

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)

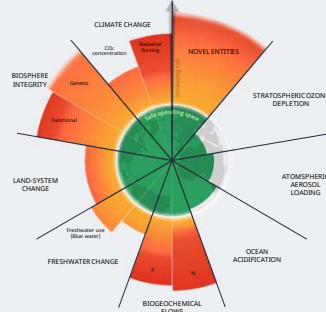
*¹ Electronic Toll Collection system
*² Chief Product Officer
*³ Chief Supply Chain Officer



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

- Businesses have long contributed to enriching society.
- However, exceeding planetary boundaries has led to growing environmental and social challenges.
- Environmental challenges are recognized as global risks by the international business community and are considered significant management risks for companies.

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



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Intergenerational Inequality

Responsibility to Future Generations



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- Environmental challenges are marked by disparities and inequalities.
- It is difficult to quantitatively establish causality, making it challenging to implement coordinated global measures.
- One reason for the differing views between developing and developed countries at forums like COP is the lack of universally accepted, objective standards that everyone can agree on.
- It is important to correctly understand and visualize these challenges to implement effective measures, and leveraging ICT is essential in this process.

The Four Key Focus Areas for Environmental Initiatives



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- Discussions on environmental challenges tend to focus on the mitigation of climate change mitigation and CO₂ reduction. However, effective action requires a broader approach that also focuses on adaptation for climate change, the circular economy, and nature positive.

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 CO₂ levels with the TANSO Satellite and monitoring illegal logging areas in the Amazon with the DAICHI Satellite

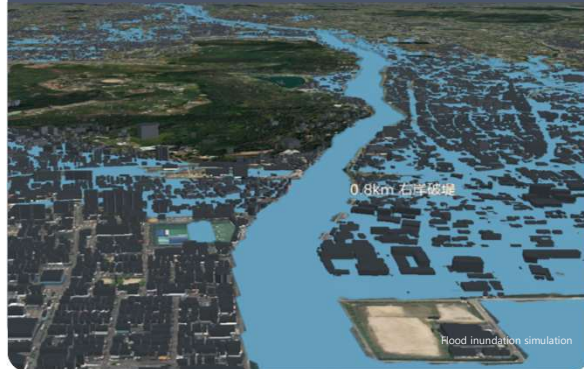


Computer-generated image of TANSO onboard the Greenhouse Gases Observing Satellite "IBUKI" (GOSAT) ©JAXA

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Disaster Prevention Solutions for Safeguarding Communities

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



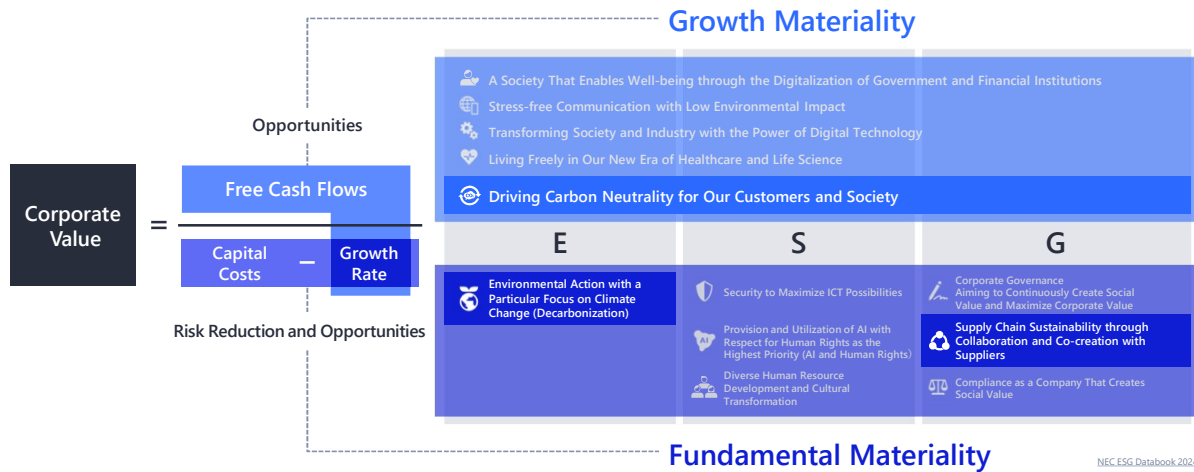
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- In 1970, NEC launched an organization dedicated exclusively to addressing environmental challenges (The Ministry of the Environment was established a year later in 1971)
- Aligned with our Purpose as a company dedicated to creating social value, NEC has leveraged ICT to help address environmental challenges. Examples include using the TANSO satellite to visualize CO₂ emissions and the Daichi satellite for preventing illegal logging in the Amazon. We also provide disaster response solutions for local governments in the field of disaster prevention.
- This history and track record continue to form the foundation of NEC's commitment to addressing environmental challenges.

Integrating financial and non-financial aspects in management for sustainability

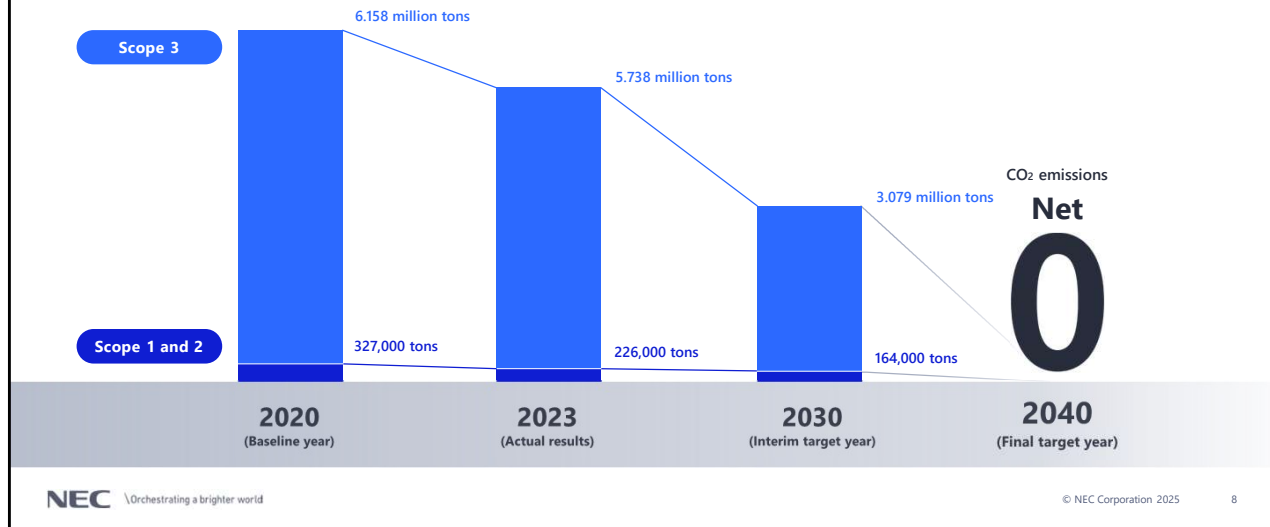
Environmental initiatives play a crucial role in both mitigating risks and creating opportunities. By leveraging our strong track record, we unlock new business opportunities and drive corporate value.



- NEC integrates environmental challenges as a key aspect of its management strategy.
- Starting in FY2024, NEC has established a sustainability management approach that clearly links financial and non-financial aspects, considering both risks and opportunities.
- The environment is categorized under the management themes of fundamental materiality and growth materiality.

Our Environmental Initiatives

NEC Group's Carbon Neutrality Target for 2040

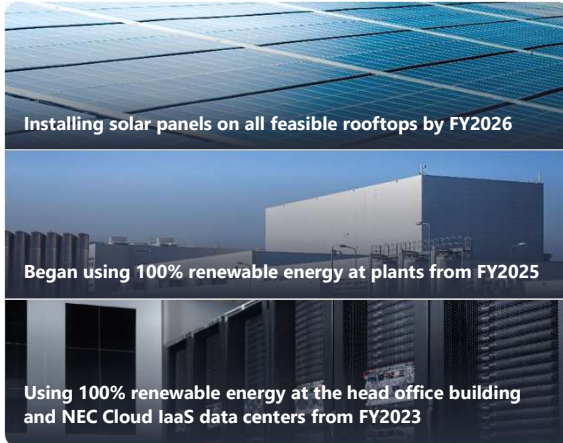


- In terms of climate change mitigation, we have set the ambitious goal of achieving net-zero emissions by 2040 and are actively working towards it.
- In April of last year, we obtained SBTi net zero certification.

NEC Group's Environmental Initiatives

Scope 1 and 2

Expanding Renewable Energy to Achieve Targets



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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 CO₂ emissions reduction initiatives



Collaborating with Sumitomo Mitsui Banking Corporation to support CO₂ reduction across the supply chain

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



Financial function, customer base, and more

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Track record in carbon neutral initiatives

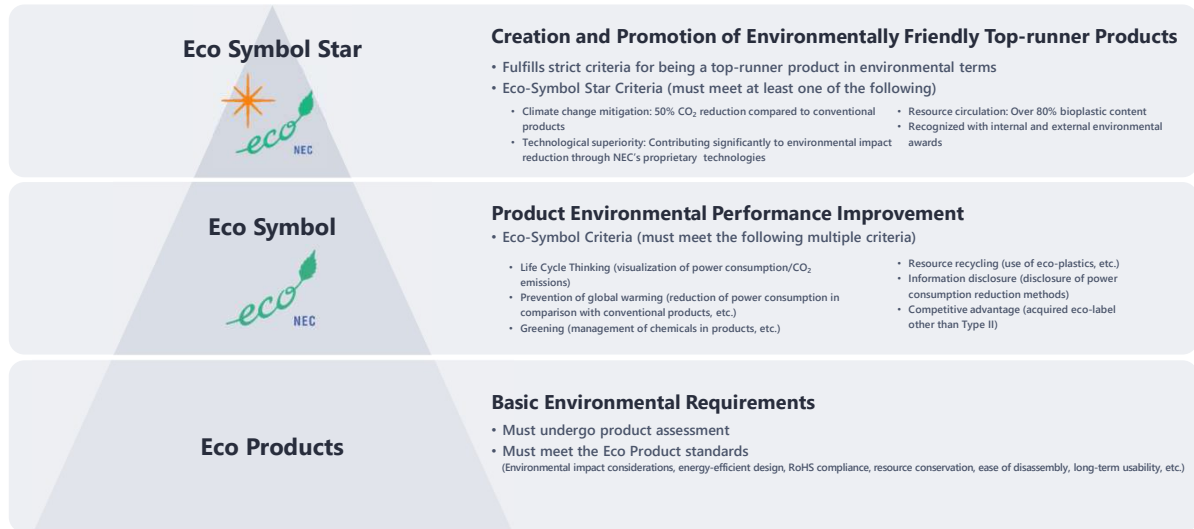
NEC signs basic agreement contract with Sumitomo Mitsui Banking Corporation for collaboration in carbon neutral business (in Japanese only)

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- For Scope 1 and 2 emissions, we are expanding energy efficiency, conservation, and the use of renewable energy sources.
- For Scope 3 emissions, we are concentrating on Category 1 by fostering supplier engagement to drive reductions.
In FY2025, we assisted in obtaining SBT certification, with three companies anticipated to acquire it.
- We are also collaborating with Sumitomo Mitsui Banking Corporation to support our suppliers in reducing CO₂ emissions through financial services and business matching.

Environmental Considerations for Products and Services



- NEC incorporates environmental considerations into its products and services.
- We have introduced a unique Eco Products system specifically for our hardware products.

This system requires that environmental considerations be integrated into the development process, ensuring that all hardware products meet the company's environmental standards and qualify as Eco Products.

- However, the proportion of hardware products is decreasing. Therefore, it will become increasingly important to focus on environmental considerations in our software and service offerings in the future.

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)



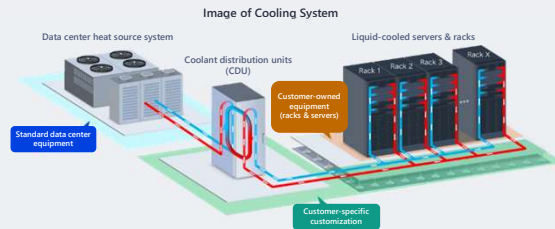
NEC Kobe Data Center
(Phase Three Building)



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)

- Customers are increasingly seeking to reduce CO₂ emissions associated with data center usage as part of their Scope 3 reduction efforts.
- NEC is enhancing its offerings by providing cloud services powered entirely by renewable energy, along with services such as non-fossil fuel certificates and technologies like liquid-cooled server integration.

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)

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- As generative AI becomes more widespread, there are growing concerns about increased power consumption.
- NEC has developed technology that doubles the computational efficiency of GPUs while maintaining the performance of generative AI, thereby reducing power consumption per inference process.
- This allows for the use of generative AI with reduced power consumption, meeting customers' needs for Scope 3 emissions reduction.

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)

- NEC's efforts to prioritize environmental measures as a core management issue have been highly regarded outside the company.
- We have been named to the CDP "A List" for advanced Climate Change and Water Security initiatives for six consecutive years, a rare achievement as only 1% of companies have maintained A-List status even once over the past year.
- We were also ranked second in TIME magazine's list of the World's Most Sustainable Companies.
- We also contributed to fundraising through sustainability-linked bonds, setting our targets for reducing Scope 1 and 2 emissions and maintaining our position on the CDP "A List" for climate change initiatives as KPIs.
- Furthermore, at last month's Davos conference, our CEO, Morita, received an invitation to participate in a panel discussion on the use of technology to address environmental pollution.
- Representing Japanese tech companies, we shared insights globally on utilizing ICT to tackle environmental challenges.

Environmental Management Challenges and Vision: The Environmental Client Zero Strategy

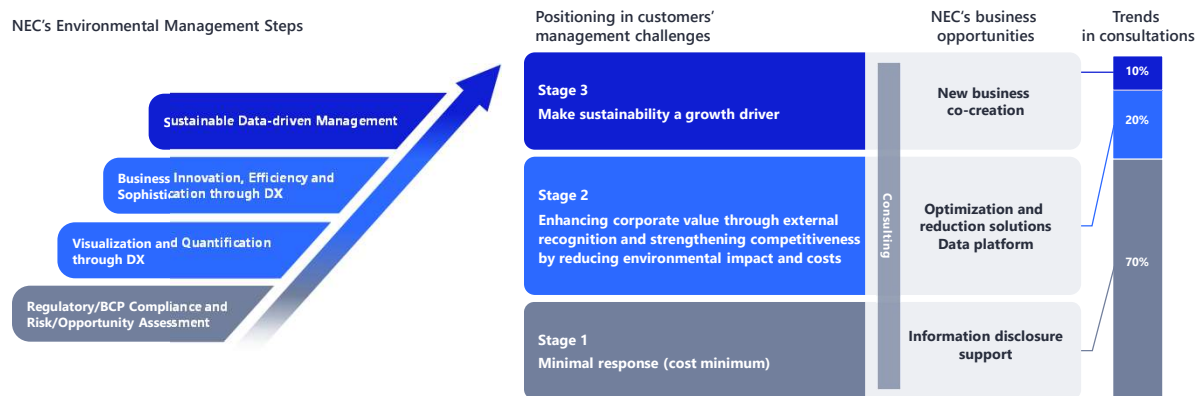
Moving away from analog, personalized responses through digitization is key. Drive business innovation by visualizing issues and results. Achieve data-driven management that integrates financial and non-financial data.



- NEC aims to further advance its environmental management.
- We have faced structural challenges, such as reliance on individual expertise and analog processes.
Digital transformation is needed to enable quantification and business transformation.
- Our goal is to integrate environmental perspectives into all supply chain processes, making necessary information easily accessible.
- Currently, NEC is about 70% of the way there, with progress varying across different areas, including partial development of the second and fourth layers.
- The challenges in this process are likely similar for many companies.
By addressing these issues early, NEC intends to use the knowledge gained to enhance our consulting, digital transformation, and core systems businesses.
- We call this the 'Client Zero Strategy,' where we view ourselves client zero.

Understanding of the Environmental Business Market (1/2)

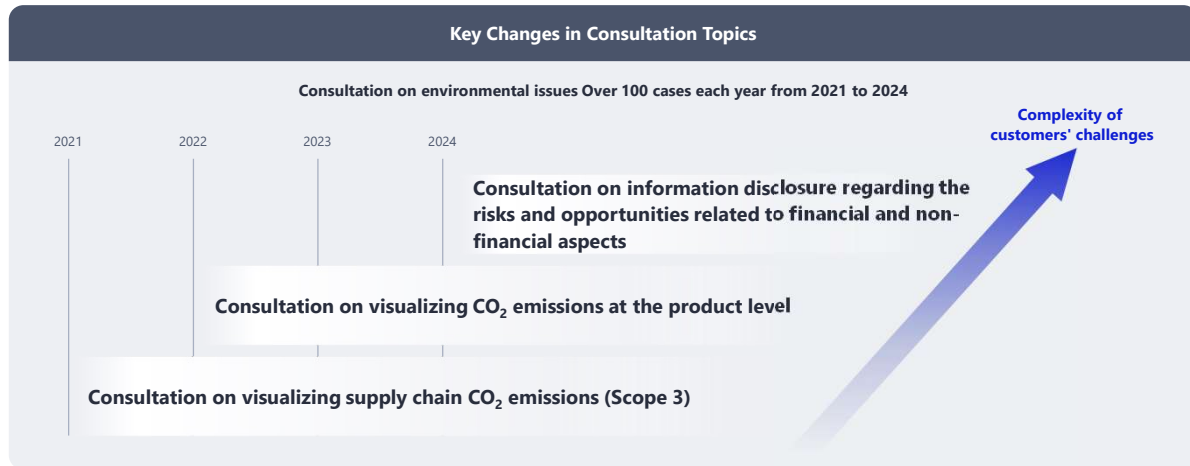
The introduction of regulations and carbon taxes is making customer challenges in the environmental domain more complex and more directly connected to management issues. At each stage, these challenges present business opportunities for NEC.



- Based on the trends we observe from companies consulting with NEC, about 70% are only addressing minimum requirements, such as disclosure responses.
- In contrast, 20% of advanced companies aim to enhance operations through digital transformation, and 10% view it as an opportunity, positioning sustainability as a growth driver.
- As an IT company, NEC sees business opportunities in addressing these management challenges for our customers.

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.



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- Since around 2021, there has been a sharp increase in inquiries from clients regarding environmental challenges, with over 100 consultations per year.
- Initially, most of the inquiries were about Scope 3 and the need for visualization tools.
- Gradually, the focus shifted to visualizing CO₂ emissions at the product level and the non-financial risks and opportunities related to finance—issues that cannot be addressed by tools alone.
- NEC also perceives similar challenges based on external evaluations.
- We see this as an opportunity to offer consulting services that provide ongoing support tailored to each customer's challenges, along with delivering the appropriate solutions.

NEC BluStellar

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

Business Model

NEC BluStellar Customer Agendas

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.



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.

Organization / Talent

NEC BluStellar Programs

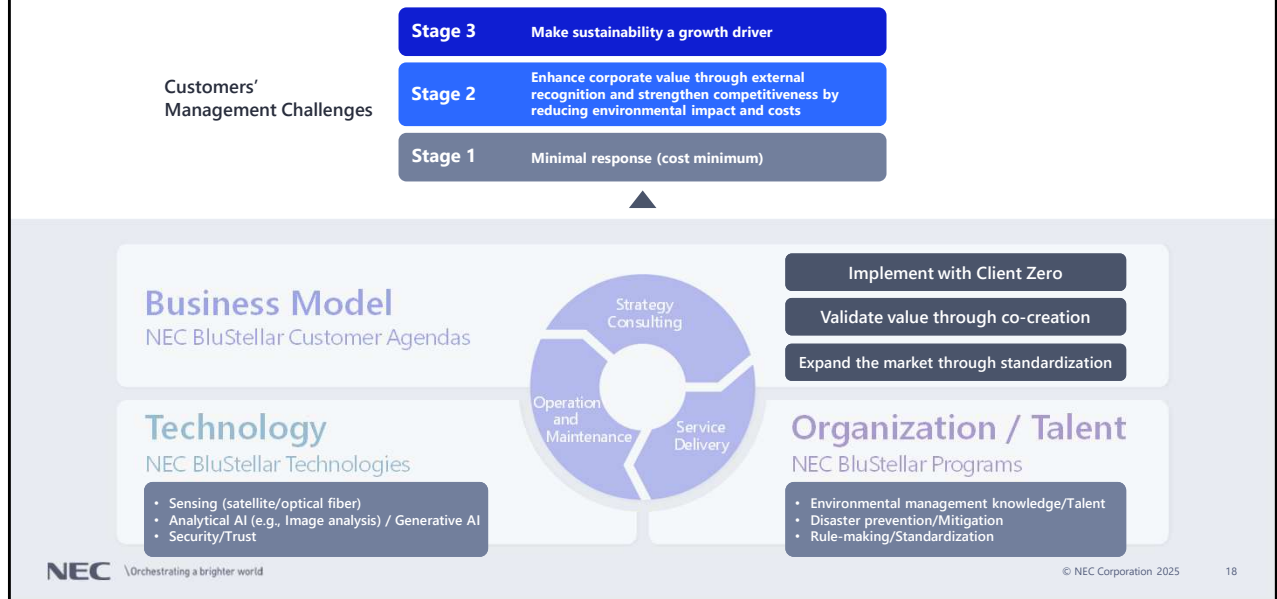
Transformation means change. Companies will need to develop new skills, processes and functions. These initiatives support NEC BluStellar customers to ensure that the necessary resources (e.g. people partners & programs) to succeed are in place.

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- Last year, NEC launched NEC BluStellar as a brand representing a value creation model that guides clients into the future.
- BluStellar starts with the client's management agenda and leverages both 'technology' and 'organization/talent' to provide value through an end-to-end 'business model' approach, spanning from consulting to operation and maintenance.

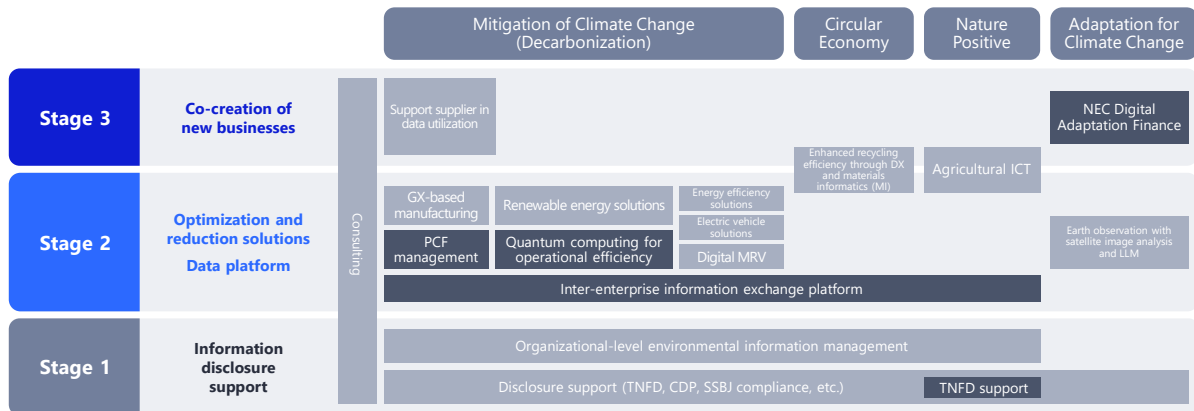
Solving Environmental Management Challenges with the NEC BluStellar Model



- In the environmental business, NEC remains committed to creating value through the NEC BluStellar model.
- We leverage technologies like sensing, AI, and security, alongside the expertise and knowledge of highly regarded professionals.
- By visualizing and analyzing complex environmental issues, we clarify the specific challenges that need to be addressed.
- Through "Client Zero" and "co-creation," we advance the identification of key issues and effectiveness, contributing to the establishment of industry standards and other initiatives.

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

- As mentioned earlier, our customers' management challenges are evolving from meeting information disclosure requirements to enhancing efficiency through data organization and eventually generating new business value through data-driven management.
- Environmental challenges are similarly expanding beyond just decarbonization to encompass concepts like the circular economy and natural capital.
- Additionally, climate change adaptation, including responses to the increasing severity of weather-related disasters, is becoming an urgent issue.
- NEC is dedicated to creating value that addresses these evolving stages of customer management challenges and broader societal issues.
- Today, I will highlight some of the key initiatives NEC is currently focused on.

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.



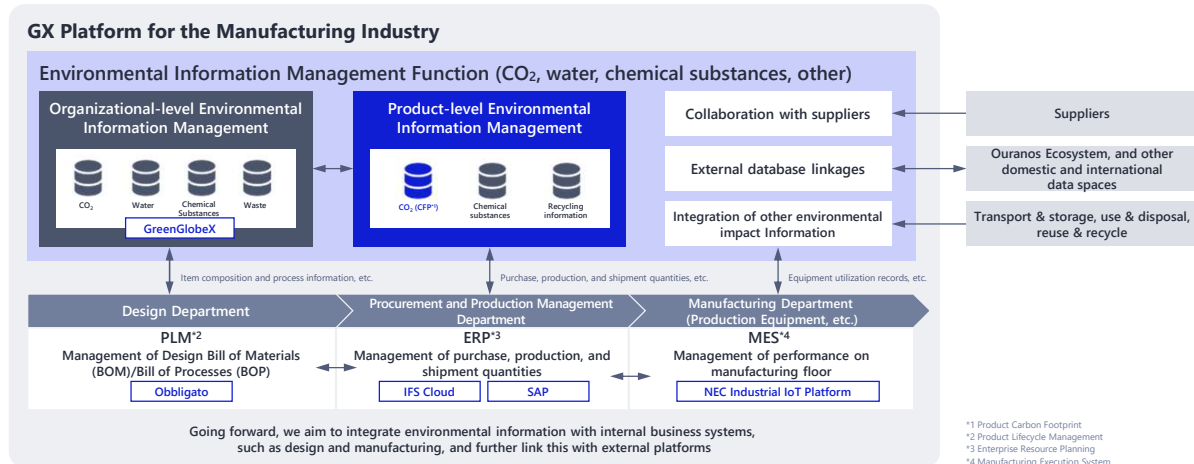
Established in March 2024

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

- Firstly, regarding the growing efforts in information disclosure concerning natural capital and TNFD.
- NEC was the first in the IT industry in Japan to issue a TNFD report. This report evaluated risks in business activities while also showing the potential contributions of NEC's ICT solutions.
- Due to the limited examples of such disclosures worldwide, NEC has received offers to speak at many international conferences, including the 2024 United Nations Biodiversity Conference (CBD COP16) (as seen in the photo).
- This practical knowledge has been incorporated into the consulting services of our joint venture (GX Concierge), established last March with Sumitomo Corporation.
- By sharing insights and challenges from our own experiences, we have received very positive feedback.
We have already handled dozens of inquiries and secured contracts from clients in the manufacturing and construction sectors.

Mitigation of Climate Change (Decarbonization): CO₂ Visualization at the Product Level

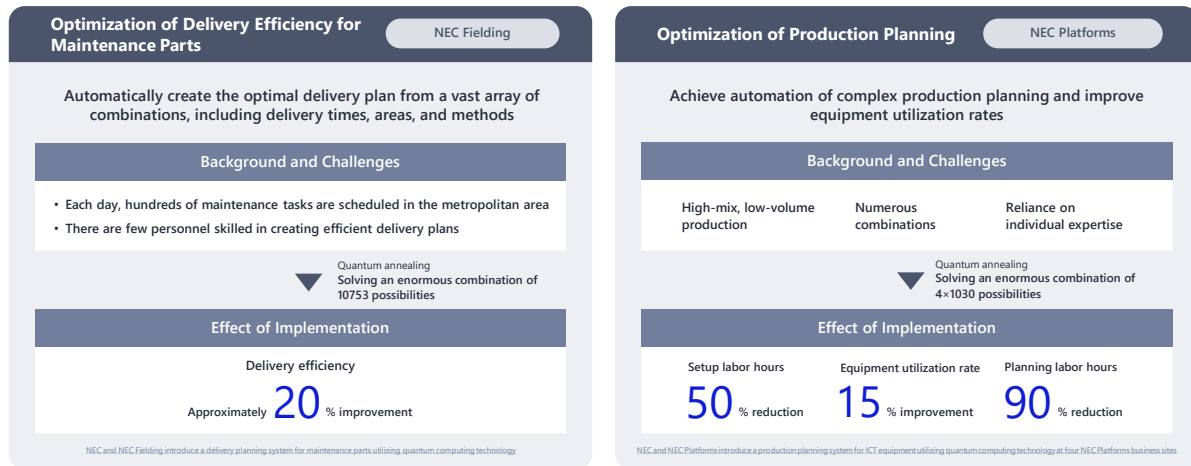
The management of environmental information such as CO₂ emissions is expanding from organizational units such as companies to product units. Our Client Zero initiatives identify business problems. Contributing to standardization activities in the JEITA Green x Digital WG.



- The second point is the visualization of CO₂ emissions at the product level to connect corporate CO₂ reduction efforts to product competitiveness.
- Environmental information management is extending from organization-level management for information disclosure to product-level management that enhances competitiveness.
- Last year, as Client Zero, we conducted a trial to identify issues in operational processes and supplier coordination that cannot be solved by tool implementation alone.
- NEC serves as the leader in JEITA's Green x Digital Consortium's Visualization Working Group and contributes to standardization activities.

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

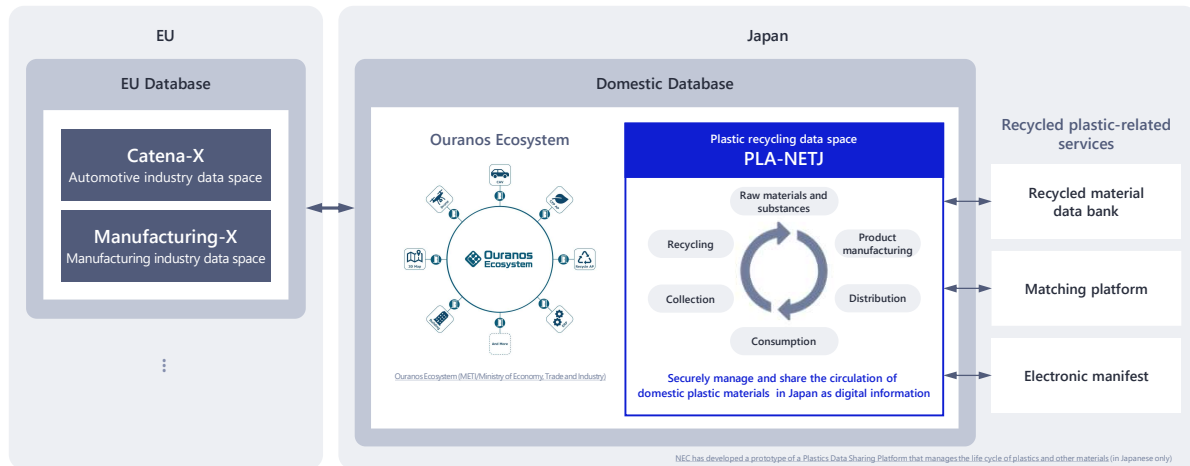
Optimization using quantum computing technology improves the operational efficiency of logistics and manufacturing industries and reduces CO₂ emissions. Quantitative verification of the reduction effect of the Client Zero initiative at a Group company.



- The third point is business efficiency improvement through quantum computing technology.
- This technology can find optimal solutions for a vast number of combination problems, allowing for more efficient production and transportation planning.
- At NEC Fielding, which provides IT equipment maintenance services, we have improved the efficiency of maintenance parts delivery by 20%, reducing the number of trucks and contributing to CO₂ reduction.

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.



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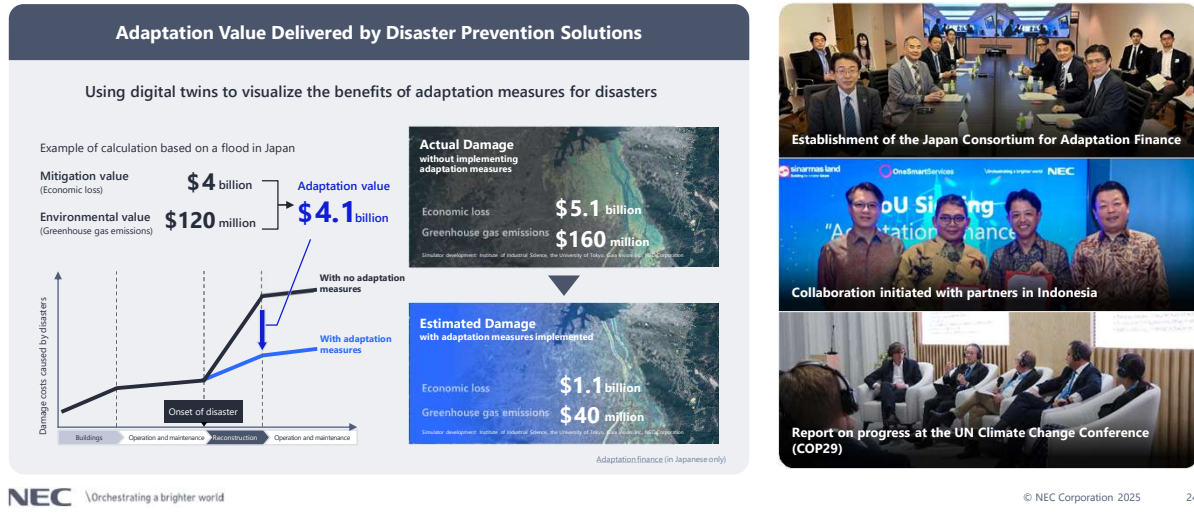
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- The fourth point is the circular economy initiative.
- This involves creating an industry-standard platform through co-creation with other companies and collaboration with the government.
- Recently, mainly in Europe, there has been progress in developing and implementing platforms for data exchange between companies. From the viewpoint of economic security, it is urgent to create a platform in Japan.
- NEC is working on realizing a company-to-company information exchange platform in the plastics industry, using resources like the Cabinet Office's SIP program.
- In the future, this effort will expand to include the recycling of other resources such as aluminum.

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.



- Lastly, addressing climate change is important not only for decarbonization but also for adaptation areas such as disaster prevention and mitigation.
- The primary challenge in the adaptation domain is the lack of funds due to the localized nature of these issues.
- NEC proposed NEC Digital Adaptation Finance at last year's COP28 to digitally quantify the effects of adaptation measures and stimulate funding.
- We have established the Japan Consortium for Adaptation Finance and are collaborating with members and global partners to develop various financial products.
- This initiative was also presented at COP29 last year, attracting significant interest from institutions worldwide.
- NEC's long-standing expertise in disaster prevention DX has enabled us to create such innovative business solutions.

(previously shown)

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.

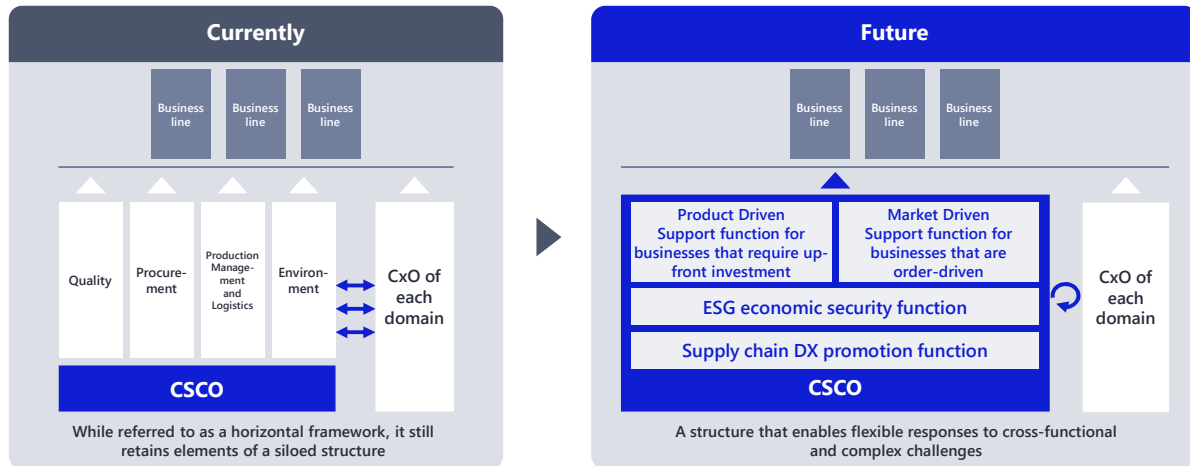


- Although we have shared some leading examples, NEC recognizes that we are still in the process of achieving our environmental management goals.
- Challenges such as processes that are dependent on analog methods and individual expertise as well as organizational barriers remain.
- Here, we will explain how we are addressing these issues.

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).



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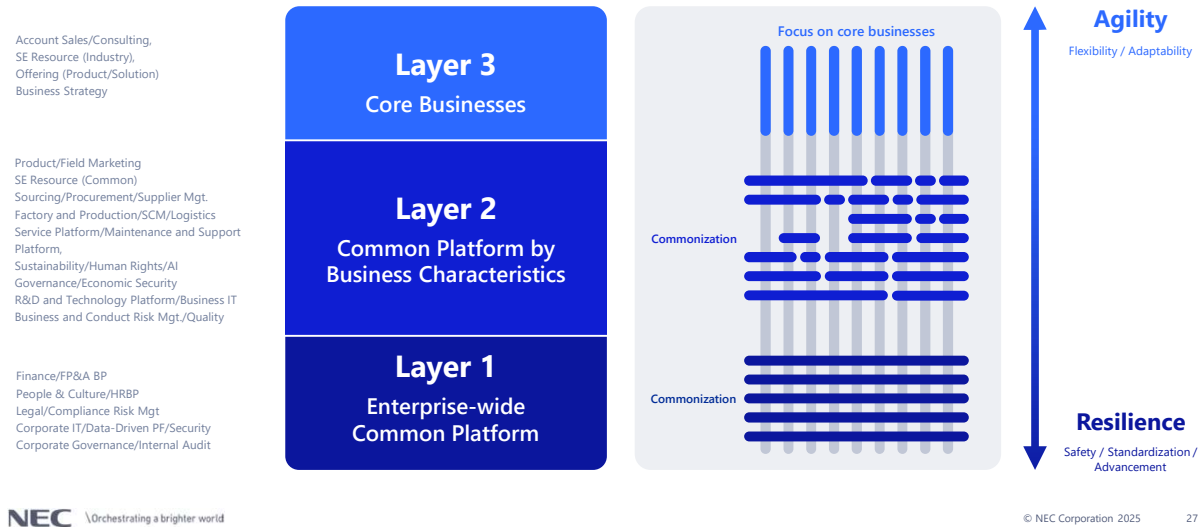
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- For example, in supplier engagement, multiple divisions were involved, focusing not only on environmental issues but also on topics like human rights and information security.
- Additionally, the digital transformation in this area was advanced by each division independently.
- We have started to address this by viewing environmental issues not in isolation but as part of our overall CSCO (Chief Supply Chain Officer) functions.
- To achieve this, we reorganized specialized divisions in environmental, procurement, quality, and production areas based on the value they provide.
- For instance, supplier engagement tasks have been consolidated into a single division.
- Similarly, efforts to enhance and streamline functions using AI and digital tools have also been centralized in one division.
- Through such initiatives, we are reducing existing operations by one-third and shifting focus to new value areas.

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



- The CSCO reforms we explained today are connected to our company-wide transformation.
- Over the past five years, NEC has focused on establishing the first layer of a "company-wide common platform," centered on finance and HR.
- We are now advancing the development of a second layer, a "platform categorized by business characteristics," which corresponds to the CSCO reforms.
- With these two layers established, businesses can focus on their core activities while achieving overall optimization and adapting flexibly to various environmental changes.
- Additionally, by aligning financial and non-financial data under a unified framework, we support management flexibility and quicker, more accurate decision-making.
- We believe this model brings us closer to our ideal of sustainable, data-driven management.

\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.

- To summarize today's key points:
- Addressing environmental challenges requires both "visualization" and "measures," with ICT playing a crucial role.
- NEC has a track record of utilizing ICT for both visualizing and addressing these challenges.
- By enhancing visibility, we can uncover social disparities and inequalities, offering essential data to guide corrective actions.
- This approach aligns with NEC's Purpose to create the social values of safety, security, fairness and efficiency.

NEC

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