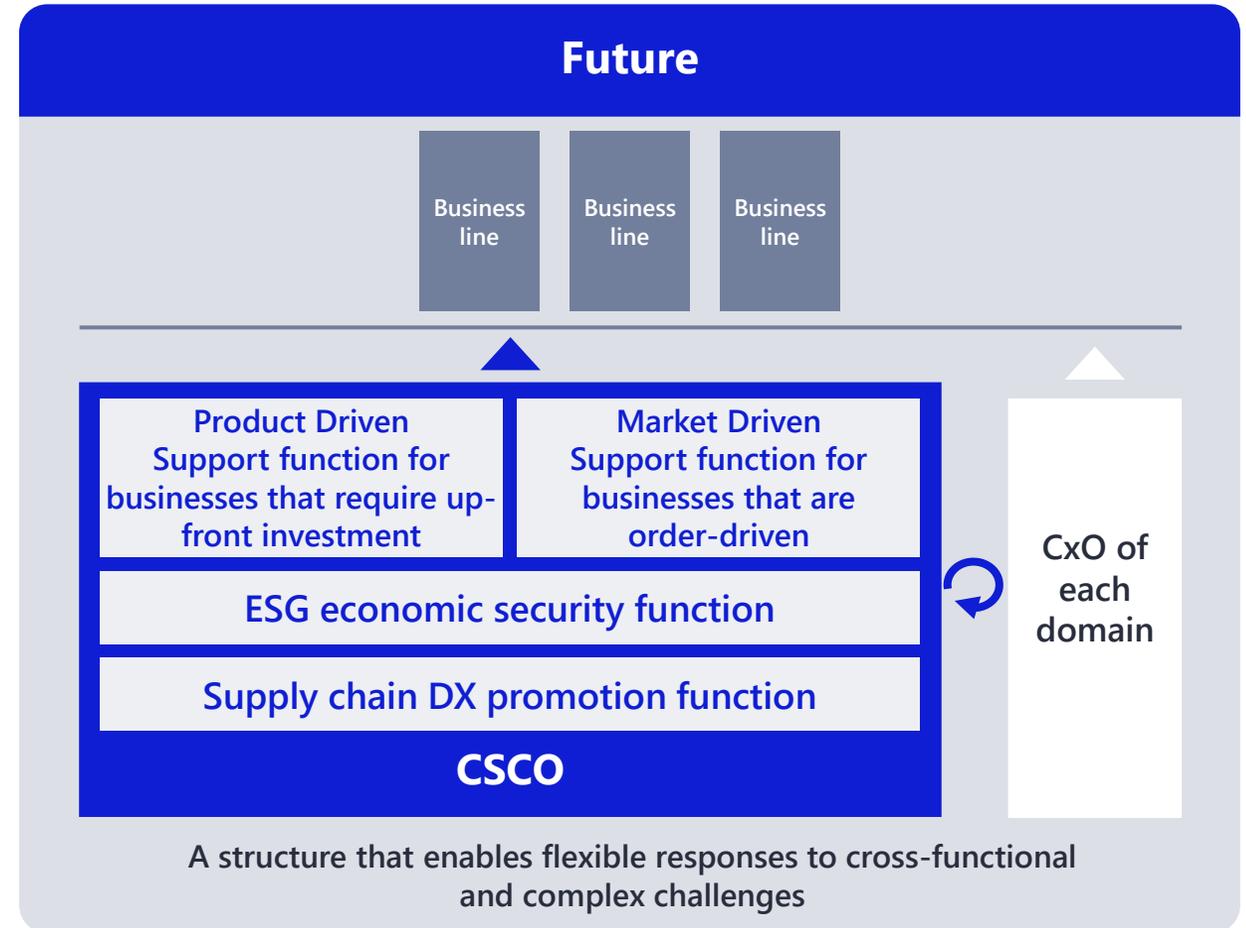
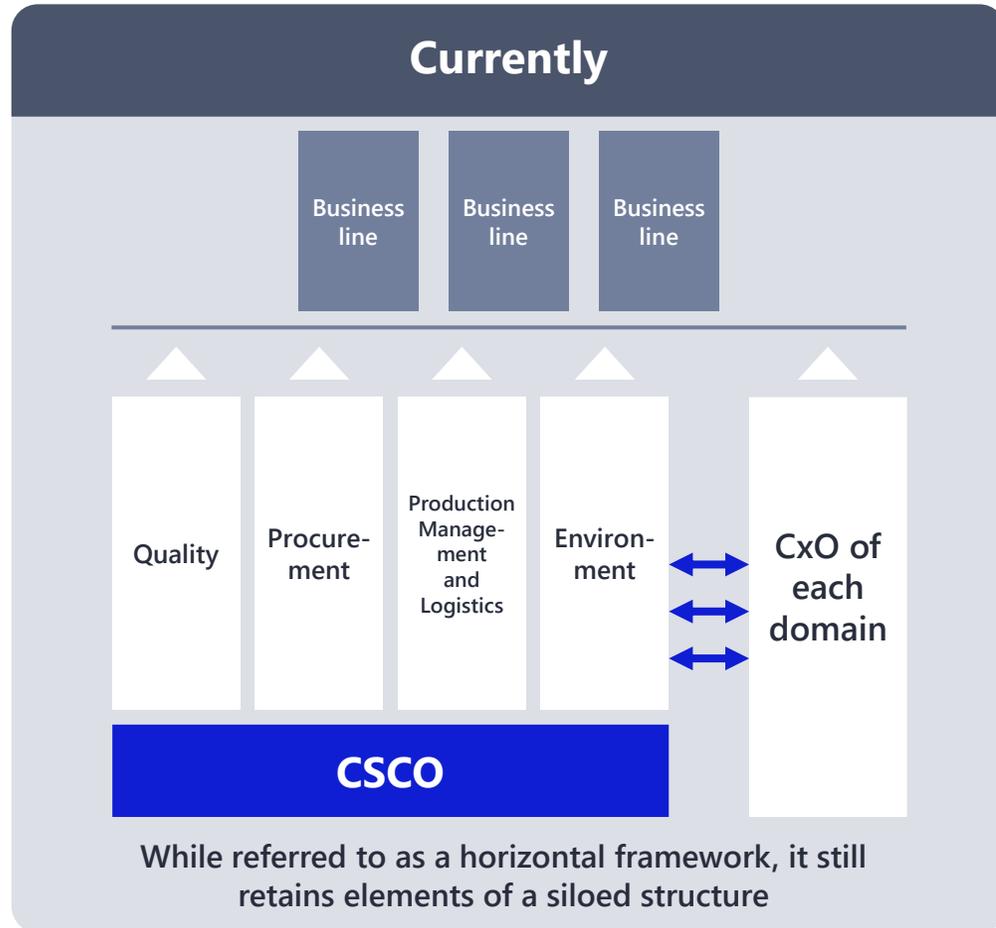
Moving away from analog, personalized responses through digitization is key. Drive business innovation by visualizing issues and results. Achieve data-driven management that integrates financial and non-financial data.



# Rebuilding the Chief Supply Chain Officer (CSCO) Function

NEC is currently working to develop a second layer of functions that will support the business by linking them to the company-wide reform of the existing vertical functions.

In conjunction with this, we have started to reorganize non-financial and external data (data structure and collection methods).



# The Client Zero: Three-layer Model as A New Initiative

NEC is exploring a two-tier common platform for achieving overall optimization and business flexibility

Account Sales/Consulting,  
SE Resource (Industry),  
Offering (Product/Solution)  
Business Strategy

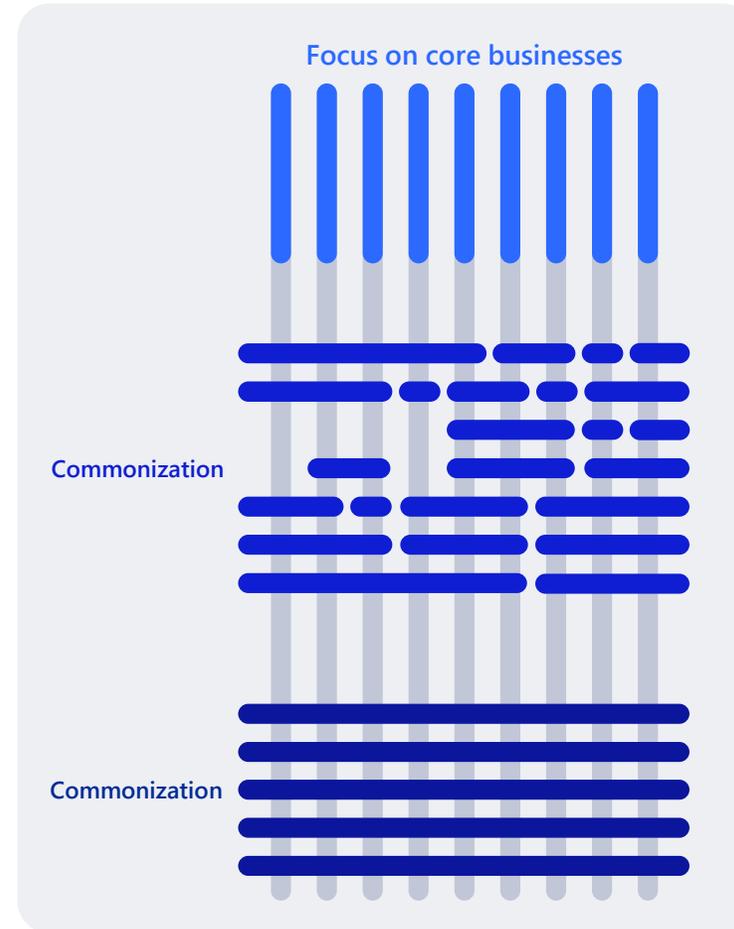
**Layer 3**  
Core Businesses

Product/Field Marketing  
SE Resource (Common)  
Sourcing/Procurement/Supplier Mgt.  
Factory and Production/SCM/Logistics  
Service Platform/Maintenance and Support  
Platform,  
Sustainability/Human Rights/AI  
Governance/Economic Security  
R&D and Technology Platform/Business IT  
Business and Conduct Risk Mgt./Quality

**Layer 2**  
Common Platform by  
Business Characteristics

Finance/FP&A BP  
People & Culture/HRBP  
Legal/Compliance Risk Mgt  
Corporate IT/Data-Driven PF/Security  
Corporate Governance/Internal Audit

**Layer 1**  
Enterprise-wide  
Common Platform



**Agility**  
Flexibility / Adaptability

**Resilience**  
Safety / Standardization /  
Advancement

# \Orchestrating a brighter world

NEC creates the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential.

**NEC**

\Orchestrating a brighter world