ESG PLAYBOOK 2022

NCSOFT SUSTAINABILITY REPORT

About This Report

About This Report

NCSOFT presents our sustainability reports each year to communicate our activities undertaken to advance the 'joy of taking an earnest initiative towards the best possible outcome'. The NCSOFT ESG PLAYBOOK 2022 outlines our ESG management strategies, achievements, and activities for the year 2022 to transparently disclose our financial and non-financial performance and heed the voice of wide-ranging stakeholders.

Reporting Standards

This report was prepared in accordance with the GRI (Global Reporting Initiative) Standards, and its financial performance was presented in conformity with the K-IFRS (Korean International Financial Reporting Standards). This report also reflected the disclosure standards of the SASB (Sustainability Accounting Standards Board) to consider industry-specific issues, as well as the disclosure recommendations of the TCFD(Task Force on Climate related Financial Disclosures). In addition, information on the three topics of care for employees, information security/data privacy, and environmental management which form the core values of NC's ESG management was prepared in alignment with the Exposure Draft IFRS S1 General Requirements for Sustainability-related Disclosures.

Reporting Period and Scope

This report spans the period between January 1, 2022 and December 31, 2022, and which extends to the first half of 2023 for some activities. Quantitative performance data cover the recent three to four years to help identify yearly trends. This report covers the NCSOFT headquarters and some of its subsidiaries to report their activities and achievements in each of the ESG areas. When caution is required as to the reporting scope and boundary, this is separately noted to better communicate with stakeholders.

Assurance

This report was assured by the Korea Management Registrar (KMR) as a third-party assurance provider to establish the reliability and credibility of the report preparation process, disclosed data, and reported content. For further details, see the Independent Assurance Statement on pages 76 and 77 of this report.

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For further information on NC and our sustainability management activities, please visit the official website.

Interactive User Guide

This sustainability report was published as an interactive PDF to enable users to move to a specific page and/or an associated website.

Cover Story

This image from THRONE AND LIBERTY, NC's new game set for release, embodies NC's commitment to moving towards a sustainable future and consistently rising to new challenges.

ESG PLAYBOOK 2022
NCSOFT SUSTAINABILITY REPORT

Contents

INTRODUCTION

THRONE AND LIBERTY

A new global MMORPG (massively multiplayer online role-playing game) under development as NC's fifth flagship IP
(to be released in the latter half of 2023)

Who We Are

Ushering in a future where all are connected by joy, NC perseveres in making this dream a reality and tirelessly rises to new challenges.

COMPANY OVERVIEW

Name of company	NCSOFT Corporation
Date of establishment	March 11, 1997
Type of business	Developing and publishing online mobile game software
CEO	Kim Taek-Jin
Employees	4,796 (On a non-consolidated basis)

GLOBAL NETWORK

As the end of 2022

Name of company	Location	Date of establishment	Total employees	Main business
NC WEST HOLDINGS	Washington, the U.S.	2012. 12	406	Game publishing / development
NC JAPAN K.K.	Tokyo, Japan	2001. 09	180	Game publishing / development
NC TAIWAN CO., LTD.	Taipei, Taiwan	2003. 08	107	Game publishing / development
NC VIETNAM VISUAL STUDIO CO., LTD.	Ho Chi Minh, Vietnam	2020. 01	105	Art outsourcing
NC EUROPE, LTD.	Brighton, the U.K.	2004. 07	9	Game publishing

MISSION

PUSH, PLAY

'PUSH, PLAY' embodies NC's commitment to ceaselessly pushing the boundary of what technology has to offer and create the innovative experiences of connecting people with joy.

PUSH

Spirit of challenge to enable technology innovation

PLAY

Imagination to bring innovation to user experience

CORE VALUE

INTEGRITY

True commitment to quality

PASSION

Passion to never stop trying

NEVER-ENDING CHALLENGE

Never ending challenge to create a joy-filled world

What We Create

On the strength of best-in-industry development technology and service capabilities, NC pushes the boundary into a host of platforms and services, including but not limited to the Lineage series, AION, Blade & Soul, and the Guild Wars series.

Mobile game · Service

PC · Console Game

Cultural Content

Chairperson's Message - ESG Steering Committee

NCSOFT is taking action on multiple fronts with the belief that ESG management is only essential in our path towards sustainability.

Dear Valued Stakeholders,
As the Chairperson of the NCSOFT ESG Steering Committee, let me first begin by extending my deepest gratitude to our shareholders, customers, partners, and employees for their steadfast interest and support in NCSOFT.

Today, corporate sustainability is gaining prominence more than ever. Companies and markets are exposed to ever-increasing social and economic fluctuations, and changes in our natural environment represented by global warming also bring massive impact to business activities. New regulations are emerging starting with the US and Europe, which include legislation for sustainability due diligence, and sustainability disclosure standards continue to tighten. Global institutional investors and other stakeholders are also speaking up demanding that businesses establish their sustainable management system.

Making our management strategy and business operations more sustainable is absolutely imperative in ensuring our survival as a company as we navigate the shifting global landscape. NCSOFT is taking action on multiple fronts with the belief that ESG management is only essential in our path towards sustainability.

NC puts sustainability as our top priority in establishing relevant institutional settings to build our future competitive edge and market leadership and to fulfill our responsibility towards the environment and society. **We apply rigorous standards to take stock of our own operations across all areas**, from game development and operation, technology, and R&D to attraction and development of human resources and corporate culture, **that may affect our sustainability.** We also keep close tabs on changing external conditions and our internal/external stakeholders to integrate the feedback gathered as such into our sustainability management system. To advance our sustainability management in a more systematic way, we launched the ESG Steering Committee in 2021 with top executive members attending to deliberate on relevant issues from multiple perspectives, and we brought in an expert in the field of environment and ESG as an outside director in 2023. We are confident that as such efforts translate into robust internal implementation and sincere execution, this will **bring even more diverse joy to our global customers and drive sustained and shared growth with our shareholders, customers, partners, employees, and society at large.**

Let me elaborate on NCSOFT's approach and commitment to sustainability management in line with our three core values of 'Joy Created Together', 'Digital Responsibility', and 'Qualitative Leap of Society'.

1. Joy Created Together
To stamp out hatred and discrimination while embracing greater cultural diversity within our content, we will bolster relevant processes all the way from development to product launching. We will widen the lines of communications with our customers during our entire operational phase so that their valuable feedback is constantly apparent in our development efforts.

2. Digital Responsibility
We will beef up our data privacy and information security management system on par with global standards to ensure our customers feel fully confident in accessing our services. We will also reinforce our management system to incorporate ethical considerations in the development of our technologies as the upcoming future of AI unfolds.

3. Qualitative Leap of Society
We are sincerely committed to advancing environmental management for the long haul. We will extend the scope of our environmental data management system, including GHG emissions, to include subsidiaries and improve energy efficiency at our office buildings and data centers. As a corporate member of society, our aim is to leave a legacy for communities' development and growth of generations to come – a future ripe with a broad spectrum of opportunities that can drive our society to take a qualitative leap forward.

Regarding of ESG management activities on the back of our three core values, we will transparently disclose our achievements and continue to broaden our communication with the Board of Directors and stakeholders. We at NCSOFT tirelessly strive to heed the voice of our shareholders, customers, partners, and employees and to bring joy of earnestly working towards ushering in the best possible outcomes. We look forward to your plentiful interest and advice as we deliver on our commitments to sustainability.

Sincerely,

Yoon Song-Yee
Chairperson of the ESG Steering Committee

NC ESG Management Core Values

NC dreams of a new world connected by joy and defines our core values of sustainability management as Joy Created Together, Digital Responsibility, and Qualitative Leap of Society. This drives our efforts to systematically advance ESG management with the NC ESG Steering Committee and its working-level organizations playing a central role.

A New World Connected through Joy

Joy Created Together
- Diversity & Inclusion
- Customer Communication
- Care for Employees

Digital Responsibility
- Information Security & Data Privacy
- AI Ethics
- Service Reliability

Qualitative Leap of Society
- Environmental Management
- Future Generations
- Local Community

Governance | Human Capital Development | Ethical Management | Human Rights Management

ESG Steering Committee

Chair CSO (Chief Strategy Officer)

Members:
- **COO** (Chief Operating Officer)
- **CFO** (Chief Financial Officer)
- **CLO** (Chief Legal Officer)

Working-level organization: ESG Management Division

Role & Responsibility
- Establish and implement ESG management policies and strategies
- Review the progress and results of ESG management activities
- Establish and implement environmental management policies
- Review externally-disclosed ESG management performance data, including ESG reports
- Deliberate on and approve key ESG implementation results for the pertinent year and plans for the following year

Reporting Cycle
- Convene on a quarterly basis (on an as-needed basis when key issues arise)

2022 Activity

Meeting	Agenda
1st meeting (Apr. 14, 2022)	ESG management achievements in 2021 and the organization of sustainability reports
	Establishment of operational regulations of the ESG Steering Committee
2nd meeting (Jun. 17, 2022)	Publication of the 2021 sustainability report
	Discussion on ESG management trends and approaches: Key ESG management tasks among IT and game companies, assignment of the lead department for each of the ESG management agendas
3rd meeting (Sep. 14, 2022)	Advancement of ESG management in 2022: Implementation of ESG tasks for respective areas including environment/AI, advancement of the ESG assessment response system, and (planned) implementation of materiality assessment

Materiality Assessment

NC performed materiality assessment in line with the updated GRI (Global Reporting Initiative) standards. ESG topics that are material to NC were identified based on understanding on the business context, and our business activities associated with each ESG topic were assessed for their impact on the economy, environment, and people. This was followed by impact assessment made by internal·external stakeholders whose views could inform the process of determining our material topics. Impact assessment was conducted on each topic according to the four criteria of scale, scope, irremediable character, and likelihood[1], and this led us to arrive at eight material ESG topics.

Materiality Assessment Process

Process	Objective and Activity	Specific Process and Consideration	Deliverables
Understand the business context	Understand a company's business operations, business relationships, and sustainability context to fully identify actual and potential impact significant for sustainability	· **Operations in general:** Mission, business model & strategy, products and services, location, type of workers, etc. · **Business relationship:** Type of major business, characteristics of customers and supply chains, etc. · **Sustainability context:** Industry, activities, location-related economic, environmental, and social issues, laws, and regulations, etc.	Identify stakeholders (employees, users, shareholders & investors, partners, communities, etc.)
Identify a pool of topics	Determine topics that fit the characteristics of the company and its industry and for which stakeholders require disclosure	· Analyze major disclosure guidelines (GRI, SASB, etc.) · Analyze major ESG rating standards (MSCI, DJSI, etc.) · Analyze key ESG topics reported by industry peers	List of 17 topics
Assess topics for their impact characteristics	Define the impact of each topic on the economy, environment, and people and identify the characteristics of impact (positive/negative, actual/potential) to prioritize topics	· Understand policy and regulatory requirements, media articles, global disclosures and assessment standards, shareholder·investor requirements, and ESG committee agendas associated with each topic · Define the social and environmental impact of NC's activities associated with each topic and distinguish the target of their impact (economy, environment, people) based on prior understanding · Distinguish topic-specific impacts into positive or negative, and actual or potential based on NC's activities and identify their characteristics	Develop impact assessment tools
Assess topics for their impact	Survey internal/external experts who can inform the process of prioritizing topics for their understanding on NC and ESG (Mar. 2023 ~ Apr. 2023)	· Topic assessment criteria: Scale, scope, irremediable character, likelihood · Detailed assessment by impact characteristic Actual negative impact: Scale X scope X irremediable character Potential negative impact: Scale X scope X irremediable character X likelihood Actual positive impact: Scale X scope Potential positive impact: Scale X scope X likelihood	Impact assessment results and priorities
Determine material topics	Determine the priority of reporting topics	· Perform quantitative analyses on impact assessment results · Group material topics to be reported based on assessment results	Determine material topics and group reporting topics

Topic Pool for 2022

E	Responding to climate change and improving energy efficiency
	Creating green values
S	Information security and data privacy
	Improvement of user (customer) satisfaction
	Diversity and inclusion in content
	Digital responsibility and innovative technology
	CSR
	Talent recruitment and support for growth
	Human rights management
	Win-win cooperation with communities
	Fair performance appraisal and compensation
	Operational and service reliability
	Employee health and safety
	Win-win partnership with partners
G	Ethical Management
	Sound governance
	Promoting shareholder value and communication

1) Scope is defined as the severity of impact on stakeholders for each topic, scale as the boundary of stakeholder groups or the extent of the environment affected, irremediable character as the amount of time and cost taken to remedy the causes of impact (for negative impact only), and likelihood as the probability of impact occurring and frequency of impact occurring (for potential impact only).

Materiality Assessment Results

Category	No.	Material Topic	Characteristic of Impact	Key Impact	Target of Impact	Social· Environmental Impact Level	GRI Index	Reporting Topics	Page
Environmental	1	Responding to climate change and improving energy efficiency	Negative-actual	GHG emissions generated from overall supply chains give rise to such negative climate events as abnormal weather conditions, natural disasters, and ecosystem destruction.	Environment	●●●	305-1~5, 302-1~4	Environmental Management	36~41p
			Positive-potential	GHG emissions and adverse environmental impacts could be minimized through a transition to clean energy for power consumption, the sourcing of renewable energy (participation in Renewable Energy 100 (RE100), the green premium program, PPAs, etc.) and the introduction of EVs.	Environment				
			Positive-potential	Improving energy efficiency and sourcing and management of renewable energy could impact the creation of new markets and the revitalization of economic activities, and may result in savings in business operation expenses.	Economy				
Social	2	Information security and data privacy	Positive-actual	Systematic data privacy systems, secure data collection·use·management, and information security training could guarantee the human rights and privacy of stakeholders in relation to data privacy, and prevent a range of damages.	People (external)	●●●●●	418-1	Information Security and Data Privacy	25~29p
	3	Improvement of user (customer) satisfaction	Positive-actual	Transparent customer communication and diverse communication channels help build trust between the Company and stakeholders and improve customer satisfaction, and could also lead to improvement in content quality and the dissemination of a joyful game culture.	People (external)	●●●●	-	Customer Communication	16~18p
			Negative-potential	Degradation in game service quality management may undermine a company's reputation and credibility while decreasing its operating profit, and give rise to investment risks from the viewpoint of investors.	People (external)				
	4	Diversity and inclusion in content	Positive-actual	Diversity and inclusion in content could prevent cultural, political, and social risks, and engaging with users from diverse backgrounds could contribute to expanding the games industry and disseminating a wholesome game culture.	Society	●●●	-	Diversity & Inclusion	13~15p
	5	Talent recruitment and support for growth	Positive-potential	Securing professionals and increasing the diversity of employment could result in greater value of human and intellectual capital through the development of the games market and the resolution of unemployment issues among vulnerable groups.	Economy	●●●●●	401-1~3, 404-1~3	Care for Employees, Human Capital Development	19~23, 52~54p
			Positive-potential	A diverse workforce enables a company to develop games and provide services in reflection of needs of varying users, which could lead to improvement in user satisfaction and diversity & inclusion in content.	People (internal·external)				
			Positive-actual	Employee benefits help improve the quality of life for employees and their work motivation to ultimately increase employee satisfaction, create an efficient work environment, and build a wholesome corporate culture.	People (internal·external)				
	6	Digital responsibility and innovative technology	Positive-potential	Supporting the digitally underprivileged and engaging in AI ethics activities help contribute to improving service accessibility, bolstering the industry's technology, disseminating a wholesome media culture, and promoting academic technology development.	Society	●●●	-	AI Ethics	30~33p
			Negative-potential	The groundbreaking advancement of AI technology could potentially lead to inconvenient and uncomfortable user experiences including data privacy/information security issues, increasing unemployment, and human rights violation caused by technology errors.	People (external)				
Governance	7	Sound governance	Positive-potential	Sound governance boosts efficient corporate operation and profitability gains, and could also help protect the rights and interests of varying stakeholders, promote constructive corporate growth, and fulfill social responsibility.	Economy	●●●●	2-9	Governance	48~51p
	8	Ethical management	Positive-actual	Transparent, integrity-driven, and ethical management contributes to driving corporate sustainability and building trust-based relationships with stakeholders, and also helps strike a balance in economic and social interest among wide-ranging stakeholders.	Society	●●●●	205-1~3, 206-1	Ethical Management	55~56p

*Financial impact assessment: NC surveyed working-level personnel at departments implementing or relevant with ESG on the impact of material ESG topics on our financial performance including sales, expenses, and cash flows. This revealed that topics 2, 3, and 6 were high in financial impact, topics 5, 7, and 8 were medium, and topics 1 and 4 were low.

PUSH FOR A BETTER FUTURE

Lineage W

A global MMORPG developed by NC to cater to worldwide users while inheriting the heritage of Lineage (released in November 2021)

Comments Come&Go

Dev Talks
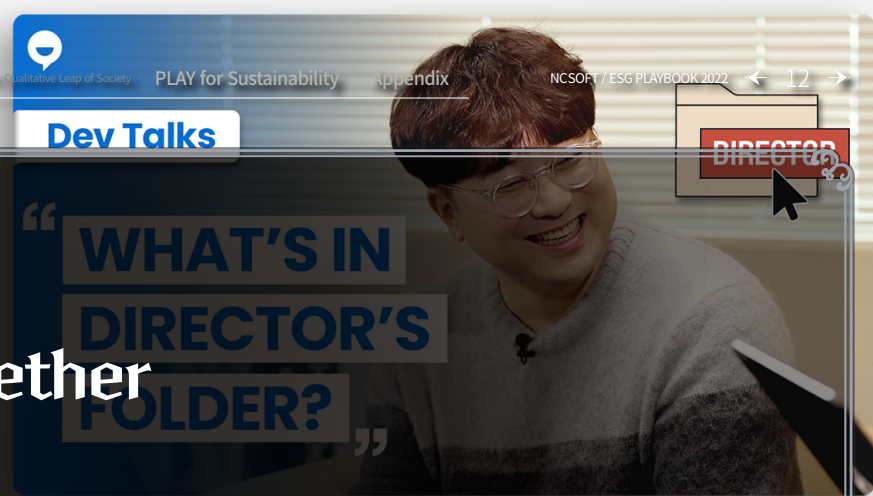
" Your **Comments**, Our **Replies** "

Joy Created Together

WHAT'S IN DIRECTOR'S FOLDER?

Diversity & Inclusion

Customer Communication

Care for Employees

NC, What are you doing?

Ask later   Answer now

NCing

PROJECT G
eNCounter

PUZZUP AM!TOi
Devlog

CRUSH
...y Trailer

eNCounter

NCing

NC's open R&D culture to expand communication in diverse format and incorporate user feedback from the development phase

PUZZUP AM!TOi
eNCounter

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Diversity & Inclusion | Customer Communication | Care for Employees
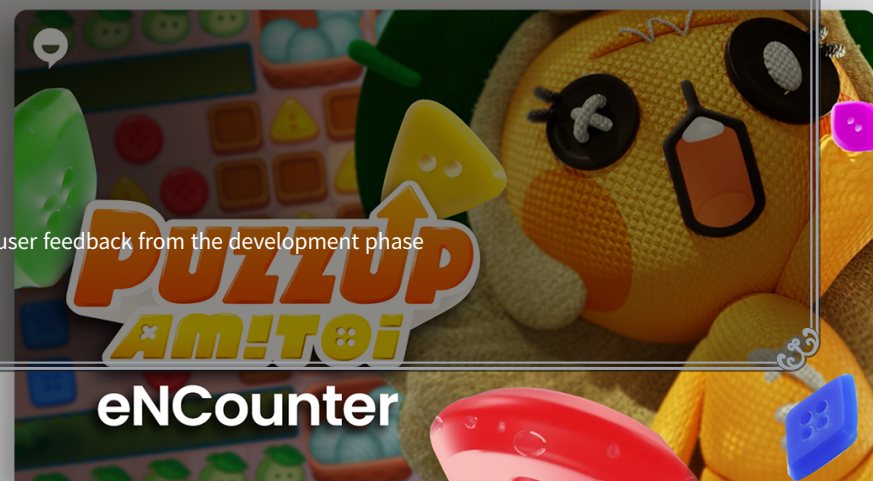
Diversity & Inclusion

NC will ensure our content and services are designed in a way that embraces cultural diversity while preventing hate and discrimination. We will also provide a discrimination-free, equal game environment for all users. In so doing, we create a future together in which joy connects us all.

NC Diversity & Inclusion Framework

Mission — A world where everyone is connected by joy

Vision — Bias-free content that users can universally understand

Approach
- Increase diversity in content
- Prevent hateful and discriminatory in content
- Provide a discrimination-free gaming environment

Culturalization · Quality Assurance · Make games more accessible

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Diversity & Inclusion | Customer Communication | Care for Employees

Increase Diversity in Content

Culturalization

Our culturalization initiative aims to prevent the risk of containing hateful or discriminatory connotations within content during the global product launching process while embracing even greater cultural diversity. Culturalization refers to reviews that are performed to create content that users can universally understand and effortlessly immerse themselves into based on the understanding of superficial diversity (gender, age, race, physical disability, etc.) and cultural diversity (language, dress, customs, moral norms, etc.) of countries around the globe.

Culturalization Details

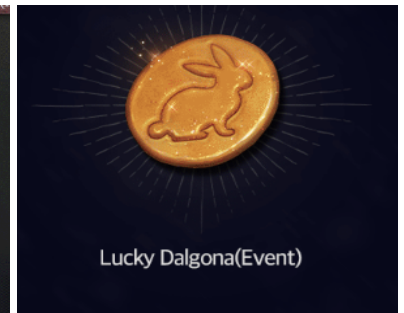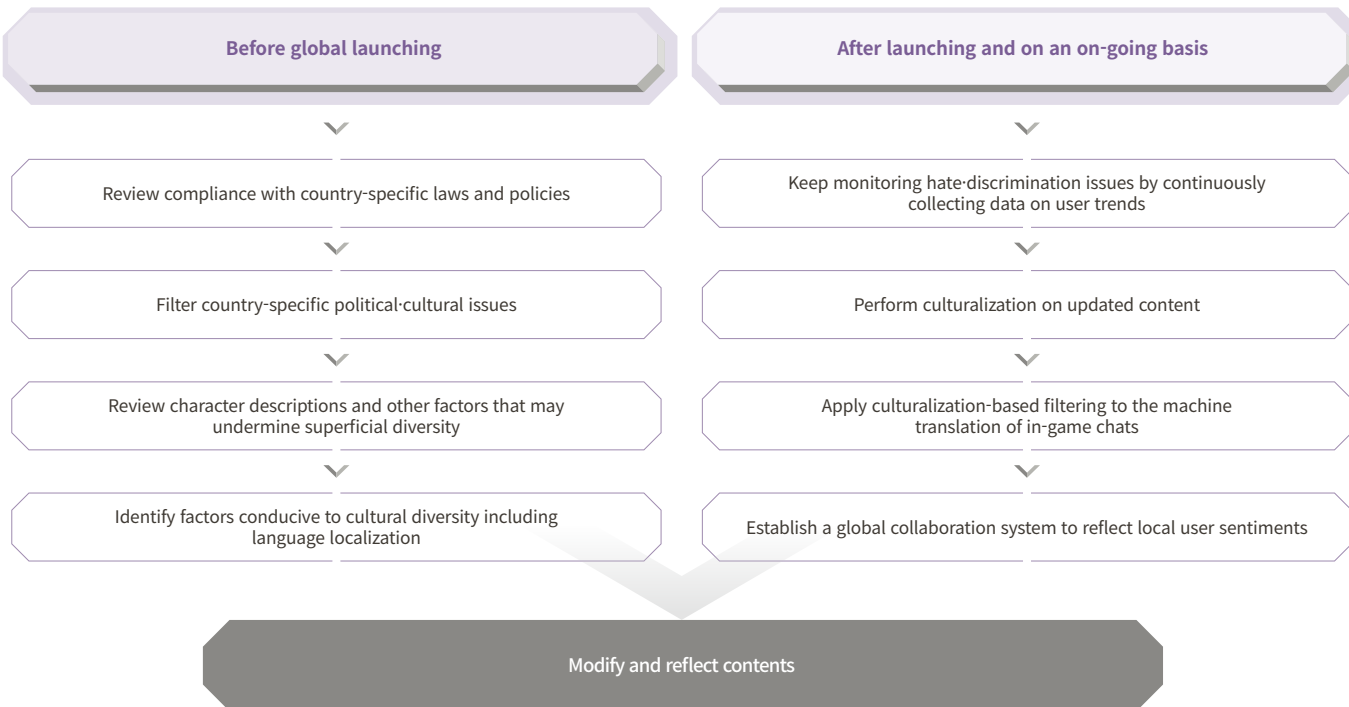| IP	Details
Lineage W· Lineage 2M	• Eliminated terms indicative of gender from monster and collection names : Swordsman, Spearman → Legionary, Impaler • Switched to more inclusive words in hosting specific religious events : Christmas → Holiday, Christmas Tree → Fir Tree • Reflected Korean cultural elements such as 'Chuseok' in naming items : Chuseok, Tteokguk, Yakgwa Cookie, Dalgona
THRONE AND LIBERTY	• Diversified options to customize appearance settings across a broader spectrum of races, gender distinction, and age groups

Culturalization Process

Before global launching
▼
Review compliance with country-specific laws and policies
▼
Filter country-specific political·cultural issues
▼
Review character descriptions and other factors that may undermine superficial diversity
▼
Identify factors conducive to cultural diversity including language localization

After launching and on an on-going basis
▼
Keep monitoring hate·discrimination issues by continuously collecting data on user trends
▼
Perform culturalization on updated content
▼
Apply culturalization-based filtering to the machine translation of in-game chats
▼
Establish a global collaboration system to reflect local user sentiments

Modify and reflect contents

Naming in-game items

Diversified character customization

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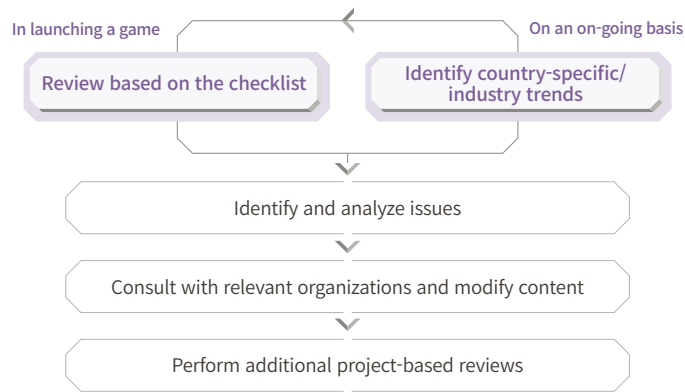
Diversity & Inclusion   Customer Communication   Care for Employees

Preventing Hateful/Discriminatory Content

QA(Quality Assurance)

Our QA process ensures that our content is developed from the D&I viewpoint. This process considers our compliance with language and cultural taboos, laws and regulations, and moral and ethical values of respective countries. To raise the bar on our inspections, we reinforce our system to provide training and collect information on current affairs and humanities to keep close tabs on the domestic and international landscape while constantly updating our ethics checklist to cope with emerging D&I issues.

Country-specific Content QA Process

In launching a game | On an on-going basis

[Review based on the checklist] [Identify country-specific/industry trends]
↓
[Identify and analyze issues]
↓
[Consult with relevant organizations and modify content]
↓
[Perform additional project-based reviews]

QA Inspections Performed

IP	Inspections Made
Lineage W	• Renamed events suggestive of specific injuries or fatalities : Festival of the Undead → Rahdon's Rage
Lineage M	• Removed expressions prone to distorted interpretations concerning specific religions
Lineage 2M	• Renamed episodes suggestive of disasters caused by torrential downpours : City of Water: Inadril → Eva's Blessings: Inadril
Blade & Soul	• Removed content suggestive of cross-border conflicts/wars • Modified sexually-discriminatory or demeaning expressions
AION	• Improved expressions associated with national events or cultures
Others	• Blocked content containing or remindful of political/social issues • Eliminated content that may give rise to licensing issues

Process to Embrace D&I within Content

NC's games are made diverse and inclusive through our systematic process. Under this process, the DEI Advisory Council decides on the proposals made by the DEI (Diversity, Equity, and Inclusion)[1] Group and the ACR (Asian Cultural Representation)[2] Group on an on-going basis, and Upper Management grants the final approval.

1) An employee resource group that consists of employees from diverse cultural backgrounds to discuss the topic of D&I on an on-going basis
2) An employee resource group composed of employees representing Asian cultures to discuss game designs and social issues from the D&I viewpoint on a monthly basis

Process to Embrace D&I

[ACR Employee Resource Group]   [DEI Employee Resource Group]
↓ Proposal
[DEI Advisory Council]
↓ Report
[Upper Management]

Case Study: Guild Wars 2

We remained committed to making Guild Wars 2 more diverse and inclusive since its release in 2012 by reaching close to 50:50 in gender ratio for in-game NPCs (Non-Player Character) and voice-over and by manifesting diverse sexual orientations in in-game plant species.
In 2022, we realigned the art style guidelines for Guild Wars 2 to strengthen its D&I considerations. The game item production pipeline was updated to reflect the revised guidelines and was completed in Q3 2022.

Providing a Non-discriminatory Game Environment

Improving Users' Accessibility to Games

NC creates a discrimination-free, equal game environment for our users. To make our game environments accessible for all, we defined standard accessibility options, and established accessibility option development guides to illustrate detailed methods to implement each option. These guides elaborate on detailed accessibility options for their implementation approaches, methods, specifics, and examples under the nine categories commonly applicable both to our PC and mobile platform games. Our accessibility option guides were circulated among development teams at all levels to be applied to games under development, and were made available on our in-house information-sharing webpage for working-level developers to refer to as they wish.

Efforts of the Global Gaming Industry to Improve Accessibility for People with Disabilities

Efforts are on-going to make games more accessible for people with disabilities across the global gaming industry. The CVAA (21st Century Communication and Video Accessibility Act) requires communication and video services provided in the US to be easily accessible by people with disabilities. Microsoft and other global publishers and game engine developers including Unity and Epic Games also provide guidelines and lectures to render games accessible to people with disabilities. As of the end of 2022, more than 59% of global top 100 best-selling games offered a range of accessibility options.

Customer Communication

Communicating with Customers Early from the Development Phase

NC strives to pursue open communication early from the development phase to produce content that brings joy to users. Taking the Shift Left approach to initiate communication as early as possible and seek change in so doing, we build a culture of communication that engages even potential users as well as incumbent global users.

NCing, Creating Games Together with Users

NCing, our publicly-available R&D content, intends to communicate with users as part of our development process. NCing serves to introduce our new games and projects under development and update users on their development status and process. By sharing with users content associated with our games early from their development phase including their development purpose, production process, and behind-the-scenes stories, we directly collect feedback from users and reflect such feedback in our game development efforts.

In 2022, we unveiled content on our on-going development projects - Project M, LLL, Project G, Battle Crush, and PUZZUP : Amitoi – including play videos, trailers, developer interviews, behind-the-scenes stories, and comments made by users to directly communicate with designers and developers. In 2023, we will go beyond sharing our development process through online videos to leveraging offline and diverse formats of communication.
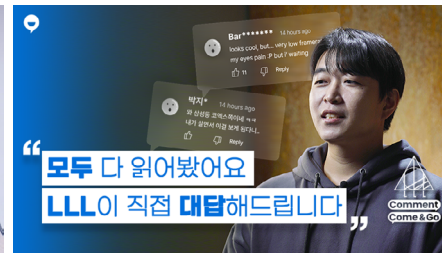
NCing videos

[NCing] PUZZUP : Amitoi
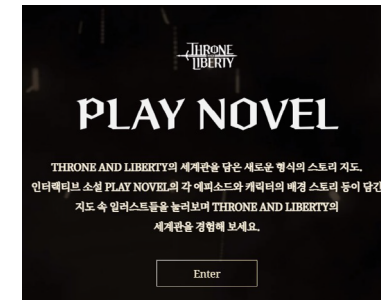| GamePlay Concept Trailer | eNCounter

[NCing] Project M Devtalks

[NCing] | LLL Commentary Video | Comment Come & GO

Go to NCing

TL PLAY NOVEL for Interactive Stories

NC published PLAY NOVEL, an interactive novel which unfolds its story in the world of THRONE AND LIBERTY (TL) that we will release soon, on our wide-ranging communication channels. This novel was designed to help readers immerse themselves into the story through the combination of interactive elements including TL's worldview as well as arts and sounds. Providing users with content to experience the world of TL in advance, this novel served as a new channel to elevate excitement among global users in the pre-launching phase and reach out closer to them. PLAY NOVEL was honored with the Digital Campaign Communication award at the iF Design Award 2023 held in Germany.

TL PLAY NOVEL

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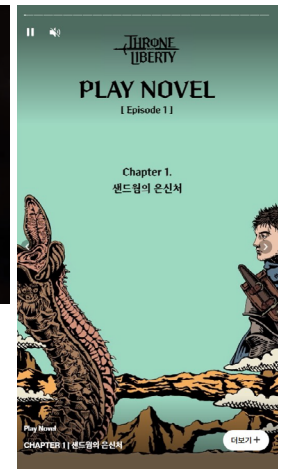
Post-release Communication with Customers

To engage with our users in the most genuine way possible, NC proactively expands opportunities to communicate with them through a broad array of channels. We aim to offer users joy in an unprecedented way as well as enriched experience through interactive communication.

Extending the Scope of Communication and Diversifying Channels

NC heeds user feedback through wide-ranging channels including Youtube, discussions, and bulletin boards and directly integrates such feedback into our games through open communication. Not only do we provide information through updates and events, but we also broaden our communication methods to include interviews between different groups competing in a game and entertainment show-type videos to interact with users outside the world of games. While we previously focused on domestic users only in our communication activities, we extended their scope towards overseas markets to cater to the global game-playing environment, and hosted live user discussions in Japan and Taiwan. In addition, we arrange direct communications that feature game masters (GM) within a game on an on-going basis.

Lineage W

Lineage W Expanding Global Communications

Directors' Talk in TAIWAN, a discussion meeting held in celebration of the first anniversary of Lineage W, was a clear success as our first overseas offline event. The meeting was simultaneously broadcast through Korean and global channels, and reached nearly 18,000 in the number of peak concurrent viewers in Korea and abroad. The event served to communicate with users: featured personnel directly answered the questions raised by users and we promised to reflect users' feedback. Studio W has since been hosted consistently as our live broadcast show for real-time communication, and we are working to expand channels to hear the voice of even more global users.

2022 Director's Talk in TAIWAN

Lineage M

Lineage M, Making Donations Together with Users

In commemoration of the 2,000th day of releasing Lineage M, we held a donation event titled 'Santa's Special Gift' in December 2022. A total of 228,680 users purchased donation items (named 'warm-hearted star') with the in-game money they have to join the donation event. NC donated KRW 20 million to the Korea Childhood Leukemia Foundation, along with DOGURI dolls and school supplies, to communicate how our users care about pediatric cancer patients. This initiative was inspired by the preceding donation made to the Foundation in July 2022 by the blood pledge that was awarded prize money at the 'Journal of Monarchs' event held for Lineage M's blood pledges. As such, our interaction with users moves beyond the joy of playing games to living by the value of sharing.

Donation made together with users   Donation made in celebration of Lineage M's 2,000th day

Diversity & Inclusion   **Customer Communication**   Care for Employees

New Touchpoints for Customer Communication

Opening NC PLAY as Our Global & Interactive Communication Platform

NC opened NC PLAY as our new communication platform in August 2022 to help global customers and stakeholders easily access and experience NC's branded content. This brand media presents a wide variety of engaging content, from newsroom content to communicate NC's corporate values and culture, games, and R&D technology to interactive, vertical, and short-form videos. Such content is made available in English, Japanese, and traditional Chinese to reach out to global customers. In recognition of the achievements we made with our customer-friendly platform, we were awarded in the communication (website) category at the iF Design Award 2023, one of the global top 3 design awards, in April 2023.

Go to NC PLAY 🔗

Awarded at the iF Design Award 2023

Weekly News EDGE

To promptly keep our stakeholders updated on our corporate value and business activities on a weekly basis, we launched EDGE as our weekly news content and published a total of 63 videos as of June 2023. EDGE helps us share our corporate values with the public, ranging from our CSR activities for a sustainable future to our technology and commitment to games, members' expertise, and R&D vision.

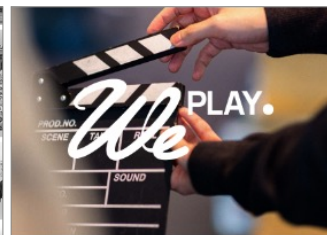### MOMENT & WE PLAY to Share Our Corporate Culture

MOMENT and WE PLAY serve to externally communicate our employees' activities and our positive corporate culture. MOMENT comes in photo sketch format to capture a variety of moments that our employees experience as part of NC corporate culture. A total of 20 episodes have been published to cover company-wide cheering in the baseball game, hobby club activities, and recruitment news. WE PLAY features videos to introduce our departments working to pursue a creative and self-directed corporate culture and our diverse employees. A total of three videos were produced as of March 2023 to share NC's corporate culture.

Diversifying Communication Methods

Meet THRONE AND LIBERTY First Offline

NC arranges a variety of communication opportunities for users to directly experience the worldview of THRONE AND LIBERTY (TL) set for release in the latter half of 2023.

Dinos TL Day

In August 2022, we hosted Dinos TL Day at the NC Park in Changwon. We unveiled the new brand identity of TL, and provided audiences with a variety of on-site events, along with diverse attractions including media wall AR content made possible with NC's cutting-edge technology, videos on the electronic scoreboard, and special uniforms.

TL Encountered at the Museum

To communicate NC games' distinctive artistic values, we participated in the Maurizio Cattelan's solo exhibition [WE] held at the Leeum Museum. For four months from January 2023, we exhibited two original drawings of TL to broaden the intersection between games and arts.

DOGURI, a Character for Everyday life Communication

NC leverages our character DOGURI to expand online and offline communications – online participatory campaigns, pop-up stores, and collaboration with multiple brands - and closely interact with customers.

EDGE | THRONE AND LIBERTY in the museum

MOMENT | Seizing and archiving the moment of NC

WE PLAY | Standing on the starting line together

DOGURI pop-up store

DOGURI collaboration products

Introduction   **PUSH for a Better Future**   ▶ **Chapter 01. Joy Created Together** • Chapter 02. Digital Responsibility • Chapter 03. Qualitative Leap of Society   PLAY for Sustainability   Appendix   NCSOFT / ESG PLAYBOOK 2022   ←   19   →

Diversity & Inclusion   Customer Communication   **Care for Employees**

Care for employees

Governance

Governance

NC operates the decision-making process and necessary controls and procedures to oversee and manage risks and opportunities associated with care for employees.

Mandate and Management & Oversight

Labor Relations

Labor-management council

Composition	3 employer members, 3 employee members
Mandate (Regulations)	Promote the common interest of labor and management and facilitate communication (labor-management council regulations)
Management and oversight	• Improve NC's productivity, consult on labor conditions (HR, corporate culture, etc.), make decisions, report, etc. • Resolve employee grievances
Cycle	Quarterly
2022 Activity	• Discussed labor-management council regulations, made improvements on employee proposals, consulted on time-off requests from foreign national employees for their work visa, office environments, and benefits • Shared council meeting results and opened and operated the wiki page for activities

Category	HR Center HR Partner Division
Role	• Operate channels and support institutional improvement to promote the common interest of labor and management and facilitate communication • Labor-management council organization and operation: Support its quarterly meetings

Health and Safety

Occupational Health and Safety Committee

Composition	3 employee members, 3 employer members
Mandate (Regulations)	Deliberate and decide on health and safety operations as the highest governance body for health and safety (health and safety management regulations)
Management and oversight	• Establish·amend health and safety regulation procedures, guidelines, standards, and rules • Develop health and safety prevention and action plans • Inspect·improve working conditions, perform maintenance on equipment and facilities • Perform and manage employee health check-ups, provide health and safety training
Cycle	Quarterly
2022 Activity	• Conducted risk assessments and improved risk factors • Investigated musculoskeletal occupational risk factors • Performed walk-around·joint inspections as a contractor

Category	CSMO[1] Safety and Health Management Division/ Safety and Health Policy Support Division
Role	• Manage and support activities to provide a safe and healthy work environment and implement the health and safety management system • Consultative body operation: Analyze regular meeting agendas of the Occupational Health and Safety Committee and support the hosting of meetings

Corporate Culture & Benefits

Category	ESG Management Division	CT[2] Center	People Happiness Center	Corporate Planning Division

Role	• Implement company-wide corporate culture assessments and improvement activities
	• Operate CSR activities that engage employees
		• Implement organizational development programs
		• Implement communication-based organizational revitalization programs
			• Plan and operate benefit programs
			• Implement company-wide events
			• Manage and operate workspaces
				• Facilitate communication between top management and employees
				  - NC [ ] Forum
				  - I&M REPORT
				  - In-house broadcast

1) Chief Safety Management Officer
2) Culture & Talent

Strategy

Strategy – Risk and Opportunity

NC identifies key risks and opportunities that may affect our stakeholders and corporate sustainability in relation to care for employees.

Key Risk & Opportunity and Our Response

Category		Impact	Impact Level[1]	Our Response	Affected Stakeholder
Risk	Excessive work engagement and the resulting decline in quality of life for employees	• Undermine employees' health rights and the quality of project deliverables to result in decreases in customer satisfaction	●●●	Provided flexible work arrangements and benefits	Employees, Customers
	Safety accidents	• Incur expenses to recover human/physical damages and employee health and to restore equipment and facilities • Cause employee damages/injuries, decreases in project productivity, and degradation in brand reputation	●●	Performed joint health and safety inspections and risk assessments	Employees, Partners
	Rigid corporate culture that hinders communication	• Decrease work efficiency • Increase employee turnover • Tarnish brand reputation	●●●	Implemented organizational culture programs including onboarding and communication ground rules	Employees
Opportunity	Continuous efforts for institutional improvement to build a inclusive corporate culture	• Improve work efficiency and the quality of project deliverables through active collaboration among departments	●●	Operated NC-in and other channels for free-flowing communication	Employees, Customers
	Ensuring employees' human rights (labor rights) and bolstering the work system	• Improve employee satisfaction and trust between labor and management	●●●	Operated the employee grievance mechanism (NC Tong)	Employees
	Bolster benefits	• Secure top talent and prevent turnover • Increase diversity in the composition of employees • Improve employee satisfaction and work efficiency	●●	Implemented a range of benefit programs	Employees

1) Categorized risks and opportunities into three types
● Business model (including the value chain): Impact on products and services delivered, profit generation methods, procurement & distribution networks, and investment in new businesses
● Business strategy: Impact on business operations (e.g., business suspension, damage to reputation, etc.)
● Cash flow, financing accessibility, and capital expenses: Impact on expenses and finances

Diversity & Inclusion   Customer Communication   **Care for Employees**

Strategy

Strategy – Our Response

NC operates a range of systems and programs to respond to key risks and opportunities associated with care for employees.

Category	Communication Channel	Description	2022 Activity
Expand communication between the Company (top management) and employees	I&M REPORT	Online town hall meeting through which the CEO and top management introduce pending corporate issues to employees to jointly explore possible improvements	H1: Communicated on NC's approach to internal/external communications H2: Communicated on NC's progress in developing live games and new projects and ways forward in 2023 (nearly 70% of all employees attended each session)
	NC [ ] Forum	Offline event through which officers, handling each of the topics associated with the Company and selected in advance, engage in direct communication through employees' questions and feedback	Sep: Hosted on the topic of 'corporate life (corporate ethics, compensation & assessment, working hours, benefits, financial management)' and reflected and implemented some of the ideas into corporate systems consecutively Apr. 2023: Communicated on the progress made in developing new games and conducting AI R&D
Game-focused communication – share a culture of development and knowledge	NCDP (NCSOFT Developers Party)	On/offline knowledge sharing conference to share development know-how through professional lectures and presentations	May: Provided 44 lectures on the theme of 'Re Focus, Re Connect' at the NCDP 2022, including <open recruitment lectures> to share one's technology and know-how for game development and <know-how sharing lectures> to handle topics chosen by employees
Operate company-wide channels to raise one's voice on corporate culture	NC-in	Online communication channel to collect and share corporate culture improvement plans on a monthly basis	H2: Collected employees' ideas and shared them across the board on five occasions, concerning our approach to corporate culture, free exchange of ideas, language and actions that may cause discomfort, meaning of work, and characteristics of high performers (Cumulative number of participants since launching in June: 2,901, average participation rate per episode: 12%)
Operate organizational development and revitalization programs	BTS(Best Team Start)	Team building program to create an inclusive and respectful corporate culture	Implemented programs to understand mutual work·communication styles (96 teams, 627 persons), set team-level ground rules (28 teams, 149 persons), and engage in in-depth conversations to resolve team issues (41 teams, 279 persons)
	Culture Class	Cultural/arts experience program to help gain new insights	May: Held the <DOGURI Drawing (fan) Contest> to help directly experience NC's character DOGURI (submission: 187 persons, voters who voted for their favorite submission: 1,973 persons) Dec: Held an exhibition titled <Moment (展)> to capture the key moments of NC in 2022
	Ground rules: Promises we should keep	Self-initiated communication promises made among employees to create a culture conducive to the free-flowing exchange of ideas	24 employees discussed and set candidate ground rules for six weeks Selected five promises for all NC people to follow through company-wide voting

Flexible Work Arrangements and Benefits

In consideration of the distinctive work characteristics of the games industry, NC completely abolished the comprehensive wage system in 2019 and instead introduced flexible working hours to offer our employees full autonomy for their work schedule(Part-time working options) so that they choose when to start and finish work. The GateOff system initiated in 2021 also intends to prevent unnecessary, extended work hours to help employees strike the right work-life balance. While we continue to improve our work systems, we also focus on improving welfare both outside and inside the Company to help employees enjoy an increased quality of life. As the pandemic subsided, we are going back to the office from remote work, and improved our workspaces and welfare facilities by expanding the medical room and nail care room in 2023.

Benefits

Category		Description
Facility	Childcare facilities	• Operate childcare facilities with 300-person capacity at our R&D center and Alpharium Tower • Provide childcare, education, health, and safety programs on the basis of an internally-developed IT operation management system
	Medical center	• Support internal medicine and surgery treatment·prescription, physiotherapy, dermatology treatment, IV fluid administration, and vaccination • Opened additional medical rooms to provide first-aid care and VR CPR training
	Fitness	• Operate personal PT, a GX activity room, screen golf, an indoor gym, and a spa (sauna which includes a Korean dry sauna)
	Library	• Provide more than 40,000 books published in Korea and abroad, regular publications, multimedia, and e-books to all employees
	Psychological counseling	• Operate psychological counseling rooms for employees and their families with the help full-time, licensed professional counselors (R&D Center, Alpharium Tower)
	Nail care room	• Operated by NCSS, our subsidiary and a standard worksite employing people with disabilities • Nail care professionals with hearing impairments provide basic nail care and gel care services
Program	Health check-up	• Support annual health check-ups for employees • Support employees to transfer health check-up benefits to their family members (every 2 years) • Offer additional support for brain MRA test for employees 40 years old and older (every 5 years)
	Medical plan	• Provide pay for hospitalization and out-of-patient treatment for employees and their spouses, children, and parents
	Welfare card	• Provide welfare points worth KRW 2.5 million per year to all employees (including those taking leave)
	Loan support	• Support employees to pay interest on housing loans (up to KRW 100 million) and to take out living support loans at below-market-average interest rates (up to KRW 30 million)
	Post-Scholarship	• Support new full-time recruits (less than 2 years of career) with undergraduate/graduate student loans worth up to KRW 15 million
	Others	• Provide ticket price discounts for games played at the NC Park in Changwon, support to attend NC Dinos' holiday games and receive special group attendance rates • Support employees with their convenient commutes (help pay for commuter shuttle buses and for parking at the office building and nearby parking lots) • Operate spaces dedicated to breast-feeding and breast pumping within the female lounge

Establishing Our Health and Safety Policy

NC established health and safety management guidelines to provide both our employees and partners with a safe and pleasant work environment. We will advance our health and safety management system through continuous improvement and proactive prevention efforts.

Health and Safety Management Guidelines 🔗

Conducting Regular Joint Health and Safety Inspections

NC established a system to safeguard our employees and partner employees from high-consequence injuries, and created the CSMO (Chief Safety Management Officer) position to further promote the systematic implementation of health and safety management in May 2022, bolstering our occupational health and safety management system in so doing. To prevent occupational incidents, we performed weekly walk-around worksite inspections as a contractor, and performed three rounds of joint health and safety inspections on subcontractors operating at the Company in the first half of 2022. Key improvements include the installation of fire blankets within the underground parking lot of our Pangyo R&D Center to respond to fires involving EVs, and this was notified to our employees and partner employees, along with user guides. We also communicated to our employees the location and user manuals of AEDs (Automated External Defibrillator) made available for emergency use, along with relevant training.

2023 Implementation Plan and Goal

In 2023, we will provide health and safety awareness-building training to employees who manage partners operating at our worksites, and ensure more rigorous health and safety management by identifying high-risk tasks and creating their register. We will also continue to communicate our NC Safety White Paper and circulate video materials to help employees promptly respond to emergencies.

Maternity Protection

Work-Life Balance Support Programs

Leave of absence during pregnancy·parenthood	• Support expectant mothers to take maternity leave • Support employees during their parenthood to take parental leave (up to 2 years including one year of statutory leave)
Reduced work hours during pregnancy·parenthood	• Operate reduced work hours for employees during their pregnancy·parenthood
Fertility treatment leave	• Support employees receiving fertility treatment to take leave
Maternity·miscarriage·stillbirth leave	• Support employees who gave birth or experienced miscarriage·stillbirth to take leave • Provide paternity leave
Prenatal check-up/parental leave	• Support expectant mothers to take leave for prenatal check-up • Support employees whose child is one year old or younger to take leave for childcare
Time-off·leave of absence·reduced work hours for family care	• Provide time-off, leave of absence, reduced work hours for employees to meet their family care needs

Diversity & Inclusion | Customer Communication | **Care for Employees**
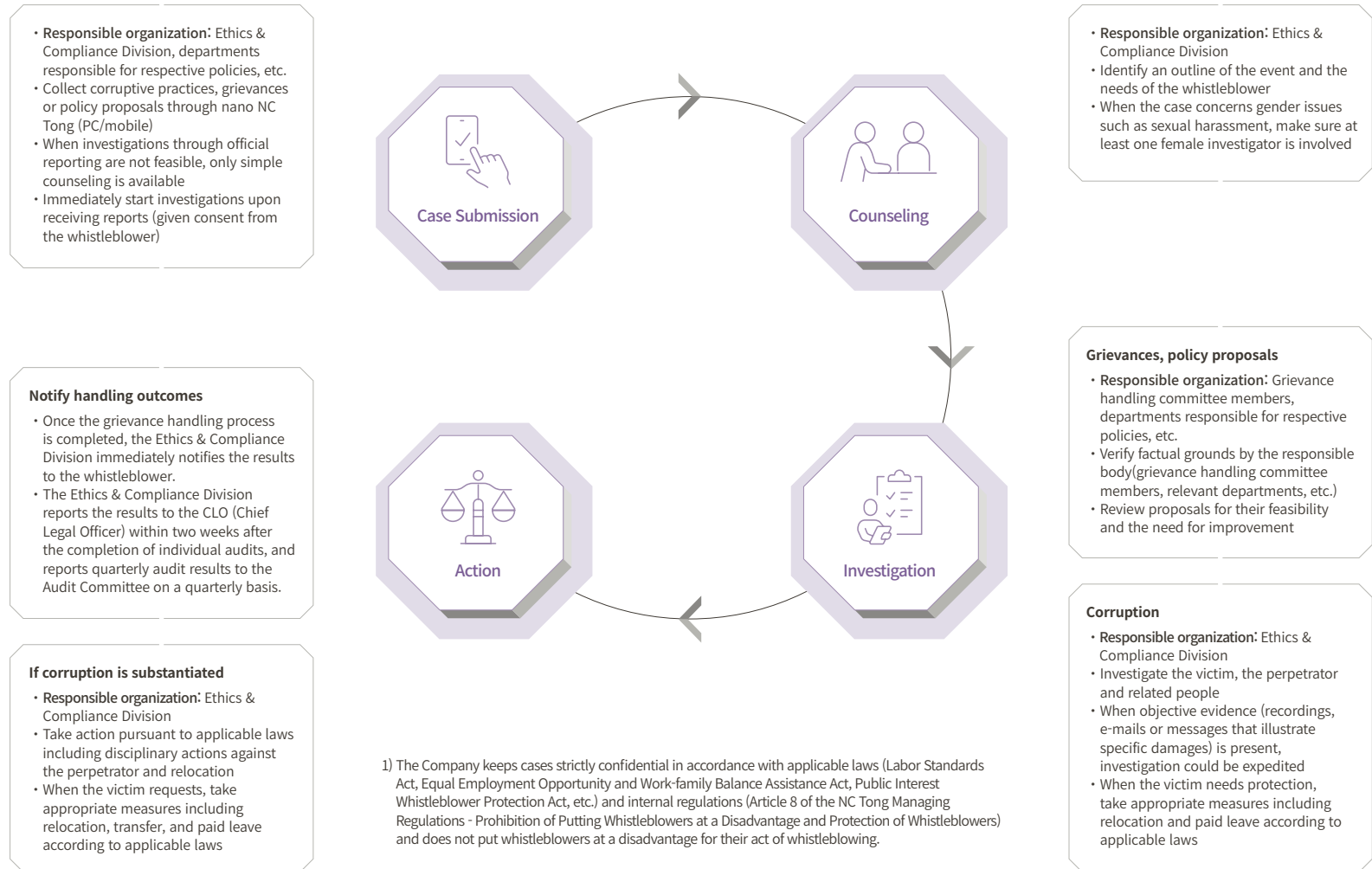
Risk Management

Risk Management

We implement the identification – assessment – management process to address actual and/or potential risk factors that may arise in relation to care for employees.

Employee Grievance Mechanism (NC Tong)

NC operates NC Tong as our internal grievance mechanism to collect grievances and feedback from employees and effectively handle them. NC Tong serves as our communication channel not only to address grievances associated with workplace sexual harassment and bullying but also to seek improvement in our corporate policies, institutions, and work environments, serving to improve our potential human rights and labor risks.

To ensure the concerns raised and whistleblowers remain confidential, we allow for anonymous reporting, protect whistleblowers, and make sure whistleblowers are not put at a disadvantage for the act of whistleblowing while handling all cases in accordance with the NC Tong's grievance reporting and handling process. Even after action is taken, we regularly monitor to develop follow-up measures and provide company-wide training to prevent the reoccurrence of similar concerns.

NC Tong's Grievance Reporting and Handling Process [1]

Case Submission
- **Responsible organization:** Ethics & Compliance Division, departments responsible for respective policies, etc.
- Collect corruptive practices, grievances or policy proposals through nano NC Tong (PC/mobile)
- When investigations through official reporting are not feasible, only simple counseling is available
- Immediately start investigations upon receiving reports (given consent from the whistleblower)

Counseling
- **Responsible organization:** Ethics & Compliance Division
- Identify an outline of the event and the needs of the whistleblower
- When the case concerns gender issues such as sexual harassment, make sure at least one female investigator is involved

Investigation

Grievances, policy proposals
- **Responsible organization:** Grievance handling committee members, departments responsible for respective policies, etc.
- Verify factual grounds by the responsible body(grievance handling committee members, relevant departments, etc.)
- Review proposals for their feasibility and the need for improvement

Corruption
- **Responsible organization:** Ethics & Compliance Division
- Investigate the victim, the perpetrator and related people
- When objective evidence (recordings, e-mails or messages that illustrate specific damages) is present, investigation could be expedited
- When the victim needs protection, take appropriate measures including relocation and paid leave according to applicable laws

Action

Notify handling outcomes
- Once the grievance handling process is completed, the Ethics & Compliance Division immediately notifies the results to the whistleblower.
- The Ethics & Compliance Division reports the results to the CLO (Chief Legal Officer) within two weeks after the completion of individual audits, and reports quarterly audit results to the Audit Committee on a quarterly basis.

If corruption is substantiated
- **Responsible organization:** Ethics & Compliance Division
- Take action pursuant to applicable laws including disciplinary actions against the perpetrator and relocation
- When the victim requests, take appropriate measures including relocation, transfer, and paid leave according to applicable laws

1) The Company keeps cases strictly confidential in accordance with applicable laws (Labor Standards Act, Equal Employment Opportunity and Work-family Balance Assistance Act, Public Interest Whistleblower Protection Act, etc.) and internal regulations (Article 8 of the NC Tong Managing Regulations - Prohibition of Putting Whistleblowers at a Disadvantage and Protection of Whistleblowers) and does not put whistleblowers at a disadvantage for their act of whistleblowing.

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Diversity & Inclusion   Customer Communication   Care for Employees

Metrics & Targets

Metrics & Targets

NC sets metrics and targets in relation to care for employees.

Health and Safety Risk Assessment

To fulfill our responsibility and obligation to ensure workplace safety, NC conducts regular risk assessments in line with our health and safety management system. Conducting risk assessments in the latter half of each year helps us preemptively identify and improve hazards·risk factors and safety risks and measure the effectiveness of our improvement activities through annual assessment result analyses.

Risk assessments were made on our Pangyo Office (Pangyo R&D Center and Alpharium offices), and NC Tower 1 between November and December of 2022. This revealed that there were a total of 123 hazards and risk factors, and the overall average risk level was medium. Such findings based our efforts to develop improvement measures for new risk factors identified and to define high priority tasks. Furthermore, our improvement activities undertaken for the risk factors identified in 2021 were assessed for their effectiveness and the results were reflected in implementing improvement measures.

Key improvement activities include installing dedicated storage boxes for inflammables for the integrated management of chemical risk factors, installing fences around the rotating body within the elevator machine room, and ensuring the connection of ground wires for motors and vacuum pumps within the machine room, to reduce hazards and risk factors within the workplace. Through our efforts to preemptively identify risk factors, we also replaced old chain block device hooks and portable ladders.

2023 Implementation Plan and Goal

We will make improvements based on the risk assessment results generated in 2022. While we regularly convene the Occupational Health and Safety Committee and conduct risk assessments, we will also provide employees with health check-ups and job trainings. We will continue with walk-around and joint inspections on partners, and verify partners for their implementation of risk assessment and provide recommendations to bolster our health and safety operations. Our goal is to maintain a significantly low level of risks in the upcoming years through the implementation of such activities.

Employee Diversity

Category		Unit	2019	2020	2021	2022
By age	Under 30	number of people	601	653	707	673
	30~50	number of people	3,130	3,541	3,857	4,016
	Over 50	number of people	31	37	63	107
By gender	Ratio of all female employees	%	31.8	32.3	33.3	33.4
	Ratio of female team leaders[1] and executives (registered/non-registered executives)	%	17.8	20.0	20.5	20.7
	Ratio of female executives	%	9.6	12.5	14.9	13.9
	Ratio of female team leaders	%	18.4	20.6	21.0	21.2
Total No. of foreign national employees		number of people	27	37	34	35
Total No. of employees with disabilities		number of people	15	14	23	21

1) Defined as positions to make basic decisions and manage department members for the responsible function

Health and Safety

Target

Target Metric	Target (quantitative)	Target Year
Number of high-consequence injuries	Zero	Annual

Work-related Injuries

Category	Unit	2019	2020	2021	2022
Total hours worked	hour	7,524,000	8,462,000	9,240,000	9,578,000
Injury rate[1]	%	0.08	0.05	0.02	0.02
LTIFR (Lost Time Injury Frequency Rate) [2]	Lost workdays per every 1 million hours worked	0.40	0.24	0.11	0.10
Fatalities	number of people	0	0	0	0
Employees who sustained occupational injuries	number of people	3	2	1	1
Incidents that caused lost-time injuries [3]	number of cases	3	2	1	1

* Based on regular employees, and the occurrence of occupational injuries and lost work amounted to 0% among subcontractor employees
1) (No. of employees who suffered occupational injuries) / (Total No. of employees) X 100
2) (No. of employees who sustained lost-time injuries) / (Total No. of hours worked) X 1,000,000
3) Incidents that caused eight or more hours of lost work

Digital Responsibility

Information Security & Data Privacy

AI Ethics

Service Reliability

Digital Human

Create a sense of real-life presence through the scans performed by our independently-developed 4D scanner

| Information Security & Data Privacy | AI Ethics | Service Reliability |

Information Security & Data Privacy

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Governance

Governance

NC implements the decision-making process and necessary controls and procedures to oversee and manage the risks and opportunities associated with information security and data privacy.

Mandate and Management & Oversight

Decision-making Body

Category	Information Security Committee	Data Privacy Committee
Composition	Head of the Information Security Center (Chair), Head of the Privacy Protection Division, and executives at major departments under the CEO and COO	Head of the Privacy Protection Division (Chair), Head of the Information Security Center, Head of the Legal Division, Head of the Global Communication Center, and Head of the Ethics & Compliance Division
Mandate (Regulations)	Deliberate and decide on key security issues (Information security regulations)	Deliberate and decide on key issues including modifications in data privacy-related work (Personal data processing guidelines/Data Privacy Committee procedure)
Management and Oversight	· Comprehensive security measures and action plans, organizational operation · Establish·amend information security regulations, guidelines, and key policies · Perform information security audits and review implementation progress · Other matters requiring approval for security operations	· Establish the data privacy management system and operational matters · Establish·mend data privacy regulations, guidelines, and key policies · Manage data privacy risk assessment and address data breaches · Consult on other data privacy issues related to respective operations
Cycle	Annual	Annual
2022 Activity	· Amended the key details of regulations·guidelines - Introduced new processes including a security assessment process - Amended internal regulations in line with statutory amendments	· Amended the key details of regulations·guidelines - Amended internal regulations in line with statutory amendments

Dedicated Organization

Organization	Information Security Center	Privacy Protection Division
Headed by	CISO (Chief Information Security Officer) * Head of the Information Security Center	CPO (Chief Privacy Officer) * Head of the Privacy Protection Division
Mandate	· Establish information security strategies and policies, develop security technology · Operate the information security management system and raise employees' awareness · Establish and operate a security breach response system · Engage in activities to identify security threats and beef up security operations	· Establish data privacy strategies and policies · Operate the data privacy management system and raise employees' awareness · Prevent privacy risks

Efforts to Help Security Personnel Build Expertise

To help security personnel at the Information Security Center with capacity building, NC signed an MOU with the Korea Internet & Security Agency (KISA) to nurture professionals in strategic areas and are participating in specialized training programs. We assist our security personnel in setting their training completion goals and attending internal/external trainings and seminars to develop their individual competency, and recognize 'Security Leadership Representative' on a semi-annual basis to disseminate their positive impact.

Policy

Information Security Regulations and Policies

NC establishes and implements information security regulations to keep our information assets safe, and amends them on an annual basis. These regulations apply to our employees, including contract workers, dispatched workers, visitors, partners (companies and individuals who sign a contract with NC and perform work accordingly), and our subsidiaries in Korea and overseas. Our subsidiaries operate their information security regulations in reflection of their distinctive business conditions. We hold global consultative meetings to elevate our security performance and maintain our information security management system, and launch Security Care Service as our security check activity to work as one team at the global level.

Data Privacy Regulations and Policy

NC establishes and implements data privacy regulations to keep personal data safe, and amends these regulations on an annual basis. These regulations apply to customers, our employees including contract workers, visitors, and suppliers. They also apply to our subsidiaries in Korea and abroad, and each subsidiary operates their own data privacy regulations and guidelines in reflection of their business conditions.

NC and all our subsidiaries manage the personal data of service users in accordance with respective personal data processing guidelines. In line with our advancement into the global games market, we have stipulated our Global Privacy Policy to enable our global users to access our data privacy policy at any given time. We have minimized the collection of personal data in accordance with respective personal data processing guidelines, do not store sensitive information as specified in the Personal Data Protection Act, and securely store personal data such as phone number and account information that is likely to pose high risks when leaked through encryption and de-identification. We use personal data collected and stored for their intended purposes only, and do not loan, sell or provide such data to third parties. We make sure that personal data is immediately disposed of once it has fulfilled its intended purpose. New vendors who process personal data on behalf of NC are subject to NC's data privacy policy.

Global Privacy Policy 🔗

Information Security & Data Privacy	AI Ethics	Service Reliability

Strategy

Strategy – Our Response

NC operates a broad array of systems and programs to respond to the key risks and opportunities that may arise in relation to information security and data privacy.

Advancing the Information Security and Data Privacy Management System

To emerge as a global player, NC defined our information security vision to keep our IT data assets and services secure and build trust with customers internally and externally to pursue sustainability management. This vision drives our efforts to establish a system to make our game services safer and more secure and to upgrade our NC-ISMS management system.

Operating the Data Privacy Management System

NC defined our data privacy vision as 'Privacy Best Practices in the Games Industry' and this drives our endeavors to implement the following strategic tasks of ensuring global privacy compliance, building a privacy risk prevention system and a safe customer data use system, and bolstering the privacy by design approach. Our data privacy management system is operated in accordance with applicable laws and regulations to aid in the advancement of our game services across the worldwide market. Additionally, to create industry-leading data privacy settings across the global market, we analyzed country-specific data privacy laws in 91 countries including 46 countries where our game services were launched, and established our global data privacy checklist with a focus on major countries enacting global data privacy laws. This allowed us to perform reviews prior to entering a specific country and provide preemptive guides on key regulatory compliance requirements at the country level.
In line with the mounting importance of data privacy for children, we aim to establish data privacy processes for children and teens in Korea and overseas, and to bolster data privacy for our employees.

Guaranteeing the Right to Informational Self-Determination

NC ensures that anyone wishing to become a PLAYNC member is provided information on its 'personal data collection and use', and an option to give their 'opt-in' consent. The collected personal data is used to satisfy intended purposes only, including payment agency service, customer counseling, and user verification among others, and its use is not allowed for purposes other than agreed-upon ones. In addition, we do not loan or sell personal data to third-parties for purposes other than service provision, and are not provided with personal data by third-parties for the purpose of leasing or selling such data. The personal data stored is immediately destroyed when the consent period terminates or the intended purpose is fulfilled, and users may easily check, modify, handle, and delete (cancel membership) their personal data on the My Page section of the PLAYNC website. Our personal data processing guidelines and Privacy Policy specify contact information concerning data privacy so that customers can make inquiries on their personal data at any given time. NC established its Cookie Policy to notify users of the Cookies collected and their purpose of collection and to gain their consent. Users can directly check and choose among the Necessary, Functional, Performance or Analytical, and Targeting/Advertising categories, and are informed of the purpose of collection and the retention period of each category. Our Cookie Policy also specifies details on the data collected by respective Cookie categories.

Cookie Policy 🔗

Process to Respond to Personal Data Breaches

NC operates the data privacy breach response procedure established to ensure prompt response to personal data breaches. This procedure guides our efforts to organize a taskforce to address personal data breaches and clearly defines the specific activities to be undertaken by each department in the event of such breaches. We also perform regular annual drills to make sure we swiftly respond to personal data breaches. This serves to examine our response procedure in line with the set scenario and to review the findings identified during drills to amend the procedure accordingly. In so doing, we manage risks and minimize any resulting damage.
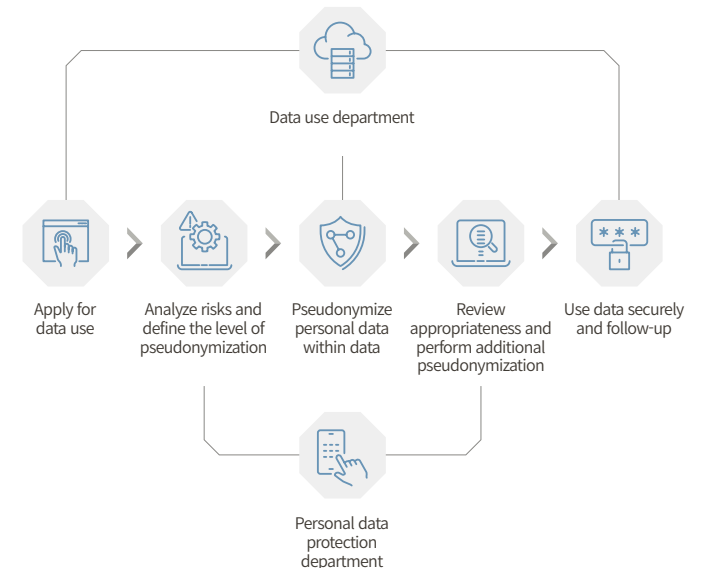
Personal Data Breach Response Drill Conducted in 2022

• **Period:** Jan. 25 ~ Jan. 26, 2022
• **Details**
  ① Conduct a mock drill under the scenario that an employee erroneously sent an a-mail to the wrong recipient and this resulted in a personal data breach
  ② Create a personal data breach response taskforce with eight departments joining to test department-specific responses and cooperation measures

Establishing Our Data Use Process

NC has established our data use process to respond to tightening laws, systems, and regulations governing data pseudonymization and other emerging areas of artificial intelligence and to extend greater support for internal data use. This aims to move beyond merely protecting our internal personal data towards proactively leveraging data. This process is implemented by departments using data and departments responsible for data privacy.
Our data use process applies to NC employees, workers who perform work under signed contracts with NC (including contract and dispatched workers), and all other individuals accessing our worksites. This also applies to the additional use of the personal data collected from service customers and managed by NC and the personal data of our employees and partners for business purposes, as well as to the external provision or linkage of such data.

> **Implementation outcomes in 2022:** 5 cases (year-round implementation)

Data Use Process

Data use department

| Apply for data use | Analyze risks and define the level of pseudonymization | Pseudonymize personal data within data | Review appropriateness and perform additional pseudonymization | Use data securely and follow-up |

Personal data protection department

Bolstering Information Security and Data Privacy Technology

Developing Information Security Technology

NC remains ceaselessly committed to the development and application of security technology to safeguard our services and assets from increasingly sophisticated external threats. We independently developed the Security Analysis Management System (SAMS) as a server security monitoring solution to perform real-time analyses and responses to the vulnerabilities of game and platform servers consistently arising. This drives our efforts to prevent security vulnerabilities and threats on an on-going basis and to enable immediate response once they occur to keep our service environment secure. In November 2022, patent registration was made on this technology for 'server monitoring methods and devices', testifying to NC's capabilities and achievements in developing security technology.
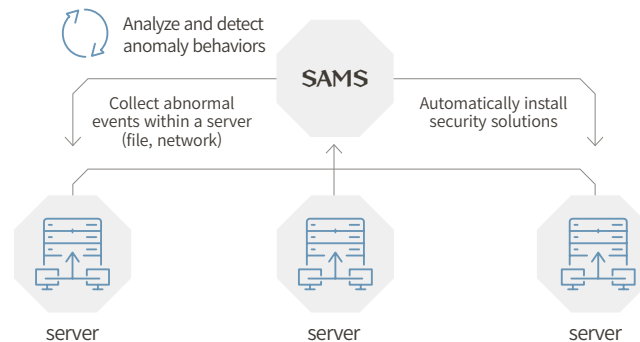
VIOLET Anti-Cheat

Furthermore, NC developed and launched VIOLET Anti-Cheat as our unique solution designed to prevent such unfair practices as using illegal macro programs and/or game hacking committed by game service users. This helps optimize NC's game environment and enables prompt response when an issue occurs, contributing to creating a wholesome game culture.

Technical Measures for Data Privacy

NC deploys a range of data privacy technologies to brace for internal/external intrusions and prevent data breaches.

① We operate security systems such as F/W, IDS, IPS, and WAF among respective networks to create vigilance against intrusion, and any Database(DB) that stores personal data is located in an Internet Data Center isolated on a separate network to fundamentally prevent any external access.

② We deploy DB access control solutions to ensure that our DB storing personal data is accessed by authorized user IP only, and continually monitor DB data query and access history.

③ Whenever an employee who handles personal data is away from his/her workstation for a period of four or more hours, their system access is blocked automatically to prevent illegal access to the personal data processing system and any resulting data breaches. If there is an inevitable reason that the system needs to be externally accessed, such access is allowed in accordance with our secure authentication procedures (VPN log-in and OTP authentication).

④ We have installed the vaccine program to detect and block malicious codes in real time. This program performs automatic policy (pattern) updates at least daily, and full scans are conducted at least once a week to respond to malicious codes through detection and blocking.

⑤ We develop and operate password creation rules for users to set secure passwords and login accordingly.

Operational Structure of SAMS Server Vulnerability Detection Solutions

Analyze and detect anomaly behaviors

SAMS

Collect abnormal events within a server (file, network)

Automatically install security solutions

server   server   server

Raising Employees' Security Awareness

Information Security Training

NC conducts internal information security training to make our security policy easy-to-understand and readily approachable for employees. We engage in a variety of awareness-building activities, including video campaigns, newsletters, and company-wide notices, to raise their security awareness on an on-going basis, and share '{Secure Coding}', produced as security training videos for developers, to provide tailormade training for respective job positions.

Training Provided

Topic	Security rules that employees need to follow
Target	All employees (including contract workers)
Period	Annual
2022 Performance	Completed by 4,622 persons

Data Privacy Training

NC provides company-wide data privacy training to assist our employees handling personal data in securely performing their given work. In 2022, we extended the scope of this training, which was previously made available for employees handling personal data, to include all our employees while providing separate training to new hires registered as employees handling personal data. Data privacy training is conducted at all our subsidiaries in Korea and overseas.

We also publish and send semi-annual newsletters to communicate information on personal data breaches and destruction among others to employees at the headquarters and subsidiaries, elevating their awareness on data privacy in the process.

Training Provided
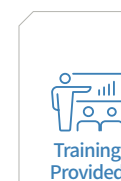
Topic	Personal data handling	
Target	All employees (including contract workers and subsidiary employees)	New hires (handling personal data)
Period	Annual	Year-round
2022 Performance	Completed by 5,377 persons	Completed by 35 persons

Risk Management

Risk Management

NC operates a risk identification, assessment, and management process to address actual and/or potential risk factors that may arise in relation to information security and data privacy.

Information Security Audits and Risk Assessment

NC ensures that our policies and systems comply with international certification standards, and receives third-party external audits at least twice a year to have our policies and systems objectively verified. Our security operational audit organization under the Information Security Center conducts regular internal audits each year on our data privacy management system among others. As part of such internal audits, risk assessments are made based on the baseline approach, and risk levels are quantitatively calculated so that we develop action plans for improvement based on risk levels to eliminate risks and measure their effectiveness. NC became the first in the Korean games industry to achieve the global CBPR (Cross Border Privacy Rule) certification designed to evaluate a company's data privacy system. We also maintain or renew our certification in accordance with ISO 27001 and ISO 27701, the international information security management system standards set by the ISO (International Organization for Standardization) and the IEC (International Electrotechnical Commission) as well as the ISMS-P national standards, working continuously to upgrade our security management.

Information Security Certification

ISMS-P
- Date of certification ：2021.04.07
- Termination of certification ：2024.04.06
- Scope ：PLAYNC game service operations

ISO 27001 / 27701
- Date of certification ：2022.01.30
- Termination of certification ：2025.01.23
- Scope ：NCSOFT Services

CBPR
- Date of certification ：2023.04.05
- Termination of certification ：2024.04.04
- Scope ：PLAYNC game service operations

Preemptive Personal Data Management System

Performing Data Privacy Reviews Prior to Launching Services
Prior to launching services, the TS Team under the leadership of the CTO (Chief Technology Officer) performs integrated technical reviews, along with QA, data privacy, and information security reviews. Relevant departments examine review items in each phase, and the Privacy Protection Division reviews items related to data privacy. We also go over the provisions of data privacy laws and regulations in the pre-launching phase in alignment with the regulatory review process implemented by the Ethics & Compliance Division under the CLO (Chief Legal Officer). In line with this process, data privacy law manuals are developed and circulated so that service planning personnel may preemptively review necessary considerations associated with data privacy early in their development work.

Assessing Our Services for Personal Data Impact
To bolster data privacy for our game services, we conduct personal data impact assessments in advance in launching or altering services. Such assessments are performed against a checklist, and measures are taken to make necessary improvements identified through assessments prior to opening the concerned service.

Implementation outcomes in 2022: 107 cases were submitted, and preemptive reviews were made and guide implementation was completed for 63 applicable cases.

Process

Process	Impact Assessment	Protection measure	Risk management and monitoring	Overall outcome
Identify the overall service Structure and review the service for its personal data collection process	Perform impact assessments to analyze whether personal data is collected and used in advance	Provide protection measure guides for respective issues according to assessment outcomes	Develop action plans in accordance with assessment results to manage and monitor risks	Identify overall outcomes generated as a result of measures taken and document and manage personal data processing activities

| Information Security & Data Privacy | AI Ethics | Service Reliability |

Metrics & Targets

Metrics & Targets

NC sets metrics and targets and progresses towards them to continuously manage our performance in relation to information security and data privacy.

Preventing and Reviewing Information Security Incidents

Preventing Security Breaches

NC is establishing policies and institutional settings to prevent security incidents and swiftly respond to them once they occur 24/7/365. To keep security breaches that could be caused by security vulnerabilities at bay, we perform security audits in advance for each game, service, and system, and operate a separate supporting organization to ensure our offerings are devoid of any potential security threats prior to their launching. An independent Red Team is organized to conduct regular vulnerability checks on our internal services, which comes in tandem with penetration tests performed by third-parties to take a rigorous prevention approach. In preparation for potential security breaches, we set our (personal) data breach response process and its underlying principles to implement consistent policies in this regard, and conduct annual breach response mock drills to effectively respond to real-life incidents once they occur. To ensure the continuity of our key services even in the face of disasters, we also make our services redundant on an on-going basis and conduct disaster recovery drills once a year.

Supply Chain Data Privacy Review

NC reviews and oversees suppliers and business partners for their data privacy management levels. Such reviews are made at least once a year, and review outcomes base our efforts to grade these suppliers and business partners and manage them accordingly depending on their grade. For companies who continuously fail to develop implementation plans to improve risks identified through reviews, we terminate our contract with them.

In the event our own employees violate their data privacy obligations, disciplinary action is taken in proportion to the severity of their non-compliance on an on-going basis, and annual audits are conducted on employees' compliance with our data privacy policy. All legal provisions managed by the Ethics & Compliance Division in association with our supply chains also include matters on data privacy.

> **Implementation outcomes in 2022:**
> Reviews were performed on 77 suppliers and business partners.

Category		2019	2020	2021	2022	Note
Training	Number of persons who attended data privacy training	587	772	984	4,622	Data privacy training and information security training were integrated in 2022 and have since been expanded as company-wide training
	Number of persons who attended information security training	3,219	3,876	4,488		
Information security audits	Number of third-party audits conducted	2	3	3	3	
Security incident drills	No. of drills conducted	2	1	2	2	Personal data breach drill (Jan. 2022) Security incident drill (Dec. 2022)
Personal data impact assessments for services	No. of cases submitted	119	286	349	107	
	No. of preemptive audits and guide implementation completed	99	262	278	63	
Supply chain data privacy reviews	No. of suppliers and business partners	62	74	74	77	

Information Security & Data Privacy | AI Ethics | Service Reliability

AI Ethics

NC AI Ethics Framework

As Artificial Intelligence (AI) is emerging as the paradigm of our time, NC needs to set principles and guidelines for technology development to ensure that AI technology remains human-centered and evolves as such. NC vows to doubly ensure that user data is protected and that no social bias is generated in developing AI technology, and that we design our AI technology in an easily understandable manner.
This reasoning lies at the core of our NC AI Ethics Framework, and will be built into our technology development and operational process.

Core Values

Data Privacy
AI that values data privacy

User privacy should be respected and all personal data should be protected in both its collection and application.

We comply with all applicable laws and obligations to protect the privacy of personal data used in AI learning.
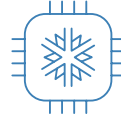
Unbiased
AI that is not biased

The development and application of AI technology should remain fair and free from any prejudices or biases.

We eliminate biases in learning data and continuously verify learning outcomes to ensure that AI does not invoke discrimination, hatefulness or prejudice

Transparency
AI that pursues transparency

AI technology should be easy to understand and should be able to explain the process of decision that led it to its outcome.

We improve competencies to explain AI technology to render its decision-making process easier to understand, while proactively working to share major relevant information and technology.

Major Activities Implemented

Abide by internal/external data use policies
·
Expand the personal data de-identification processing system
·
Prevent user-identifiable logging
·
Provide data security and handling training

Broaden the definition of unethical expressions by type
·
Develop a system to prevent the generation of unethical speech
·
Conduct AI impact tests based on fairness/unbiasedness
·
Develop technology to address adversarial attacks within chatbots and other conversational models

Disclose the operational principle and key technology of AI models
·
Disclose interpretable and explainable AI conversation datasets
·
Develop an AI behavioral pattern analysis system

Information Security & Data Privacy | **AI Ethics** | Service Reliability

Data Privacy (AI that values data privacy)

Expanding Our Internal/External Data Use Policy

NC established our own data use policy and process to abide by domestic and international data security regulations and ensure the secure use of data. Our 5-step data use policy and process – data use application, risk analysis, pseudonymization, appropriateness review, and follow-up management – is applied to our AI research and development efforts. When using publicly available data, we proactively comply with the licensing and use policy of the concerned organization to keep such data secure.

- Apply for data use
- Analyze risks · define the level of pseudonymization
- Pseudonymize
- Review appropriateness and perform additional pseudonymization
- Use data and proceed with follow-up management
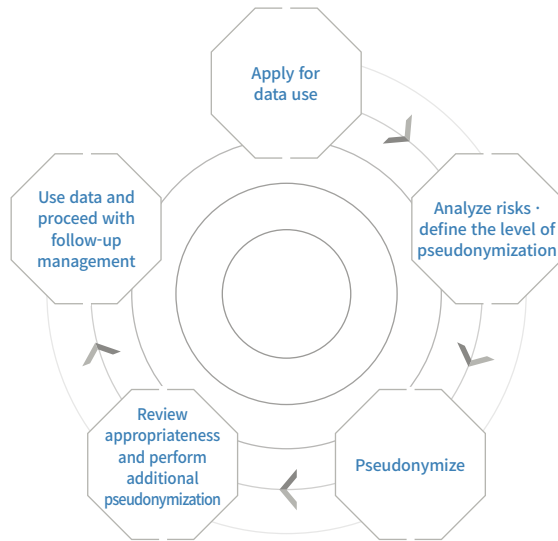
In 2022, we broadened our personal data use policy to extend the scope of our data collection and application from text to voice, motion capture, face, and other multimodal datasets. As to the acquisition and application of users' biometric data and data deemed as personal data, we established our data storage and consent process with the help of our internal legal team and personal information protection policy team. In capturing facial and voice feature data, recordings are performed only on those participants who gave their consent to collect and use sensitive data and personal data. NC is aware of the sensitiveness of the data collected as such and ensures their data security in accordance with data storage principles concerning access rights, control, log management, encryption, and destruction.

Expanding the Personal Data De-identification Processing System

NC's AI R&D organization remains committed to establishing and continuously improving a comprehensive de-identification system to keep personal data safe. Work is underway to develop and apply personal data recognition technology for the purpose of de-identification in alignment with our technology development roadmap. In 2022, we defined nine patterns that have the potential to identify a specific individual, including resident registration numbers and mobile phone numbers, out of text-based numerical data used for AI training, and developed technology to recognize such patterns. We also developed technology to recognize names and character IDs that could serve as personally identifiable information. Currently, we put such technologies to use to perceive and de-identify personal information within a given dataset, and work to expand the scope of identifiable personal information to further maintain data security.

Policy	Perform complete cross-validation on personal data and inappropriate data
	Develop data generation·management·deletion plans according to the characteristics of service log data, crawling data and other data
	Establish guidelines to process and validate personal de-identification
System	Perform complete cross-validation on personal data and inappropriate data
	Develop personal data recognition technology (numeric pattern, names·character ID)
	Develop encryption, de-identification, and deletion technology
Process	Step 1: De-identify automatically through personal data recognizers
	Step 2: Test manually
	Step 3: Distribute data tested for personal data de-identification
	Step 4: Perform re-learning on personal data recognizers concerning newly discovered personal data annotation data and, update the model

Furthermore, NC is expanding our de-identification system from text to video, speech, and other multimodal datasets in developing our conversational AI technology. Participants' data – their speech, gestures, and facial patterns – are pseudonymized except for feature information, and are managed in a format that makes them identifiable only through IDs. To prevent any inappropriate use of data, we also apply the DB personal data care solution (DB-Safer) to ensure data is accessed by authorized users only.

Preventing User-Identifiable Logging

To protect personal data in analyzing AI behavioral patterns, NC prevents user-identifiable logging. While a user's behavioral pattern data could be extracted in the process of analyzing the behavioral patterns of AI-based NPCs (non-player character) within a game, we still make sure that no log data that leads to the identification of users is left behind. Following the 'Clone Wars' within the Lineage Remastered in 2021, we also deployed the same system for the Giran Infinity War in 2022 to store data with their log data deleted to analyze the game's service operations and identify issues. In so doing, we ensured uninterrupted service operations and improved the quality of our services without raising any concern over customers' data privacy.
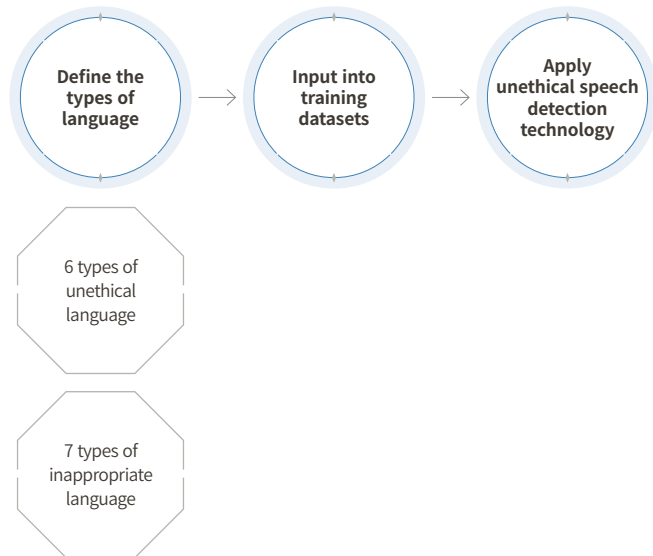
Data Security and Handling Training

NLP Center continues to provide training on data management rules in addition to our company-wide information security training. These data management rules serve as our internal guides governing data collection, sharing, and management to leverage data that are essential for AI research. Such training covers data request methods and necessary precautions for data management, and is provided at least twice a year for new hires (including experienced hires) assuming AI-related roles.

Information Security & Data Privacy   AI Ethics   Service Reliability

Unbiased (AI that is not biased)

Expanding the Types of Unethical Language

To ensure that the conversational datasets used for our AI service development are free from any unethical or biased language, NC defined relevant expressions by type. Specifically, we extended the scope of such expressions, from six basic types of unethical language including biased comments, sexual harassment, and violent language, to include seven types of inappropriate language that may trigger discomfort on the part of users to define a total of 13 types of unethical and inappropriate expressions. In 2022, we input these 13 types into actual training data to develop unethical and inappropriate speech detection technology. This technology was also applied to our conversational AI technology to demonstrate its exceptional filtering performance. We will continue to upgrade our definition of unethical and inappropriate language and relevant detection technology, along with expanding application targets and services.

Unethical Speech Detection Technology

| Define the types of language | → | Input into training datasets | → | Apply unethical speech detection technology |

6 types of unethical language

7 types of inappropriate language

Building a System to Prevent the Generation of Unethical Language

NC extended our notion of unethical language in building a system to prevent the generation of such language so that this system not only prevents insult and other discriminatory words but also makes sure that users do not feel offended. We classify AI-generated speech into biased, impoliteness, and politeness, and design our system in a way that any language that does not fall into the category of biased pursues politeness rather than impoliteness to ensure that our users engage in conversations while respecting and caring for each other.

AI Impact Testing Based on Fairness/Unbiasedness

NC is building fairness and unbiasedness into our AI system to deliver positive game play experiences. To this end, we design a wide array of test scenarios and conduct 4-step AI impact tests in developing our AI services.

4-step AI Impact Test

Validate in the development phase
- Identify risks in advance through in-house independent tests
- Analyze AI logs to analyze AI behavioral patterns and build visualization tools

Validate in the QA phase
- Review against the checklist through the QA department and conversation/translation experts

Monitoring the released service and conduct followup analytical validations
- Monitor the AI system and perform log analyses following service launching

Validate the test server
- Deploy an AI system within the test server and perform QA for final review prior to launching

Developing Technology to Address Adversarial Attacks within Chatbots and Other Conversational Models

Adversarial attacks refer to deliberately-crafted attacks launched by users to input data that could disrupt chatbots and other conversational models with an aim to cause As such adversarial attacks and the resulting misleading outputs may negatively affect a large number of users, we developed an internal response system to prevent such attacks. Specifically, this system classified adversarial attacks into 20 different types, including sexual harassment, crimes & conviction records, and self-injury to include expressions that are either contextually unethical or make unethical impressions as well as explicitly unethical ones.

Introduction   PUSH for a Better Future   • Chapter 01. Joy Created Together   ▶ Chapter 02. Digital Responsibility   • Chapter 03. Qualitative Leap of Society   PLAY for Sustainability   Appendix   NCSOFT / ESG PLAYBOOK 2022   ← 33 →

Information Security & Data Privacy   AI Ethics   Service Reliability

Transparency (AI that pursues transparency)

Disclosing AI Model's Operational Principles and Key Technology

NC actively shares AI-related information and technology to improve our competences to explain AI's decision-making process and outcomes as well as users' understanding in this regard. We disclosed our AI research papers and open-source codes to share our key data and technology, and worked to make AI models' decision-making process readily understandable for users. For instance, we published three papers at the INTERSPEECH 2022, an international AI academic conference, on the topics of 'Adversarial Multi-Task Learning for Disentangling Timbre and Pitch in Singing Voice Synthesis', 'Enhancement of Pitch Controllability Using Timbre-Preserving Pitch Augmentation in FastPitch', and 'Hierarchical and Multi-scale Variational Autoencoder for Diverse and Natural Speech Synthesis'. In November 2022, we won the 3rd AI Grand Challenge hosted by the Ministry of Science and ICT to showcase the potential of drones in collecting and using data in emergency situations. This experimentally proved that AI could be sufficiently effective in saving lives, and we published our research findings and made relevant datasets public to ensure its real-world application.

Winning the AI Grand Challenge

Efforts to Disseminate AI Ethics

Sponsorships for AI Ethics Research

To help establish ethical norms and develop educational curricula to ensure AI and other emerging technologies are properly implemented in our society, the NC Cultural Foundation has been sponsoring the MIT (NC Ethics of Technology Fund), Stanford University (NC Fellows Fund) and Harvard University (Embedded EthiCS Philosophy Postdoctoral Support Fund) since 2020. These research-driven educational institutions renowned in the field of AI engaged in advanced curriculum research and development by building collaborative communities among themselves and taking an interdisciplinary approach spanning humanities and social sciences. They also created a website to make public the curricula they developed over the years as open-source, which will surely expand the opportunity to learn about technology ethics worldwide.
The NC Cultural Foundation plans to continue its sponsorships until 2025 to further advance and expand such curriculum research and development efforts. In March 2023, we sponsored the hosting of the Embedded EthiCS 2023 Conference at Stanford University to publish the achievements made in curriculum development to date and to expand such curricula through associated organizations and instructors. Going forward, we will remain committed to taking the lead in establishing and distributing AI ethics standards.

Operating the NC NLP Tech Blog

The advent of ChatGPT brings with it potential negative impacts to users, including but not limited to the acquisition of misleading information, decreased critical thinking abilities, potential misuse, and feeling powerless in interacting with AI. In response, NC aims to assist individuals in understanding the technical aspects of AI including principles behind ultra-large AI models and their development process in the easiest way possible. This prompted us to open NC Research as our NLP Tech Blog for those who are highly interested in AI or NLP research but are challenged due to expert terminology and other barriers. We already disclosed the theories behind large model development technology, methods for building data, and methods to eliminate gender-based biases within a given model, and will continue to operate this blog.

NC Research 🔗

Publishing AI Framework Book Series

NC operated the AI Framework series as a year-round special project designed to boost leadership and ethics in the AI era. This project features Yoon Song-Yee, our Chief Strategy Officer holding discussions with renowned scholars – philosophers, social scientists, ethicists, and engineers - in the AI field to present their fresh perspectives and directions forward in relation to AI technology. These discussions were compiled to publish the book titled 'The Most Humane Future' to address the topic of 'unprecedented co-existence between human and AI'. To build broader consensus on the need for future generations to build leadership and ethical viewpoints in the upcoming AI era, we donated copies of this book to high schools providing education on AI convergence, academic institutions collaborating in the field of AI, and universities. The entire proceeds from selling this book go to the NC Cultural Foundation to sponsor AI ethics curriculum research.

AI Framework Series

Service Reliability

Our Efforts to Build an Uninterrupted Game Play Environment

To keep any failure factors that undermine the 'continuity' of our game services at bay, our infrastructure and systems are made redundant and physically distributed. Here, redundancy refers to deploying two identical systems in preparation for system failures, and physical distribution refers to configuring data centers and internet connection facilities that are used for infrastructure function and operational environments at more than two distributed locations.

Physical and Technical Response to Data Center Disruptions

Our distributed data center system ensures that when the primary data center experiences any failure, the secondary data center takes over to ensure uninterrupted service operations. In 2022, we expanded our data centers from two to three locations, and are considering another data center in 2023. Our key services are distributed under this physically separated configuration to minimize the impact of disruptions on our data centers caused by artificial and natural disasters. Adopting overlay network technology to facilitate the use of virtual networks among data centers, we improved both flexibility and agility for inter-network mobility. This eliminates the need for the input of recovery time and human resources for network environment modifications in the event of data center outage, making it possible to immediately switchover to an alternative network.

Ensuring the High Availability of Our Data Base Management System

To make critical in-game data bases highly available, NC distributed key data bases for authentication, billing, and trading in game items among others across different global regions. All data base systems were made redundant with automated fail-over logic to ensure the continuity of our services.

Our Response to Ensure Reliable Global Game Services

To ensure the continuity of our global services, NC deploys technology to bypass internal/external network failures. To this end, we operate distributed global internet connections and monitor international connections for any occurrence of failures in real time so that we could directly operate core routers in the event of any service disruptions to bypass such failures affecting external data centers. As to inter-server internal communications, we also perform load balancing according to the intelligent load distribution logic when detecting failures to maintain uninterrupted connections.

Advanced Technology Research to Enhance Service Continuity

To enhance the continuity of our game service operations, NC engages in research and development on technologies chosen as global sustainable technologies while reviewing their applicability.

Digital Immune & Remediation Technology

NC introduced digital immune and remediation technology to improve the remediation of services and systems in the event of disruptions through the combination, analysis, and automation of multiple engineering strategies to automate our infrastructure recovery process.
In 2022, we automated the handling of key network issues to eliminate the need for any human intervention, ranging from detection and analysis to dissemination, action-taking, and result reporting. Currently, this automation technology is being applied to our global game operations as well as network operations, and we will continue to upgrade and expand this technology.

Applied Observability Technology

In the evolving service environment (architecture, microservice, etc.), NC is also advancing our technology to track and manage abundant data and operational metrics. In this regard, we are considering the application of 'Applied Observability' technology for our infrastructure and services to support agile decision-making through estimating and monitoring the internal state of services and operational infrastructure. In 2022, its proof of concept (POC) work was completed across our key organizations handling infrastructure, security, and platforms, and work is underway to review its application to NC CLOUD, our internal cloud environment. The implementation of applied observability technology will be a critical milestone in breaking down data silos among different operational organizations, in improving the visibility of issue tracking and management for our key services, and in managing service continuity.

Qualitative Leap of Society

Environmental
Management

Future
Generations

Local
Community
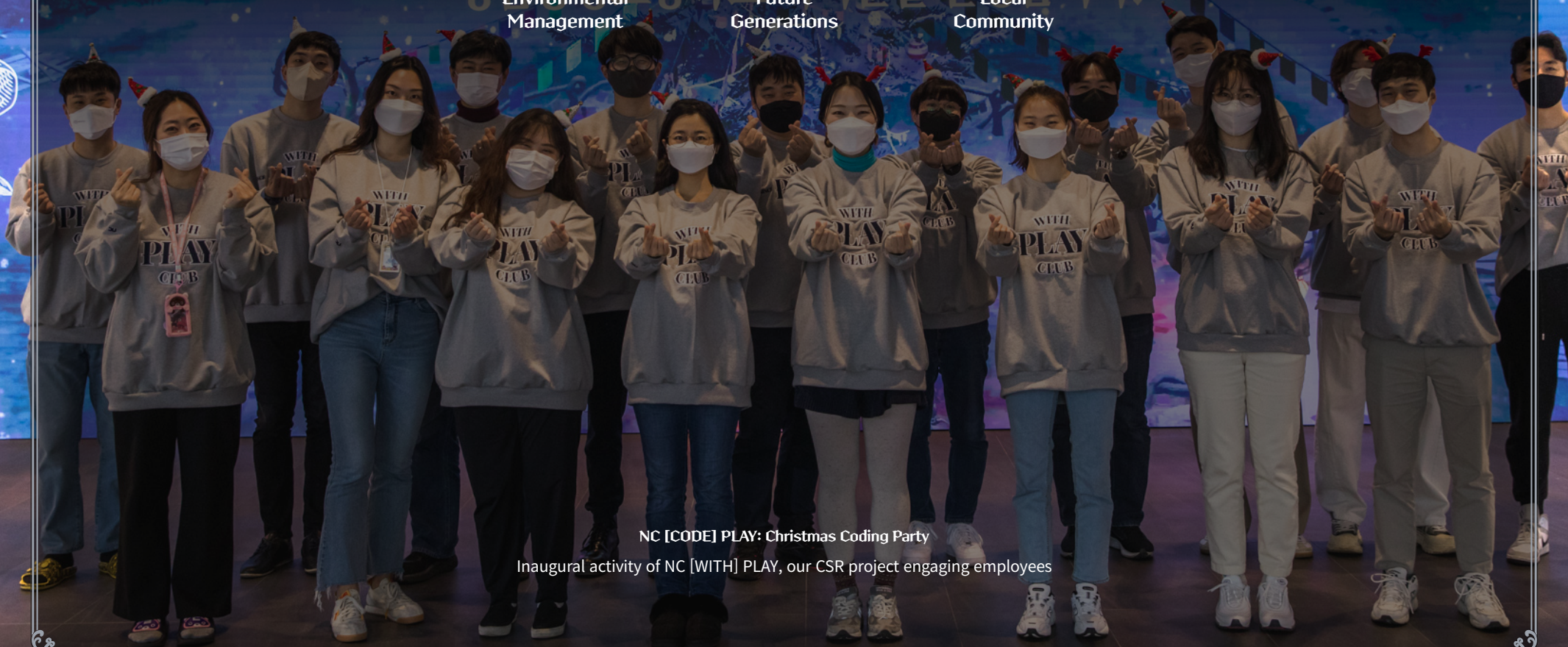
NC [CODE] PLAY: Christmas Coding Party

Inaugural activity of NC [WITH] PLAY, our CSR project engaging employees

Environmental Management	Future Generations	Local Community

Environmental Management

◆◆◆◆ ───────────────◆

Governance

Governance

NC implements the decision-making process and necessary controls and procedures to oversee and manage climate change and other environment-related risks and opportunities.

Management's Role and Management & Oversight

Category	ESG Steering Committee
Composition	CSO (Chair), COO, CFO, CLO
Mandate	Manage, oversee, and make decisions on strategic directions and implementation plans for environmental management
Management and Oversight	• Review environmental management strategies and implementation plans for climate change adaptation among others • Review the implementation of key environmental management tasks and their outcomes
Cycle	Quarterly
2022 Activity	• (Jun. 2022) Discussed trends and directions for ESG management (review the directions of environmental management and the assignment of the lead department, etc.) • (Sep. 2022) Advanced ESG management in 2022 (review the directions of the environmental management system) • (Apr. 2023) Review global environmental management trends and task priorities for 2023

Dedicated Organization

Headed by	ESG Management Division	People Happiness Center	I&O[1]Center
	Head NC's environmental management	**Responsible for office building management and employee benefits**	**Responsible for technology and infrastructure including data centers**
Role	• Manage the development and implementation of NC's environmental management • Manage and respond to environmental management impact (risk and opportunity assessment, data collection and management) • Report to top management and engage in internal/external communication	• Manage and monitor environmental data (energy use within the office building, food and other waste, water consumption, etc.) • Implement energy consumption reduction and improve energy consumption	• Manage and monitor environmental data (power consumption for data center and infrastructure operation, etc.) • Implement energy consumption reduction and improve energy consumption

1) Infra & Operation

Environmental Management Principles

NC stipulated our own policy and principles for responsible and sincere environmental management as part of our long-term commitment to environmental management.

> 01. NC recognizes its environmental impact, develops response measures, and engages in on-going management and monitoring.
> 02. NC considers the environment in developing technology and delivering services.
> 03. NC complies with the environmental laws and regulations in the countries where its offices and data centers are located.
> 04. NC provides employees with environmental training and information, and encourages them to participate in environmental protection.
> 05. NC transparently discloses its environmental performance through sustainability reports and other corporate media.

Environmental Management Policy 🔗

Decision-making and Implementation System

Dedicated Organization for Environmental Management

In 2022, NC designated the ESG Management Division as our dedicated environmental management organization to establish and implement our environmental management strategies and policies and manage company-wide environmental data. The Division also engages in close communication and collaboration with relevant departments at our domestic and overseas subsidiaries as well as within NC.

Role of Top Management for Environmental Management

The ESG Steering Committee, composed of four senior executives, receives reports at least on a quarterly basis to manage, oversee and make decisions on key environmental management plans and achievements.

Efforts to Ensure Expertise within the Board of Directors

To bolster expertise on environmental management at the Board of Directors, we appointed Jae Chun Choe, an expert in the environment and biodiversity filed, as an independent director in March 2023.

| Environmental Management | Future Generations | Local Community |

Strategy

Strategy – Risk and Opportunity

NC identifies the key risks and opportunities of climate change that may impact our stakeholders and our corporate sustainability and develop corresponding strategies.

Assessing Climate–related Risks and Opportunities

NC identified 25 climate-related transition risks, physical risks, and opportunities in line with the TCFD framework, and chose the risks and opportunities material to NC. Risks were categorized into physical risks that may occur due to natural disasters and the long-term effects of climate change and into transition risks that arise in the transition into a low carbon economy. Quantitative impact analyses were conducted on how physical risks, that may occur due to the four types of disasters (wind speed, flood, wildfire, heat), impact our operations and sales while surveys[1] were performed on internal/external experts to assess transition risks and opportunities for their impact on our finances and business model and for stakeholder (investors and others) interest in them. This process led us to arrive at 10 top priority issues as material issues.

Type of Risk		Impact			Impact on NC		Stakeholder Interest	Response Strategy
---	---	---	---	Short-term (within 5 years)	Mid-term (5-10 years)	Long-term (beyond 10 years)		
Transition risk	Policy and law	T1	Tightening regulations and policies in Korea and overseas in relation to climate change including disclosure mandates	Mid	High	High	High	Disclose environmental data and reduce the discharge of waste and water
	Technology	T2	Increasing cost for transitioning to low-carbon technology including the sourcing of renewable energy	Mid	High	High	Mid	Increase the consumption of renewable energy in the workplace
	Market	T3	Increasing demand to reduce GHG emissions from stakeholders including users and partners	Mid	High	High	High	Develop and implement measures to reduce GHG emissions including Scope 3 emissions
	Reputation	T4	Impact on corporate brand and reputation when failing to respond to shifting user and market preferences towards low-power, low-carbon, and eco-friendly products	Low	Mid	Mid	Mid	Launch eco-friendly products
Physical risk[2]	Acute	P1	Costs incurring to restore the damage and losses affecting key assets due to wind speed, flood, wildfire, and other natural hazards, and disruptions to business operations including game service outage	0.75% / 1.34~1.57%	0.75% / 1.33~1.57%	0.77% / 1.38~1.60%	Mid	Establish management and monitoring process for climate change
	Chronic	P2	Declining productivity amid the prolonged climate change (heat, etc.) and increasing operational expenses for cooling and others	0.61~1.82%	0.65~1.91%	0.73~2.16%	Mid	

*Classify financial impacts (estimated annual losses) from physical risks: � Damage, ▢ Disruption[3]

Type of Opportunity		Impact		Stakeholder Interest[4]	Response Strategy
Opportunity	Resource efficiency	O1	Declining environmental impact through the design and introduction of efficient infrastructure (office, data center)	High	Improve the efficiency of office energy use, independently develop a platform to monitor the energy efficiency of data centers, and design infrastructure to improve the efficiency of cloud energy
	Energy source	O2	Opting for and investing in renewable energy sources through the installation and operation of PV panels	High	Meet the power needs of our new office building and the Changwon NC Park through renewable energy
	Market	O3	Strengthened external communication with investors and stakeholders through joining green initiatives	High	Respond to the CDP and other environmental initiatives
	Resilience	O4	Assessing climate-related risks and opportunities and developing management plans	High	Identify and assess key climate-related risks

1) A survey was conducted on individuals, including NC's working-level ESG personnel and external consultants, to assess transition risks and opportunities between April 3 and April 14 of 2023.
2) For physical risks, four physical hazards from IPCC's SSP1-2.6 and SSP5-8.5 scenarios were comprehensively analyzed for their impact on our key operations based on Jupiter Intelligence's global climate modeling and data base, and the above data were generated from the assessment made under the SSP5-8.5 scenario. Short-term and mid-term results were determined with the base years of 2025 and 2030 respectively, and long-term results are five-year averages between 2035 and 2050.
3) Impact was assessed based on the estimated annual losses of tangible asset value and sales. Damage refers to losses of asset value and reflects direct asset impairments caused by wind speed, wildfire, and other disasters while Disruption refers to revenue loss and is calculated as the number of operation days lost due to damage recovery. As to heat, results were generated under the two scenarios of high or low losses in labor productivity.
4) Opportunities were assessed based on stakeholder interests only as the impact of opportunities on the Company including its financial status, operational activities, and business model is primarily determined by the Company's strategic decisions.

Strategy

Strategy – Our Response

NC engages in a broad array of mitigation and reduction activities to manage the climate-related risks and opportunities identified according to our internal process as well as their impacts.

Improving the Efficiency of Office Energy Use

In line with the on-going economic transition into a low carbon society, investing in high-efficiency infrastructure including key operations and equipment is drawing even greater attention. Our Pangyo R&D Center which serves as our primary office consumes 19.1GWh of electricity, accounting for nearly 51% of our total office electricity consumption, and this increasingly underscores the need to invest in low-power equipment.

In 2022, NC performed LEED (Leadership in Energy and Environmental Design) gap analysis with ERM Korea on our R&D Center and NC Tower I offices to improve the efficiency of our office energy use and to reduce our environmental impact in the operational and maintenance aspects. Our goal is to achieve LEED certification based on analysis results in 2023.

In addition, we switched from fluorescent to LED lights for the elevator halls from the 4th basement floor to the 12th aboveground floor, and changed the lighting of the in-house childcare facilities from fluorescent and halogen to LED lights at our R&D Center, which translated into nearly 15% savings in power consumption. In 2023, we plan to switch to LED lights for stairs and common-use areas at our Pangyo R&D Center, and replace air filters with refillable ones that have received Green Certification.

Investments Made in Improving the Efficiency of Office Energy Use in 2022

Investment Description	Investment	Progress
Perform gap analyses for LEED certification	KRW 10 million	100%
Switch to LED lights for the elevator halls at the R&D center	KRW 35 million	100%
Switch to LED lights for the childcare facilities of the R&D Center	KRW 78 million	100%

Improving the Energy Efficiency of Data Centers

Developing and Deploying Energy Efficiency Improvement Technology

In the games industry, data centers are considered the most important asset that enables reliable and continuous business operations. They also account for over 28% of our total GHG emissions, and our external stakeholders primarily demand that we introduce and deploy technology to ensure efficient energy management while mitigating environmental footprint. To improve the energy efficiency of our data centers, NC operates a platform that we independently developed to perform real-time monitoring on power consumption and temperature fluctuations within the data center. This goes beyond simple surface or floor-level monitoring towards detecting excessive loads, inefficiencies, and anomalies at the individual server and service level. This allows us to scale down or return unnecessary services and/or servers to eventually reduce wasted energy. To further improve the efficiency of our data center energy management, work is underway to compile and manage server and service-level energy metrics within our configuration management data base.

Improving the Efficiency of Energy Consumption

Our data centers are fitted with outdoor air cooling, hot-aisle containment, exterior insulation & double insulation materials, low-E insulated glass, geothermal and PV systems, and a waste heat recycling system to improve their energy consumption efficiency.

Deploying Sustainable Infrastructure and Technology

Designing Cloud Infrastructure with Energy Efficiency in Mind

NC continues with our R&D efforts to improve the energy efficiency of infrastructure used for game operations, and apply the technology developed as such to our services. NC CLOUD, our cloud platform, adopted CPUs with higher integration density and a server processing system which delivers higher efficiency compared to its predecessors to improve its energy efficiency. We introduced standard servers capable of more than tripling their CPU thread processing compared to existing ones with the same power consumption, and were able to save our thermal design power (TDP) by over 50% per virtual machine.

Reducing Power Consumption through Green Technology

NC is expanding the application of container services and other eco-friendly technologies. As the first Korean company serving as a founding member of the CNCF (Cloud Native Computing Foundation), a global non-profit technology foundation established to advance and disseminate containerization, we have published and made public relevant technologies (nearly 700 global companies joined the Foundation as of 2023).

Containerization is also called lightweight as it helps minimize the resource interference of hardware, and is touted as sustainable technology for its potential to reduce energy consumption. When a service is run through containerization, its resources are made lightweight at the ratio of 2:1 and up to 4:1 within the same environment, saving over 50% of consumption energy. We are broadening the application of containerized infrastructure to our global services in Korea, the US, Taiwan, Japan, and Europe.

Cluster

23 (932 Servers) — 2021
25 (1,042 Servers) — 2022

Service

4,127 — 2021
5,197 — 2022
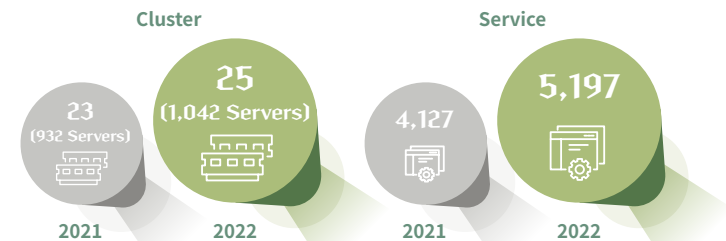
※ Cluster: The number of systems to distribute, manage, scale, and distribute containerized (lightweight) applications
※ Service: The number of resources abstracted for load balancing of containerized applications

Strategy

Strategy – Our Response

NC plans to increase the use of renewable energy by embracing photovoltaic and hydrothermal energy for our new office building to mitigate GHG emissions.

Using and Expanding Renewable Energy

**Introducing Renewable Energy for Our New Office Building Early in the Design Phase**

NC puts eco-friendly considerations first for our new office building to be completed in 2027 early from its design phase by introducing renewable energy and prioritizing energy conservation and air conditioning load reduction. In an effort to embrace renewables, photovoltaic power generators will be installed on its rooftop and loft. Furthermore, our new office building will adopt a hydrothermal heating/cooling system running on metropolitan raw water as eco-friendly renewable energy. To this end, we signed an MOU to undertake the pilot project to distribute and support hydrothermal energy joined by 10 organizations including the Ministry of Environment, Korea Water Resources Corporation, and other businesses.

Renewable Energy Use Plan for Our New Office Building

	Photovoltaic (PV)	Building-integrated Photovoltaic (BIPV)	Hydrothermal
Installed Capacity	47kW	41kW	500RT
Expected Generation	61MWh/year (14toe/year)	52MWh/year (12toe/year)	318MWh/year (72toe/year)
Total	431MWh/year (98toe/year)		

Our Plan to Use Renewable Energy for the New Office Building
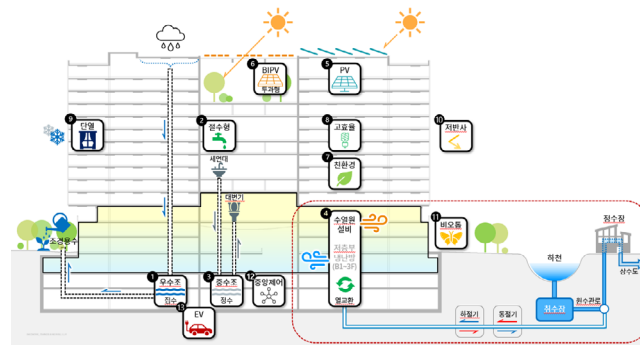
Our new office building is being designed with eco-friendly considerations in mind in accordance with the requirements set by LEED (Leadership in Energy and Environmental Design), G-SEED (Green Standard for Energy and Environmental Design), IBS (Intelligent Building System), and energy efficiency labeling certifications. The building will be also fitted with LED lights only and with high-performance exterior insulation glass to improve its energy efficiency. Its eco-friendly design approach will also take into account the surrounding conditions while supporting energy conservation. Inter-city Red Bus lanes will be secured to make public transit highly accessible, and smart crosswalks will be made for pedestrians to easily get to the bus station and keep pedestrians safe. This new building will also exceed the statutory requirement by 184% in securing storage spaces for bikes and other alternative modes of transport for automobiles. Furthermore, we plan to create a 850㎡-size, three-floor indoor garden with a rooftop ceiling designed to let in natural light.

NC Dinos' Efforts to Use Renewable Energy

NC installed 273.2kW-capacity PV panels at the Changwon NC Park to meet a portion of NC Dinos' annual power needs with renewable energy.
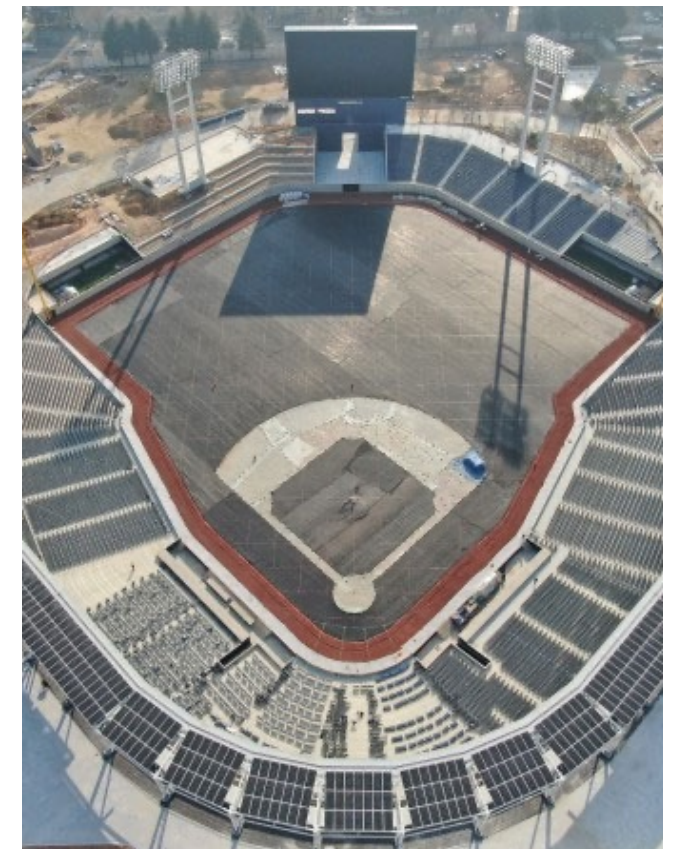
PV panels installed at the Changwon NC Park

◆◆◆◆ ━━━━━━ ▶

Strategy

Strategy – Our Response

NC is expanding our efforts to reduce substances harmful to the environment and waste, and strives to deliver products with reduced environmental footprint and disseminate the value of environmental protection.

Mitigating Environmental Impact

Reducing the Emission of Pollutants
NC replaced old boilers with high-efficiency, low-NOx boilers at NC Tower 1 to reduce our emission of pollutants by 24% from 2.73 tons per year to 2.08 tons per year.

Reducing Waste Discharge while Increasing Recycling
All litter and waste generated from our Pangyo R&D Center are discharged and managed through registered recycling companies. Our efforts including the introduction of AI resource circulation vending machine helped us maintain an average of 41% in the proportion of waste recycled out of total discharged waste.

Reducing Water Consumption
Our Pangyo R&D Center is equipped with a greywater system to self-treat the domestic sewage generated from the building for reuse. Furthermore, we opted for water-saving toilets, urinals, and shower heads. The sum of such efforts helped us reduce nearly 9,875㎥ of water for the year 2022.

Expanding the Use of Eco-friendly Materials
NC works hard to opt for eco-friendly materials. For instance, Laughing Peanut, our workplace childcare facilities, which opened at Alpharium in 2022, had its walls and ceilings primarily made of fiber materials certified for their environmental quality in Europe. The flooring finish materials for its indoor playground and hallways were also natural, eco-certified materials, and office furniture within the childcare facilities was certified to the Green Guard program.

Investment Made in Reducing Environmental Impact Activities in 2022

Description	Investment Value	Progress
Replace old boilers with high-efficiency low-NOx boilers at NC Tower 1	KRW 517 million	100%
Install AI resource circulation vending machines at the R&D Center	KRW 45 million	100%

Eco-friendly Products

Expanding Product Packaging with Reduced Environmental Impact
644 Smart Store, a seller of our DOGURI character merchandise, was already providing paper-based delivery supplies and took a step further to opt for biodegradable bags made of corn-induced lactic acid materials to expand the use of eco-friendly packaging. DOGURI products are also packaged with biodegradable bags to reduce plastic packaging.

Launching Products that Convey the Value of Environmental Protection
NC launched and sold DOGURI-patterned socks and DOGURI eco bags (in collaboration with Pleats Mama) manufactured by using yarn made from recycled waste plastic, and we plan to release new eco-friendly products in 2023.

DOGURI biodegradable, eco-friendly bag

DOGURI eco bag and patterned socks

Eco-friendly Campaigns Joined by Employees

Company-wide Environmental Campaign
NC launched campaigns that helped our employees mitigate carbon emissions in the workplace. As part of such efforts, we communicated small yet impactful actions our employees could take within the office building, including using the stairs, sorting transparent PET bottles for recycling, and turning the light off when the meeting is over. We plan to make campaign signs available even after the campaign ends so that our employees can continue with their environmental protection activities. Starting from our office building, we will expand the boundary of spaces where small actions can be taken for the greater good of the environment.

Creating Eco-friendly Spaces with Future Generations
NC employees planted trees along with future generations in Changwon in the family park near the Changwon NC Park. We plan to share the value of environmental protection with the wider community.

Making a Green Zone at the Changwon NC Park

Environmental Management | Future Generations | Local Community

Risk Management

Risk Management

NC is working to establish a system to identify, assess, and respond to climate-related risks and opportunities.

Climate Change Risk Management Process

In 2022, NC identified key risks and opportunities in the short/mid/long-term and assessed their impacts while reviewing the financial impacts from physical risks through the analysis of IPCC scenarios. We will develop our strategy to respond to identified risks and opportunities, and scale such efforts to the risk management process by establishing reporting system to consider these risks and opportunities in our decision-making process.

1. Risk identification
- Analyze global policy/market trends and industry peers in relation to climate change adaptation
- Create a pool of risks and opportunities in consideration of the requirements of the global community

2. Risk assessment
- Survey stakeholders to measure the business impact and interest level of respective risks and opportunities, and identify risks and opportunities material to NC
- Select and apply IPCC scenarios and calculate the financial/non-financial impacts of key risks and opportunities

3. Risk response
- Identify financial losses that NC may suffer under each scenario and review our response strategies
- Develop our net zero strategy including risk response plans and present its implementation measures

4. Risk monitoring
- Establish a climate change operational system to advance the role of committees and consultative bodies
- Integrate climate change risk and response monitoring within the company-wide risk management system

Metrics & Targets

Metrics & Targets

NC focuses on those GHG and energy metrics which are major climate-related factors in our monitoring and management efforts.

Expanding the Organizational Boundary of Environmental Management and the GHG Categories Subject to Management

In 2022, NC extended the organizational boundary of environmental management to include consolidated subsidiaries. We established our environmental data management process that covers four domestic subsidiaries, and calculated GHG emissions on a consolidated basis. We also plan to advance global environmental management which includes climate change adaptation in the upcoming years.

We also extended the scope of GHG management from Scope 1 & 2 to five Scope 3 categories to expand our efforts across the entire supply chains. Going forward, we will establish our management system based on Scope 1 ~ 3 GHG emissions.

GHG Emissions

Category (unit: tCO_2eq, tCO_2eq/KRW 10 billion)		2019[1]	2020[1]	2021[2]	NCSOFT (on a non-consolidated basis) 2022[4]	Domestic Subsidiary[3] 2022[4]
Total		11,782.8	12,216.7	23,054.5	155,888	5,375
Scope 1(direct GHG emissions)		535.1	530.9	598.0	711.1	173.2
Scope 2(indirect GHG emissions)		11,247.6	11,685.9	20,466.3	24,205.0	1,819.7
Direct/indirect GHG emissions intensity (non-consolidated sales)		77.2	54.5	98.9	103.8	228.0
Scope 3 (Other indirect GHG emissions)	Subtotal	-	-	1,990.2	130,975.0	3,384.8
	Category 1 (purchased goods and services)	-	-	-	101,125.3	2,728.1
	Category 2 (capital goods)	-	-	-	26,359.3	466.5
	Category 5 (waste generated in operations)	-	-	-	338.3	13.7
	Category 6 (business travel)	-	-	-	1,123.9	2.6
	Category 13 (downstream leased assets)	-	-	1,990.2	2,028.3	173.8

Energy Consumption

Category (unit: TJ, TJ/KRW 10 billion)	2019[1]	2020[1]	2021[2]	NCSOFT (on a non-consolidated basis) 2022[4]	Domestic Subsidiary[3] 2022[4]
Total	251.2	259.6	489.4	525	39
Direct energy consumption	9.1	9.0	10.9	13.0	3.0
Indirect energy consumption	242.1	250.6	437.1	516.1	38.1
Direct/indirect energy use intensity (non-consolidated sales)	1.7	1.2	2.1	2.2	4.7
Other indirect energy consumption	-	-	41.4	42.1	3.6

1) For the Pangyo R&D Center and the data centers leased by the Company only
2) Referring to the Pangyo R&D Center, Alpharium Tower 1, Alpharium Tower 2, and the NC Data Center (leased) and corresponding to non-consolidated financial statement criteria
   *Reasons for increases in intensity: Alpharium Tower 1 and Alpharium Tower 2 that provide office spaces, and one new data center began their full operation in 2021.
3) Domestic subsidiaries (NC ITS, NCSoft Service, Ntreev Soft, NC Dinos)
4) The 'Total' for 2022 may differ from the sum of direct and indirect emissions/consumption due to application of the summation of truncated value per business site.

Environmental Management   **Future Generations**   Local Community

Future Generations

Supporting the Creative Growth of Future Generations

Supporting Greater Creativity through Laughing Peanut

Laughing Peanut, the workplace childcare facilities directly operated by NC, provides a range of independently developed programs.

NC CONGCONG Curriculum
NC CONGCONG, directly developed by Laughing Peanut as a foreign language learning program for toddlers, is constantly updated through advice provided and assessment research conducted by professors with relevant expertise. This will provide our future generations diverse linguistic stimulation to help them flexibly embrace global cultures.

Picture Book Publication Project
NC continues with picture book publication on the strength of Laughing Peanut's know-how in developing educational content. Unfolding stories with diverse topics and materials in creative ways, these books help us communicate important values for future generations.

'Moving Away'
(author Lee Ji-yeon)
published in 2022

Awarded in the Bologna Ragazzi Fiction Special category at the Bologna International Children's Book Fair 2023

이사가자
이지연 그림책

Growth Programs for Future Generations
NC operates CSR programs to help children of our employees grow into members of a future who are conscious of environment.

| **Life protection campaign** | Produced and installed pickets communicating the importance of protecting lives, including goldfish and frogs living in the pond of the office building (Sep. 2022) |
| **Environmental protection campaign** | Plogging (Jun. 2022) Making promises for environmental protection (Jul. 2022) AI resource circulation robot experience (Oct. 2022) |

NC Cultural Foundation's Creativity Enhancement Activities

The NC Cultural Foundation has been operating Projectory to help future generations unlock their creative potential since 2020. In 2022, a conference was hosted to present the progress made to date.

Projectory
The name Projectory implies that individual members undertake Projects as they wish in a Laboratory setting. Projectory provides children who will lead the future with an opportunity and an environment to engage in a variety of experiments and experience 'safe' failures to unleash their imagination and push the boundary. Since its opening in 2020, a broad array of ideas has been proposed by members, and nearly 9,000 projects have been undertaken as of 2022.

| No. of projects undertaken (on a cumulative basis between 2020 and 2022) **9,049** projects | No. of members (on a cumulative basis between 2020 and 2022) **537** persons |
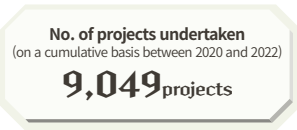
Projectory will continue with collaboration across wide-ranging areas, and will launch 'Mobile Projectory' in 2023 to provide local teens and the public an opportunity to discover new experiences.

MIT Special Science Program
Our special science program has been up and running since 2016 in partnership with undergraduates from the from the Massachusetts Institute of Technology (MIT) to provide greater educational opportunities for underprivileged teenagers. This program was provided to 12 teens at the Children Welfare Center in Jongno-gu, Seoul, in January 2022, and to 40 middle school students in the Changwon region in January 2023 in conjunction with NC Dinos and the Gyeongsangnamdo Office of Education to expand educational opportunities to teens living in areas lacking educational infrastructure.

MIT Special Science Program

Next Creativity Conference 2022
A conference was hosted on the topics of 'future generations' and 'creativity' in celebration of the 10th anniversary of the NC Cultural Foundation. This served to share the outcomes generated by Projectory and discuss creativity with experts from diverse perspectives. Projectory members were given a chance to directly introduce their project, and a workshop was held for working-level personnel to experience Projectory themselves. The NC Cultural Foundation will remain committed to facilitating multi-faceted discourse on our future generations and creativity.

Next Creativity Conference 2022

Publishing and Donating Children's Books Conveying the Value of Diversity
NC publishes children's books with diverse themes spanning disability, gender, and culture to help future generations learn how to respect diversity and keep biases at bay. In 2022, <I am big and you are small> authored by Lee sung pyo was published. To make our books more accessible for underprivileged children and teens and a wider range of readers, we donated over 4,000 copies to nearly 1,700 small libraries, public libraries, and local children centers nationwide.

3 children's books published by the NC Cultural Foundation

Introduction **PUSH for a Better Future** • Chapter 01. Joy Created Together • Chapter 02. Digital Responsibility ▶ Chapter 03. Qualitative Leap of Society PLAY for Sustainability Appendix NCSOFT / ESG PLAYBOOK 2022 ← 43 →

Environmental Management | Future Generations | Local Community

Supporting Future Generations with Capacity Building

Talent Development and Learning Support

Partnership with KAIST

NC teams up with academic institutions to nurture talent in the fields of culture and content and provide wide-ranging learning opportunities. We have been partnering with the KAIST Graduate School of Culture Technology since 2018 to nurture creative, convergence-driven talent and promote mutual networking. We have jointly participated in the 'culture content R&D professional development project' led by the Korean government since 2020 to conduct joint research, support graduate courses, provide NC scholarships, and engage in wide-ranging industry-academic activities. In 2022, we worked together to plan and operate two courses in the game track for the Graduate School of Culture Technology (Professor in charge: Ju Han Nam, Young Yim Doh, Sung Hee Lee, Jeong Mi Lee) and we supported these courses by arranging special lectures on practical game design, phased feedback, and professionals. We also engage in joint research with academia to secure research findings that are readily applicable to games.

Course 1. Game Design Project	
Description	Provide project-type classes where students directly create and execute next-generation games • KAIST: Design game concepts and assessment criteria • NC (Game Data Analytics Division): Directly engage in practical lectures, feedback and evaluation
Goal	Submit their creations to the ACM CHI Conference - Student Game Competition, an international conference in the HCI (Human Computer Interaction) field.

Course 2. Game Research Colloquium	
Description	Hold seminars with game development and research experts
Goal	Explore future ways forward for game research and broaden horizons with the help of experts from wide-ranging game areas

Seminars NC Attended	
CRO(Chief Research Officer)	Lecture on the topic of neural animation for game development
Digital Actors Division	Lecture on the topic of digital human production and look development

Discussions to Nurture Teens as Data Privacy Leaders

NC held discussions to nurture teenagers as data privacy leaders to help remind teens of the importance of data privacy and nurture these future generations into data privacy experts.

In line with the mounting importance of data privacy for children and teens, we joined the teen data privacy leader development program operated by the Personal Information Protection Commission to contribute to developing future talent in this emerging field. In August 2022, we invited middle and high school students in Seoul to tour our office building and engage in discussion with our data privacy managers, along with education on the importance of personal data and data privacy implementation.

Discussions to Nurture Teens as Data Privacy Leaders

AAC (Augmentative and Alternative Communication)

The NC cultural Foundation has provided the 'My AAC' mobile app service free-of-charge since 2015 to help people challenged with spoken language communication and to improve perceptions on communication disabilities.

In 2022, we initiated the overhaul of My AAC for its functional improvement. The AAC service was reinforced with the addition of more human-like AI voice generation in collaboration with NC's AI technology department, and its vocabulary was expanded with the help of special education experts, along with other multiple improvements. In 2022, the number of new My AAC downloads was 17,036, up by 14.3% from the previous year to maintain its No. 1 ranking from 2021 in the number of cumulative downloads among AAC apps in Korea.

We plan to release new services with increased utility in 2023, and also keep updating this service through meticulous analyses of use data. This will come in tandem with expert education for special education institutions and language therapy centers to make our new AAC services effectively applicable in the real-life setting, and with the implementation of the Mobile AAC Training program for AAC users as part of our continued commitment to expanding AAC. The NC Cultural Foundation continues to sponsor the Korean Society for Augmentative and Alternative Communication (KSAAC), the largest and only such society that operates in Korea, and provides sponsorship for the AAC best practice contest to facilitate the nation's AAC ecosystem.

Environmental Management   Future Generations   **Local Community**

Local Community

Advancing CSR with Employees

Launching NC [WITH] PLAY

NC [WITH] Play represents NC's unique CSR project launched in 2022. This is implemented through voluntary participation of our employees to pursue the qualitative leap of our society, and aims to 'move beyond merely doing good to sharing joy together'. The ESG Management Division is responsible for developing and implementing NC [WITH] projects, their goals, and operational plans, and the progress made against the set plans and outcomes are reported to top management through the ESG Management Division. The project name within the square bracket is aligned with the activity theme, and we will continue to expand activities under wide-ranging themes including future generations and the environment in line with NC's core values of ESG management.

Our employees who join the NC [WITH] PLAY project become a member of 'WITH PLAY CLUB', and this intends to encourage and support self-initiated participation so that our employees engage in such projects with an increased sense of solidarity, belonging, and pride.

Operational Plan and Goal

Introduction 2022

Initiated a pilot program
- Launch activities for the communities where we operate
- * Performance in 2022: Provided education to elementary school students in Seongnam

Dissemination 2023~2024

Expand and bolster activities
- Expand target communities (beyond locations where we operate to regions nationwide)
- Gradually increase the frequency of operations (goal: once a month)
- Expand participants (goal: reach 20% and higher in the cumulative number of company-wide participants)
- Diversify activity themes including the environment and diversity & inclusion

Institutionalization 2025

Create a culture of voluntary participation
- Launch an official volunteer group
- Establish a support system for self-initiated volunteering

Key Activity Outcomes

▲ NC [CODE] PLAY : Christmas Coding Party (Dec. 2022)

The first activity of NC [WITH] PLAY for 2022 was to provide IT education to elementary school students in Seongnam City. This was composed of programs that make the most use of NC's business characteristics, including making coding mood lights, special lectures on games and relevant careers, and a tour around our office building. The 'Make Your Coding Mood Lights' program allowed students to put their coding skills to use to create customized acrylic mood lights with dimmable brightness and color-changing functionality. Our employees provided personalized coding education through one-on-one matching with 40 students. Participating students were highly satisfied with this program, with satisfaction score of 4.95 points (out of 5), along with feedback "It was great to learn how to code. It was interesting and fascinating to learn more about games".

▲ NC [DONATION] PLAY : Blood Donation Campaign in H1 (Mar. 2023)

The 2-day blood donation campaign launched for the first half of the year in front of NC's office building was voluntarily joined by a total of 100 employees. Going forward, we will launch two regular blood donation campaigns to help with the stable supply of blood.

▲ NC [D&I] PLAY : Making Braille Children Books Together (Apr. 2023)

This activity, inspired by an idea proposed by one of our new members hired through open recruitment in 2023, was joined by 140 employees. The five books published by Laughing Peanut, NC's workplace childcare facilities, and the NC Cultural Foundation, were adapted to braille books and their copies were donated to the Braille Library in Gyeonggi Province and the Public Library of Seongnam City.

NC [WITH] PLAY activities

Contributing to the Advancement of a Game Culture

Sponsorships

NC sponsors a range of events with an aim to help small/mid-sized game companies expand their market influence, and does our part to raise awareness on these companies, identify outstanding indie games, and create a wholesome game culture.

Event	Sponsorship
INDIE CRAFT 2022	KRW 10 million
Sponsorship for the Busan Indie Connect Festival (BIC) 2022	KRW 15 million
'2022 Startup Joint Booth' at G-STAR	KRW 25 million
'K-GAMES Pavilion Start-up with NC' at the Taipei Game Show (Feb. 2023)	KRW 88 million

Other Sponsorships

NC collaborated with domestic/overseas associations, organizations, educational institutions to implement diverse projects for future generations who will lead the games and content industry.

Partner	Project
Ulsan Information & Culture Industry Promotion Agency	Sponsor the Ulsan Game Planning Contest with NCSOFT
Korea George Mason University	Support the social impact idea contest
Basket Fund	Sponsor the nation-wide undergraduate ESG contest
Korea Intellectual Property Research Institute	Sponsor the exceptional IP paper contest
Dongyang University	Sponsor the game art/webtoon animation contest
Gyeongnam Culture & Arts Promotion Council	Sponsor the Gyeongsangdamdo Governor's Cup e-Sports Campus Match
Korea Creative Content Agency	Sponsor the rookie project at the character licensing fair
Kim Daejung Convention Center	Sponsor the emerging illustrator discovery contest
Korea Game Industry Association	Sponsor the game production presentation joined by undergraduate game production union circles

Education

NC directly participates in and sponsor a range of educational projects to help improve perceptions on a game culture.

Education Program	Partner organization
Game literacy education and office tour for teens (14 times)	NCSOFT
Undergraduate game literacy education (5 times)	NCSOFT
2022 game literacy education for parents	Game Culture Foundation
Teen game culture camp literacy education	Gwangju Global Game Center
Special lecture on game careers for out-of-school youth	Game Rating and Administration Committee
2022 parent education on the prevention of excessive game engagement	Seongnam Game Healing Center

Membership at Game Associations

Association	Membership Fee
Korea Association of Game Industry	KRW 120 million
Korea Internet Corporations Association	KRW 50 million
Game Self-governance Organization of Korea	KRW 200 million

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| Environmental Management | Future Generations | Local Community |

Contributing to Community Development

Sponsorships for Community Development

Making CSR Donations
In March 2022, NC donated KRW 500 million to the Hope Bridge Korea Disaster Relief Association to help Uljin, Samcheok and other areas affected by forest fires and displaced people.

Supporting Community Public Interest Advocates with Capacity Building
NC teamed up with five organizations including the Seongnam GOOD Foundation to support the 'Seongnam Citizen Growth School' educational project designed to help public interest advocates working in the Seongnam community with capacity building. The curriculum included proposal writing, basic accounting, and special lectures for public interest advocates working in various sectors. As of 2022, 303 activists participated in this project on a cumulative basis.

Capacity building for community public interest advocates

Honored as Extra Life's Partner Of The Year

Contributing to the Global Community

Raising Awareness on Diversity & Inclusion across Communities
NC West Holdings is undertaking the Cultural Moments Initiative to help both management and employees broaden their awareness about Diversity, Equity, and Inclusion (DEI) for children and minorities from diverse backgrounds worldwide. As part of this initiative, events were hosted to celebrate Black History Month, Neurodiversity Month, Mental Health Awareness Month, AAPI(Asian-American Pacific Islander) Heritage Month, Disability Pride Month, Pride Month, and International Women's Month in 2022 to raise and donate USD 78,528 to communities.

Event	Donation Made (Including donations made by employees and the company)
AAPI Heritage Month	$ 50,000
International Disaster Relief	$ 4,496
LGBTQ, Mental Health and Social Issue	$ 8,803
Fall Fundraiser	$ 15,229 [1]

1) Provided to 25 organizations including LatinX in Gaming

Extra Life
ArenaNet continues with its support for Extra Life, a project designed to support sick and injured kids. In 2022, fund-raising events were hosted for 'Guild Wars' and 'Guild Wars 2' across North America to reach over 150,000 real-time views and raise USD 250,000 to exceed the set goal by 100%. The funds raised as such were donated to Children's Miracle Network Hospitals (CMNH), a non-profit charity.

It is worth noting that a game character inspired by a real pediatric patient was developed as part of the company's diversity efforts. April, who had her leg amputated when she was 15 months old due to severe medical conditions, appears as a permanent character for Guild Wars 2. This also earned ArenaNet the honor of being chosen as Extra Life's 2022 Partner of the Year.

CSR through Sports

D-NATION
NC Dinos engages in a wide array of CSR activities that serve communities in the three categories of 'companion', 'sharing' and 'future' under its CSR brand D-NATION.

Companion Program

Activity	Description
Register-based donations	Support vulnerable groups and future generations in partnership with local financial institutions • Support vulnerable individuals in Goseong-gun (KRW 15 million) • Support the welfare of vulnerable children in Gyeongnam Province (KRW 11 million) • Support the development of youth in Changwon City (KRW 6.46 million)
Support for community employees to watch sports events	• Local miliary units (6), educational welfare organizations (35), and other local social welfare organizations (5) • Families of local small businessmen and employees working at member companies of the local chamber of commerce & industry

Sharing Program

Activity	Description
Donation along with fans	• NC Dinos players putting up their cherished items for auction, and funds raised will go to invite vulnerable individuals
CSR fund-raising	• Additional CSR funds raised in 2023 (KRW 95 million) • Community CSR activities to be undertaken in partnership with ChildFund Korea

Future Program

Activity	Description
Support for sports mentoring	Provide mentoring for middle school baseball teams in Changwon (attended by NC Dinos coaches including Coach Kong Pill Sung)
Opportunity to experience a sports culture	Resume sports culture experience programs, including inviting local youth to baseball matches, that were suspended during the pandemic

D-NATION Activity

PLAY FOR SUSTAINABILITY

Battle Crush
Brawl battle action game
(to be released)

Governance

Governance Principles

Under the principle of transparent governance, NC protects the rights and interests of wide-ranging stakeholders and fulfill our social responsibility to create a wholesome growth system.

Shareholders

Stock and Capital Structure

NC's Articles of Incorporation stipulate that the number of authorized shares be 100,000,000 shares. As of the end of December 2022, the number of outstanding shares amounted to 21,954,022 common shares. All shares issued by NC equally carry voting rights under the One Share One Vote rule.

We provide sufficient corporate information in a timely and fair manner to protect the rights of all our shareholders. To make it easier for shareholders to exercise their rights, we have implemented the online voting system since the Annual General Meeting of Shareholders for the 25th term held in 2022.

Composition of Shareholders   As of Dec. 31, 2022

Shareholder	No. of Shares Owned	Ownership
Kim Taek-jin, CEO	2,628,000	11.9%
Treasury shares	1,646,583	7.5%
Public Investment Fund	2,032,411	9.3%
Netmarble Co., Ltd.	1,950,000	8.9%
National Pension Service	1,841,180	8.4%
Others	11,855,848	54.0%
- Foreign investors	7,823,196	35.6%
- Domestic investors	4,032,652	18.4%
Total	21,954,022	100.0%

Shareholder Return

While retaining a set amount of funds to finance new businesses and ensure the stability of our financial structure to improve long-term shareholder value, NC also implements a shareholder return policy with a focus on cash dividends.

To respect the shareholder's right to collect dividends, we have maintained our dividend payout ratio at 30% and above since 2014 while regularly developing our dividend policy every three years and disclosing it accordingly to make our shareholder return more predictable and transparent. Aside from dividends, we have exercised share buyback plans since our foundation in 1997, continuing our shareholder return initiative through stock repurchases at appropriate intervals.

Board of Directors

NC's Board of Directors serves as our highest decision-making body delegated by shareholders to fulfill its mandate, and makes strategic and independent decisions on key management issues to create corporate value and protect the interests of shareholders and stakeholders. Key management issues are associated with governance, major investment decisions, accounting & finance, and HR operations, and the details of agenda items and information items are specified in the Board's regulations. The Board also faithfully assumes its role of overseeing top management to improve NC's governance and long-term growth.

Diversity of the Board
From the early candidate screening stage, NC ensures that our directors are comprised of qualified individuals who can oversee the management with the objectivity and independence of controlling shareholders and senior management.
NC's Board of Directors consists of seven directors (1 executive director, 1 other non-executive director, and 5 outside directors) to ensure prudent discussion and effective decision-making. Two of the five outside directors are female, and all outside directors have no important interest in the company.

Expertise of the Board
NC's Board of Directors is composed of experts in the areas of management, investment, finance & accounting, law, risk management, industry technology, and ESG among others. They leverage their individual capabilities to responsibly fulfill their role in the decision-making process, and bring their work experience and expertise to engage in substantial deliberations on the agenda items. This enables us to ensure the balanced representation of all stakeholders including shareholders and faithfully monitor the work execution of top management.

Composition of the Board   As of May 31, 2023

Director	Name	Gender	Career	Participation in Board Committees	Tenure	Skills Matrix						
						Management	Investment	Accounting/Tax	Law/Risk Management	Industrial Technology	HR	ESG
Executive Director	Taek-Jin Kim	Male	CEO, NCSOFT	• Chair of the Board	2021.03 ~ 2024.03	●				●		
Other Non-executive Director	Byeong-Mu Park	Male	President, VIG Partners	• Chair of the Compensation Committee	2022.03 ~ 2025.03	●	●		●			
Outside Director	Chan-Hyun Hwang	Male	Co-CEO, Lawfim Class	• Chair of the Audit Committee • Chair of the Outside Director Recommendation Committee	2021.03 ~ 2024.03	●			●			
	Sang-Hoon Baek	Male	CEO BnH Tax	• Member of the Audit Committee • Member of the Compensation Committee	2022.03 ~ 2025.03	●		●				
	Kyo-Hwa Chung	Female	Director, Legal at Netflix (Korea General Counsel)	• Member of the Audit Committee	2022.03 ~ 2025.03				●			
	Young-Ju Choie	Female	Professor, Department of Mathematics, POSTECH	• Member of the Outside Director Recommendation Committee • Member of the Compensation Committee	2023.03 ~ 2026.03					●		
	Jae-Chun Choe	Male	Chair Professor of EcoScience, Ewha Womans University	• Member of the Outside Director Recommendation Committee	2023.03 ~ 2026.03						●	●

* Pursuant to Article 34 of the Enforcement Ordinance of the Commercial Act of Korea, outside directors are prohibited from serving as a director, an auditor, or an executive at two or more other companies outside the concerned listed company. As of May 2023, all our outside directors are compliant with this provision.

Convening and Holding Board Meetings

NC conducts regular Board meetings every quarter in principle whereas Extraordinary meetings are held when issues that require Board's approval arise. In convening the meeting, the Board is informed of the date at least two weeks prior to the event. Meeting agenda and materials are distributed in advance as well to guarantee the Board takes sufficient time to review and digest the agenda.

In case of key agenda items, each board member is briefed in advance and outside directors-only meetings are held to collect the views and opinions.

Board's Mandate and Support for Its Operations

NC demands that all directors duly fulfill their role as a member of the Board of Directors. In 2022, every member of the Board was present at all meetings demonstrating that they responsibly assumed their role. NC provides various support to ensure the Board effectively performs its decision-making and management oversight functions. These include orientations for new outside directors, training for outside directors, and designation of a Board supporting team.

Board Committees

In accordance with Article 39-2 of the Articles of Incorporation and Article 11 of the Board's regulations, area-specific committees are established subordinate to the Board of Directors to improve the expertise and efficiency in its execution.

Presently, the Board operates three Committees. 1) The Audit Committee to perform independent audits, 2) The Outside Director recommendation committee to fairly nominate outside director candidates, 3) the Compensation Committee to design and implement a transparent compensation structure.

All committees are solely composed of independent outside directors (5 outside directors, one non-executive director) equipped with expertise and experience in their field. Under this governance structure, independence and transparency in decision-making are granted.

Outside Director Training in 2022

Training	Date of Training	Attendance
Board of Directors and directors (roles and responsibilities)		
Changes and trends in the corporate governance system		
Understanding ESG and oversight guides for the Board	Dec. 15, 2022	100%
Strategy for effective Board operations		
Understanding shareholder activism and guides for the Board		

Board Committees   As of May 31, 2023

Committe	Responsibility	Composition		
Audit Committee	• Oversee the work of directors and management • Perform audits on overall business operations including financial status	Chair	Chan-Hyun Hwang	Outside director
		Member	Sang-Hoon Baek	Outside director
			Kyo-Hwa Chung	Outside director
Outside Director Recommendation Committee	• Verify the qualifications of outside director candidates and set appointment principles • Nominate outside director candidates to the AGM based on their expertise and independence	Chair	Chan-Hyun Hwang	Outside director
		Member	Young-Ju Choie	Outside director
			Jae-Chun Choe	Outside director
Compensation Committee	• Review and approve the appropriateness of employee compensation	Chair	Byeong-Mu Park	Other non-executive director
		Member	Sang-Hoon Baek	Outside director
			Young-Ju Choie	Outside director

Appointment of Outside Directors

NC's directors meet all the qualifications set by the Commercial Act and applicable laws and regulations. Director candidates are nominated in line with the fair and transparent process - executive director candidates are nominated by the Board and outside director candidates by the Outside Director Recommendation Committee solely composed of outside directors – and their appointment is proposed to the Annual General Meeting of Shareholders. In creating a pool of outside director candidates, we receive nominations from external specialized organizations and also leverage the Board Skills Matrix (BSM) that we independently developed to identify qualified candidates by area. We take stock of our current Board composition and our strategic directions each year to manage our pool of outside director candidates, and are developing and implementing a checklist of director qualifications in conformity with the laws and regulations associated with director appointment. The list of finalists is regularly reported to the Chair of the Outside Director Recommendation Committee each year.

Outside Director Nomination Process

Create a pool of outside director candidates on an on-going basis
• Review the direction of candidate pool creation for the relevant year
• Secure a database by diversified means including external professional organizations and research

Oct.
Perform 1st-step review on outside director candidates
• Select candidates to review by area
• Collect internal opinions on appointment requirements

Dec.
Perform 2nd-step reviews on outside director candidates
• Perform 1st-step reference checks
• Identify the candidate's intention

Jan.
Perform 3rd-step reviews on outside director candidates
• Check disqualifications through legal/proxy advisory organizations
• Perform 2nd-step reference checks

Feb.
Provide preliminary reports to the Chair of the Outside Director Recommendation Committee
• Provide regular annual reports on all candidates
• Provide preliminary reports on outside director candidates

Feb.
Propose the agenda item to the Outside Director Recommendation Committee
• Conduct reviews at the Outside Director Recommendation Committee
• Nominate finalist

Outside Director Candidate Nomination Criteria

Criteria	Description
Legality	Satisfy qualification set by applicable regulations
Independence	Make decisions independent of the Company and related parties
Expertise	Possess expertise to contribute to the Company and add to the competency of other BOD members
Sincerity	Invest sufficient time and effort in performing one's work
Objectivity	Represent the rights and interests of all stakeholders in an impartial manner
Ethical Responsibility	Demonstrate an exemplary and responsible work ethic
Diversity	Consider the diversity of all BOD members in terms of gender, age and/or nationality

Board Remuneration and Assessment

Our director remuneration is determined by comprehensively reflecting quantitative and qualitative performance metrics in line with the performance-focused assessment and compensation principle. This process follows fair and reasonable operational standards through the decisions made by the Compensation Committee which consists of outside directors, and the remuneration limit is approved by the Annual General Meeting of Shareholders.

Director Remuneration in 2022

Unit: No. of persons, KRW million

Category	No. of Directors	Total Remuneration	Average Remuneration per Person
Registered directors (excluding outside directors and members of the Audit Committee)	2	12,863	6,431
Outside directors (excluding members of the Audit Committee)	2	160	80
Members of the Audit Committee	3	240	80

In 2022, assessments were made on the Board of Directors and its committees as well as individual directors for entire Board members to ensure the effective composition of the Board and improve the Board's operational efficiency. The assessment items included the roles and responsibilities of the Board, Board composition and operation, the appropriateness of committee activities, and individual directors' fulfillment of duties. These assessments were made both through survey questionnaires on a scale of one to five and open-ended questions to seek respondents' proposals to collect feedback from directors in a constructive way. Going forward, we will regularly perform such assessments on an annual basis and input their results into establishing sound corporate governance, bolstering the Board process, and improving individual directors' performance.

Board Assessment in 2022

Category	Key Assessment Items	Result/Score
Board of Directors	Roles and responsibilities of the Board Board composition and qualifications Board operations	4.6/5.0
Board Committees	Organic alignment between the Board and committees Committee activities	4.5/5.0
Individual Directors	Management oversight and recommendations Appropriate use of expertise and faithful execution of duties Contribution to increasing corporate value	4.7/5.0

Human Capital Development

Extensive Talent Recruitment Pipeline

To usher in a new world connected through joy, NC is fully committed to bring in exceptional talent. As we believe that great games are made possible through collaboration of employees who contribute their expertise and creativity in their own diverse work streams, we recruit outstanding individuals through internships, industry-academia cooperation, and the recruitment of entry-level and experienced hires. Our domestic workforce surged by 50% or 1,590 persons at the end of 2022 compared to the end of 2017, testifying to our continued growth and job creation.

NC is increasing the recruitment of female employees to establish a diverse workforce, and such efforts resulted in a 68% increase in our female workforce (673 persons) from the 2017 base year, and the proportion of female recruitment rose from 33% in 2017 to 43% in 2022. As part of our efforts to expand the hiring of people with disabilities, we recruited individuals with severe disabilities for the nail care room that we operate as an employee benefit program, proactively arranging facilities to accommodate employees with disabilities and expanding practical training programs in this regard.

Proportion of female recruitment

33% 2017
43% 2022

Development and Recruitment of Future Talent

NC actively invests in recruiting talented individuals who will shape a future. Our Summer Intern program aligned with recruitment helps us select top talent and offer them an opportunity to join our systematic mentoring program and working-level projects for seven weeks. Interns who complete this program with outstanding performance are given the chance to come on board as full-time employees through the NC Flagship program. In the latter half of 2022, we hired nearly 100 employees through open recruitment (including those recruited under the Flagship program in the first half of the year) to maintain the number of new hires for two consecutive years. In the face of the recent reduction in recruitment among Korean businesses, we remain steadfast in investing in exceptional individuals to move head of the competition in future technology and global business operations. Our industry-academia program also helps us contribute to nurturing future talent in the games industry while securing and recruiting top talent. In 2022, we signed new partnerships with Chung-Ang University, Korea University, and Ewha Womens University to bolster our recruitment of R&D talent in the AI sector which forms one of our key business areas to operate industry-academia cooperation programs and hired 41 interns. In 2023, we will advance our existing industry-academia partnership programs and select and implement top priorities including institutionalizing mid/long-term networking with industry-academia program participants and creating additional programs for technology innovation positions (programming and others), strengthening our talent sourcing strategy on an on-going basis.

Recruiting Outstanding New Hires

To secure top talent over the mid-to-long term, NC engages in wide-ranging recruiting activities for applicants to expand their direct/indirect experience on NC as well as our technological prowess. Specifically, the job description session held as part of our open recruitment in 2022 served to unveil our 'miniverse', a platform currently under development, and leverage this as a new channel to bring in exceptional talent.

In 2023, we plan to further solidify our brand profile as a competitive employer in the industry on the back of our new dedicated recruitment platform which combines all our strengths together as well as our high-quality, differentiated content while advancing our management process from the viewpoint of candidate journey to draw attention from top-notch talent on an on-going basis.
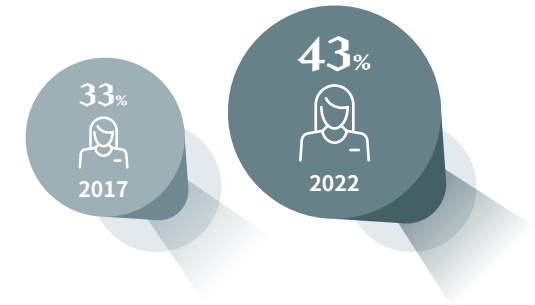
Recruiting Industry Professionals

In 2022, NC introduced the Recruiting Business Partner system to support each organization in meeting their distinctive hiring needs to lay the basis to further fine-tune and upgrade our direct sourcing of professionals. We leverage this system as a problem-solving tool by proactively proposing tailormade recruitment strategy in consideration of staffing needs at the job category level as well as organization-specific recruitment issuesWe also opened the Small Talk program (one-on-one counseling support for applicants) to provide an opportunity to directly gain information in advance through Recruiting Business Partners while fully implementing social recruiting to expand contact points with potential job candidates. Our Employee Referral system is actively up and running as a primary channel for talent recruitment to establish sound recruitment practices that allow employees to refer qualified candidates as their potential colleagues.

Internal Career Development Opportunity

At NC, there are a large number of projects – both on-going development projects and post-launching service projects – and each project involves diverse IPs, platforms, genres, technology, development processes, and talent. The sum of all such development capabilities defines the team NC to generate synergy.

NC externally publishes job openings when staffing needs arise at respective departments, and also implement the Job Posting program. This program enables our employees to apply for the department or project of their own choosing and develop their career pathways and job skills in new areas. This ensures that anyone at NC challenges themselves to take on new and diverse roles to achieve their career goals and needs while ensuring that departments in need of staff swiftly bring in highly adaptable individuals.

Job posting in 2022

Category	Internal Job Posting
Postings	1,102 cases
Applicants	404 persons
Successful Applicants	115 persons

Fair Assessment and Compensation

To design and operate fair assessment and compensation systems, NC pursues institutional improvements as follows for each function, and conduct performance assessments at least once a year to provide reasonable compensation.

Anchor Meeting

Anchor Meetings are held to set and review annual goals to promote employees' performance management and growth. In 2022, Anchor Meetings were held in April and August in a way to present detailed goal-setting guides for employees and make the system more accessible to raise the bar on goal management. In 2023, we will emphasize the alignment between individual and organizational goals to ensure both organizations and individuals commit to reaching their aligned goals and maximizing performance generation to pursue growth.

Individual Performance Appraisal

In 2022, NC provided appraisers with wide-ranging assessment reference materials to support their comprehensive performance verification and decision-making to improve the objectivity and acceptance of individual performance appraisal results, while strengthening the operation of the assessment result feedback process. In 2023, we plan to collect feedback from employees to establish the procedural fairness of our appraisal system and benchmark other companies for their implementation of appraisal systems to upgrade our appraisal process on an on-going basis.

Executive Performance Appraisal

In 2022, our executive performance appraisals were made in a way to hold responsible organizations more accountable for their performance. Executives were assessed for their performance in accordance with their leadership capabilities put to use in the process of performance generation as well as the performance of their responsible organization and their contribution to organizational performance. In 2023, we will upgrade our executive performance appraisal through systematic goal-setting and management, interim performance review, and systematic executive performance assessment to conduct performance-based executive assessments.

360-Degree Feedback

NC is working to introduce 360-degree leadership assessments in 2023 to offset the limitation of the conventional one-way (top-down) assessment system and to support leaders to grow and enhance their leadership skills. Such assessments will retain the strengths of the existing 360-degree feedback system to 'support individual growth and improvement through feedback' while monitoring whether leaders 'put their proper leadership skills to use in the process of performance generation' to ensure their leadership is exercised in full alignment with our core values to contribute to performance generation.

Organizational Performance Appraisal

In 2022, our organizational performance appraisal included comprehensive assessments of the annual organizational performance in terms of internal/external value, company-wide contributions, and organizational growth, along with feedback. The assessment process consists of the preparation of performance description, the assessment made by the responsible chief officer, and the chief calibrations made by top management. To improve the validity and accuracy of such assessments, we continue to upgrade the assessment system by diversifying assessment metrics and introducing a 360-degree assessment method. In 2023, we plan to bolster its goal-setting process and year-round goal and performance management system.

Reasonable Compensation

NC implements a variety of systems to provide employees with best-in-industry compensation.

01. Our compensation system follows the high-performance, high-compensation policy, and is based on fair and reasonable processes in accordance with the decisions made/approvals granted by the Compensation Committee.
02. We aspire to set the industry's best standards in terms of total compensation.
03. We provide compensation for new IP launches and development outcomes in consideration of the inherent characteristics of our industry.
04. We operate the Starting Salary System1) to eliminate seniority in determining compensation.
05. We compensate key talent with exceptional treatment.
06. We compensate employees in proportion to the work they accomplish, rather than through the blanket wage system.
07. We operate a personalized retirement pension system.

1) Starting Salary System: Pay annual salary to top performers according to their competency and expertise without any set standards or restrictions

Variable Compensation

PI (Performance Incentive)		• Pay incentives in alignment with organizational/individual performance (annual)
D-PI (Development PI)	Launching bonus	• Pay incentives to employees who contribute to the development and launching of new games/IP • Target: Members of the responsible organization, members of the collaborating/contributing organization
	PS (Profit Sharing)	• Pay incentives to members of the organization who contributed to the business and services of new games/IPs to compensate for their part of the overall performance • Target: Members of the responsible organization, members of the collaborating/contributing organization

NC University

Individual Job Training

To help individual employees improve their job expertise, NC provides monthly learning programs to develop the knowledge and skills required in their job categories. These programs are being expanded for employees to choose their own learning topics and content to facilitate their transfer of learning, and a total of 5,207 employees participated in these programs in 2022.

We also regularly operate lecture/seminar programs to help employees broaden their horizons and perspectives by sharing the knowledge and experiences of internal/external experts. In 2022, we opened 37 programs including one on '10 emerging trends in the games industry (attended by 245 employees) to reach 4,927 persons in the cumulative numbers of attendees.

Customized Training by Organizational and Job Function

NC provides customized training and license acquisition support programs to bolster our expertise at the organizational and job function level and keep current with the shifting market landscape. For instance, we piloted game data use training in 2022 as part of our customized training program, and will expand this program to cover more organizations in 2023. We also help our employees pay for their training and test fees to acquire technology and development licenses. All full-time employees may apply for such assistance to obtain licenses fit for their work.

Course	Support for acquiring professional licenses	NC game data use
Description	Support employees to acquire professional licenses to nurture experts in respective job functions	Nurture experts capable of handling game data for each IP at the set level and above
Result	A total of 36 employees who acquired licenses in 2022	Provided for 1 IP in 2022 83 persons in the cumulative number of trainees

In 2022, we embraced social learning to operate the 'Learn-US' program to share individual work knowledge and know-how and the 'Group Study' program joined by employees sharing the same goal to pursue self-initiated learning.

Leadership Training Program

NC provides a range of programs to help leaders strengthen their leadership competency. Leaders at NC are first and foremost expected to ensure individual employees feel valued in their own organization and to help build connections between the organization and employees as well as consensus among employees.

Leadership Training Program by Job Level

Executive	Leadership assessment and coaching program for objective self-awareness
Division head and higher positions	Catch up program to acquire knowledge, understand trends and develop insights, and NC Hakdang (NC Leaders Forum) to arrange special lectures provided by key opinion leaders
Team leaders	Team Leader Playlist as a leadership program to develop leadership skills in the areas of organization, work, people, and self-management * 2022: Provided leadership courses and practices, assessment, Q&A live talk, and team leader networking on the topic of 'empathetic communication of leaders'

Onboarding kit for newly-appointed team leaders

Melt-in training for experienced hires in 2022

Onboarding Program for New Hires

NC operates a systematic onboarding process designed to help new recruits quickly adapt to their organization and successfully perform their given work.

Onboarding Process

Employees hired through open recruitment	• Provide a two-week orientation training program to better understand the Company and games and to acquire basic work knowledge and skills • Support their adaptation at work through 1:1 mentoring and self-directed job learning
Experienced hires recruited on an on-going basis	• Provide 'preboarding tutorials' to provide information on the Company • Start with orientation on day one and provide phased-in programs including Jump-ON to understand the Company and Melt-in to adapt to their organization

Orientation training for employees hired through open recruitment in 2022

Ethical Management

Code of Ethics

NC ensures that our employees abide by the Code of Ethics as a guide to help navigate their professionalism in conduct and in the making of value judgements. In June 2021, the Code was amended to include more stringent provisions to discourage hateful, deriding, or demeaning expressions made on the grounds of nationality, gender, race, religion, or place of origin as well as to prevent workplace harassment. In preventing bribery and corruption, Article 10 of the Code stipulates provisions that prohibit any and all corruptive practices that undermine fairness and integrity by accepting, requesting, or providing unjustified gains including money & valuables, gifts, or entertainment. In the first half of 2022, we received on-line ethics pledge consent from all our employees to commit to abide by and fully implement our Code of Ethics. We plan to have our employees sign their ethics pledge in alignment with our company-wide ethics training in the latter half of 2023. Work is underway to stipulate our anti-corruption code of conduct and guidelines to fundamentally prohibit our partners and other third-parties from accepting gifts and entertainment, including prohibitive provisions on bribe-taking for those subject to the anti-graft law.

Compliance and Ethical Management Organization

In 2022, NC newly appointed the Chief Legal Officer (CLO) and placed the Ethics & Compliance Division and the Legal Division under the CLO to consistently bolster our ethics and compliance management on the strength of legal expertise. The Ethics & Compliance Division ensures that we systematically advance ethics management, and consists of the Ethics & Compliance 1 Team and the Ethics & Compliance 2 Team responsible for performing internal audits on overall business operations and for conducting IT system assessments and relevant investigations respectively as well as the Compliance Team in charge of compliance control and support in general.

The Division regularly reports compliance support activities to the Board of Directors each year, and reports to the Audit Committee quarterly on major audit plans, the progress made on audit work, and incidences of non-compliance with the Code of Ethics. Reports submitted to the Committee outline the issues discovered through audits and action plans to remedy such issues. In August 2022, compliance support activities were reported to the Board concerning compliance review on disclosure and subcontract regulations, IT compliance, amendment of internal regulation management rules, ethics training, and establishment of a regulatory review process for game launching. The Board requested that corresponding improvement measures be taken proactively.

At NCW, the Compliance & Ethics Review Committee (CERC) serves to manage and review ethical management and corruption issues. The CERC consists of three high-level executives in Senior Vice President (SVP) positions, including its Chief of Staff and General Council. Its mandate is to perform internal audits on non-compliance with the company's anti-bribery and anti-corruption policy which defines 'unethical practices' within the Employee Handbook stipulating the code of ethics guidelines for NCW employees as well as with the principles of 'fair business conduct' of the Ethical Partnership Statement of Principles.

NC's Code of Ethics

Established Feb. 4, 2009
Amended Dec. 31, 2014
Amended Jun. 14, 2021

Article 1	Purpose
Article 2	Protection of customers and others
Article 3	Compliance with laws and internal regulations
Article 4	Sharing of corporate values and safeguarding the value of dignity
Article 5	Work ethics
Article 6	Mutual trust and cooperation among employees
Article 7	Confidentiality and information security
Article 8	Protection of corporate assets
Article 9	Transparent management of finances and expenses
Article 10	Upholding integrity and professionalism in business conduct
Article 11	Prevention of conflicts of interest
Article 12	Public relations for media and others

Compliance Officer's Activities Reported to the Board in August 2022

❶ **Provide ethics training**
 · Provided all employees with training on the Code of Ethics in general and case studies, with a focus on key provisions of the Code including the prohibition of workplace harassment, the use of undisclosed information, and unauthorized outside work based on case studies (company-wide completion rate 99% in 2022)
 · Provided to new hires bimonthly (6 times/year), provided on an on-going basis since May 2022 (new hires individually attend video lectures on ethics right upon their recruitment)
 · Ethics training for new hires recruited through open recruitment: Conducted once a year in every January

❷ **Establish a regulatory review process for game launching**
 · Established a preliminary regulatory compliance review process to prepare a checklist and manuals for applicable laws in the pre-launching phase and provide them to the organization responsible for game launching

❸ **Align internal regulation management rules and internal regulations**
 · Align processes to prepare and circulate easy-to-understand internal regulation manuals and to finalize internal regulations by the responsible department developing draft regulations, consulting relevant departments, and gaining approval after reviews made by the internal regulation management department

❹ **Ensure IT compliance**
 · Review internal systems subject to IT laws and regulations – Personal Information Protection Act, Information Communications Network Act, Electronic Transactions Act, Game Industry Act, and Fair Hiring Procedure Act - for their regulatory compliance

Ethics and Anti-corruption Audits

❶ **Regular audits**
 · Purpose: Verify compliance with processes and internal regulations and audit the appropriateness of processes
 · Target: Non-compliance with the Code of Ethics and overall internal regulations and general work processes
 · Scope: NCSOFT and subsidiaries
 · Frequency: Performed 5 times in 2022

❷ **Year-round audits**
 · Purpose: Monitor non-compliance with major regulations
 · Target: Data breaches, corruptive procurement practices, wrongful use of company credit cards, etc.
 · Scope: NCSOFT

❸ **Ad-hoc audits**
 · Purpose: Audit regulatory non-compliance issues brought to our attention through whistleblowing, identification, or requests for investigation
 · Target: Non-compliance with the Code of Ethics and any other internal regulations
 · Scope: NCSOFT and subsidiaries

Improving Employees' Ethics Awareness

Training on the Code of Ethics

In June 2022, NC conducted ethics training to provide all our employees (including contract workers, dispatched workers, and interns) with an overview of our Code of Ethics. Newly-appointed team leaders who are given relevant authorities and responsibilities are provided with tailormade Code of Ethics training befitting their position on a quarterly basis. New recruits also separately receive essential Code of Ethics training. In the latter half of 2023, we plan to provide all our employees with ethics training to address such topics as workplace bullying, inappropriate use of business expenses, anti-corruption, and ban on the use of pirated software.

Training Provided by Target

Target	New Hires	Newly appointed Team Leaders
Topic	Internal ethics regulations essential for new hires (with a focus on specific cases)	Internal ethics regulations essential for new leaders
Frequency	6 times/year (separate annual training for employees hired through open recruitment)	Quarterly

Training Provided by Type of Employment

Unit: Number of people

Target	Ethics Training Participants
Executives	73
Full-time employees	4,314
Contract workers	338
Dispatched workers	4
Total	4,729

Compliance Training

NC provides all employees, including part-time workers, with statutory training on the prevention of sexual harassment and the improvement of perceptions on disability on online platforms on a regular annual basis. This comes in tandem with our internal compliance training including ethical training which addresses the prevention of workplace harassment among others, information security training, and open source license training. Specifically, we are expanding training for leaders to help them set an example in embedding compliance into our day-to-day work.

Statutory Training Provided

Topic	Target	Frequency
Prevention of sexual harassment	All employees	Annual
mprovement in perception on disability		
Data privacy	Employees handling personal data	

Internal Training Provided

Topic	Target	Frequency
Prevention of workplace harassment	All employees	Annual
Open source license	Employees in relevant job categories/ positions	Quarterly
Ethics	All employees	Annual

Disseminating Our Ethics/Anti-corruption Policy across Supply Chains

Partner Selection and Management

To build sustainability into our supply chains, NC makes it mandatory for all candidate partners to submit their integrity pledge in the partner selection process. Our service contract includes provisions on 'compliance with contractual integrity' to prohibit any provision of or request for bribes, and specifies that non-compliance with such provisions may result in contract termination and/or other disadvantages. We have developed competitive contract operational standards to elaborate on relevant details so that we select and manage partners in conformity with fair procedures, and have made them available on our internal website to raise employees' awareness and promote their compliance with the set procedures. Going forward, we will develop management plans to establish mutually-beneficial relationships with partners. In the latter half of 2023, we plan to amend our anti-graft law guidelines, and create guidelines to address the acceptance of gifts from partners.

NCW's Ethical Partnership Statement of Principles

NC West Holdings (NCW) is extending the scope of its ethics policy to include business partners and companies receiving its investment. NCW has established the Ethical Partnership Statement of Principles which specifies that the company ensures safe working conditions, fair business practices, diversity & inclusion, environmental stewardship, respect for customers, and positivity on the part of potential partners in initiating new partnerships. This Statement is circulated among employees of NCW and its subsidiaries to request their compliance. In signing a contract with business partners, NCW also requests that these partners provide their consent to the NCW Integrity Pledge based on the Ethical Partnership Principles. In addition, NCW conducts the Ethical Partnership Due Diligence Survey in acquiring or investing in companies to assess their ethical management performance as well as in forming new partnerships.

Operating Whistleblowing Mechanisms and Protecting Whistleblowers

Clean Report Center

Our partners may anonymously raise their concerns over our employees' unethical or unfair practices through the NC Clean Report Center, and we take necessary action including investigation, disciplinary measures, and process improvement. In entering into a contract with partners, our standard contract form specifies that partners are prohibited from engaging in any unethical and/or unfair practices with our employees in providing, promising, or requesting unjustified gains in the contract signing and fulfillment process. It is also made clear that partners report to the NC Clean Report Center when they identify such practices and that their non-compliance may result in contract termination. In receiving reports, our Clean Report Center ensures that partners who blow the whistle reveal their identity as our partner so that we clearly distinguish whistleblowing reports and complaints raised by partners and handle them accordingly. Whistleblowers remain confidential in terms of their identity and the concerns they raise pursuant to applicable laws and our internal regulations, and they are entitled to protection in conformity with the Public Interest Whistleblower Protection Act and other pertinent regulations. We also ensure that whistleblowers do not suffer any disadvantage for the concerns they raise and their act of whistleblowing. All such whistleblower protection measures and principles are specified on our NC Tong and Clean Report Center websites. In 2022, a total of 67 reports were submitted through these channels (16 reports on regulatory non-compliance and 51 grievances), and necessary actions were taken on all of these reports.

Human Rights Management

Human Rights Management Declaration

NC made our human rights management declaration in 2021 to pave the way for human rights management in the mid-to-long term. This declaration embodies our approach to human rights management and its goal, boundary, and principles.

Goal
NC respects the declarations and guidelines that are universally applied across the global community, and will do our utmost to protect the human rights of our employees, partners, users, and communities.

Boundary and Principles
NC takes a precautionary approach to ensure our employees, users, partners, and community members do not experience any human rights violation, and take prompt action when an issue arises.

Employee
- Ban discrimination on the grounds of gender and age among others
- Ban compulsory labor and child labor
- Provide reasonable compensation and a pleasant workplace

Users
- Create a safe and enjoyable game environment
- Ban discrimination on the grounds of gender and age among others
- Thoroughly protect users' personal data

Partners
- Prohibit any unfair influence peddling and build fair transactional relationships
- Support partners to implement human rights management and resolve relevant issues

Communities
- Protect the human rights of community members
- Engage in CSR activities for underprivileged groups, future generations, and communities

Human Rights Management Declaration 🔗

Progress Made in Advancing Human Rights Management

NC Tong Serving as a Human Rights Grievance Mechanism for Employees
NC Tong serves as a communication channel to allow employees to raise their human rights grievances and receive counseling concerning such issues as sexual harassment and workplace bullying as well as corruptive practices. Employees may raise their concern and seek counseling both internally and externally through PC, mobile, telephone, and e-mail. NC Tong keeps the reports submitted strictly confidential, prohibits any disadvantages imposed for the act of whistleblowing, and ensures speedy and fair investigations and grievance handling.

Clean Report Center Serving as a Human Rights Whistleblowing Channel for External Stakeholders
External stakeholders are able to submit whistleblowing reports on non-compliance with laws or internal regulations and corruptive practices on the part of NC employees. Disciplinary action, process improvements and other necessary measures are taken following the investigations into such matters.

Counseling for Employees' Mental Care
NC operates counseling rooms to help individual employees take care of their mental health. Three licensed counselors provide counseling to employees at NC and its subsidiaries and employees' spouse and children five days a week at the R&D Center and three days a week at Alpharium. Counseling may cover not only work-related difficulties that arise with regards to personal relationships and work stress, but also individual issues on marital relationships, childcare, and the restoration of family relationships.

Human Rights Awareness Building Training　Unit: No. of persons

Training	Employees Who Completed Training
Prevention of sexual harassment	4,948
Improvement in perceptions on disability	5,023
Prevention of workplace bullying	4,729

* Human Rights Awareness Building Training is provided once every year
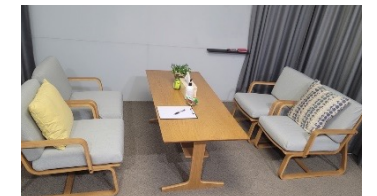
In-house counseling room

Human Rights Management Roadmap

NC plans to develop our mid/long-term human rights management roadmap and implement relevant activities to protect the human rights of our employees, users, partners, and workers in the wider community. We will develop our human rights policy and guidelines, establish a system to advance human rights management to prevent direct/indirect human rights violation in the workplace and to deliver satisfaction to stakeholders, and continue with our implementation and improvement.

H1 2024
Establish policies and governance
- Set the course of human rights management
- Establish a policy system to operate the human rights management system
- Establish governance including decision-making and responsible departments

Internalize and fully implement
- Identify issues, take action, verify effectiveness, and improve action to elevate human rights management
- Improve human rights violation remedy and communication systems

2026 and Beyond (mid-term)
Disseminate across the value chain
- Globally expand NC's human rights management system
- Expand the system across supply chains including customers and partners

APPENDIX

THRONE AND LIBERTY

A new global MMORPG (massively multiplayer online role-playing game) under development as NC's fifth flagship IP
(to be released in the latter half of 2023)

ESG Policies

Human Rights Management Declaration

Overview

NCSOFT dreams of a bright future where we are all connected by joy. We ceaselessly push the boundary and continue with technology innovation to create a brighter future. We believe that technology should be used in a way to benefit all and improve that technology forms an inseparable part of our life today, NCSOFT endeavors to minimize factors that may arise in its business conduct to cause human rights infringements.

Goal

We respect the Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights, and the ILO (International Labor Organization) Declaration that are universally applied across the global community, and will comply with them in protecting the human rights of our employees, partners, users and local communities.

Boundary

NCSOFT's human rights management declaration covers employees at the headquarter and its subsidiaries. We further recommend that our partners also abide by the principles set within this declaration to disseminate the value of respecting human rights.

Principles

NCSOFT fully prevents any incident of human rights infringements for its employees, users, partners and members of local communities, and takes prompt action in the event of any issue.

1. Respect for the Human Rights of Employees
- We do not tolerate discrimination in any way, shape or form. We provide a work environment that does not discriminate on the grounds of gender, age, birthplace, academic background, religion, marital status, sexual identity, faith or disability, etc.
- We ban forced labor performed against one's own free will, and prohibit child labor.
- We provide reasonable compensation in accordance with fair procedures, and endeavor to create a safe and pleasant work environment.

2. Respect for the Human Rights of Users
- We work to create a safe and joyful service environment for our users.
- We ban discriminate against any user on the grounds of gender, age, birthplace, academic background, religion, marital status, sexual identity, faith or disability.
- We fully comply with personal data regulations, and archive and store such data as required by applicable laws. We also thoroughly manage personal data we collect to prevent any leaks.

3. Respect for the Human Rights of Partners
- We do not exercise unjustified influence by leveraging our position of dominance in our relationship with our partners, and strive to establish fair transaction relationships.
- We fully assist partners in practicing and working together on human rights management.
- We promptly identify human rights infringements, should such issues occur in our relationship with partners, and work together to find solutions.

4. Respect for the Human Rights of Communities
- We ensure that the human rights of community members are protected in the course of our business conduct.
- We will engage in diverse CSR activities to support the underprivileged and future generations to pursue wholesome growth with local communities.

Human Rights Management Processes

NCSOFT will assist the swift resolution of grievances through relevant departments, should any such grievances be raised in relation to human rights, and protect the identity of whistleblowers.
We will revise this declaration whenever deemed necessary in line with shifting conditions in the internal and external environment.

Our Policies on the Acceptance of Bribes and Involvement in Corruptive Practices

Code of Ethics for Employees (amended on Jun. 14, 2021)

**Article 10
(Upholding integrity and professionalism in business conduct)**

NC employees ensure that the company engages in fair competition under sound market economy principles, and do not exercise undue influence by exploiting the advantage of the company's dominant position. NC employees do not accept, request, or provide bribes, gifts, entertainment and/or any other unjustified gains or make any promises to do so for themselves or third-parties in the course of performing their work, and do not engage in any other corruptive practices that impact their ability to unjustified gains are provided or received without knowledge on the part of NC employees, such incidents are immediately reported to the head of the associated department or the audit department for further details. NC employees do not engage in any act that undermines fairness in relation to their business conduct, including the following:

1. Engaging in any introduction or solicitation for the purpose of unfairly benefiting the Company, oneself, or others
2. Treating specific individuals, groups, or companies preferentially or discriminatorily in one's business conduct for reasons of regional, school, and family ties
3. Directly or indirectly soliciting favors from employees responsible for HR operations for the purpose of exercising undue influence in relation to the appointment, promotion, or transfer of oneself and/or others
4. Taking advantage of the authority granted by the Company to improperly interfere in the personnel matters of other employees for conducting business in one's given position/role

Our Policies in Relation to Diversity & Inclusion

Code of Ethics for Employees (amended on Jun. 14, 2021)

**Article 4
(Sharing of corporate values and safeguarding the value dignity)**

NC employees share NC's values and goals, and maintain their honor and dignity as members of NC. NC employees take an impartial approach to handling their work and do so without prejudice towards specific interest groups, social issues or invoke a conflict on the grounds of nationality, gender, race, religion or birthplace. NC employees ensure that their personal ideas or activities in both online and offline domains are not considered as representing NC's official position.

**Article 6
(Mutual trust and cooperation among employees)**

NC employees maintain faithful, trust-based partnerships in all their business relationships with individuals, departments, affiliates, and partners. NC employees do not discriminate or take any action that would disadvantage their colleagues without reason on the grounds of gender, marital status, pregnancy or giving birth. NC employees should not take advantage of their dominant position or relationships in the workplace to inflict physical or psychological pain on other employees beyond the appropriate boundary of work or to deteriorate the working environment. NC employees should not abuse their position in the workplace nor engage in sexual behaviors in relation to business conduct to cause other employees feel sexual humiliation or aversion, nor impose any disadvantages in terms of employment conditions or recruitment for reasons of refusing to accede to sexual behaviors or other demands.

Our Policies in Relation to Fair Trade Principles

Code of Ethics for Employees (amended on Jun. 14, 2021)

**Article 3
(Compliance with laws and internal regulations)**

NC employees comply with general laws and regulations in the countries and regions where the Company conducts business and respect the market principle of fair and free competition. NC employees fully understand and comply with NC's internal regulations including the Code of Ethics for Employees, in-house notifications, and any and all guidelines provided by the Company ('internal regulations of the Company' hereinafter). NC employees, when encountering any non-compliance with laws and regulations and the internal regulations of the Company, should immediately report to the head of their department or the audit department, and sincerely cooperate with the investigations conducted by the audit department. NC's manager groups (heads of teams/divisions/groups or any other equivalent organizations) should take appropriate preventive action to ensure their members do not violate the internal regulations of the Company.

**Article 10
(Upholding integrity and professionalism in business conduct)**

NC employees ensure that the Company engages in fair competition under sound market economy principles, and do not exercise undue influence by exploiting the advantage of the Company's dominant position. NC employees do not accept, request, or provide bribes, gifts, entertainment and/or any other unjustified gains or make any promises to do so for themselves or third-parties in the course of performing their work, and do not engage in any other corruptive practices that impact their ability to unjustified gains are provided or received without knowledge on the part of NC employees, such incidents are immediately reported to the head of the associated department or the audit department for further details. NC employees do not engage in any act that undermines fairness in relation to their business conduct, including the following:

1. Engaging in any introduction or solicitation for the purpose of unfairly benefiting the Company, oneself, or others
2. Treating specific individuals, groups, or companies preferentially or discriminatorily in one's business conduct for reasons of regional, school, and family ties
3. Directly or indirectly soliciting favors from employees responsible for HR operations for the purpose of exercising undue influence in relation to the appointment, promotion, or transfer of oneself and/or others
4. Taking advantage of the authority granted by the Company to improperly interfere in the personnel matters of other employees for conducting business in one's given position/role

Our Policies in Relation to Health and Safety

NC Health and Safety Management Guidelines
(amended on 2022.8.11)
NC considers health and safety management as our top priority and remains fully committed to providing a healthy and safe workplace for all our employees, subcontractor workers, and labor providers and all other workers ("employees and workers" hereinafter)

1. NC places health and safety management above all else in business operations to pursue continuous improvement and enhancement with a goal of establishing a health and safety management system.

2. NC places health and safety management above all else in business operations to pursue continuous improvement and enhancement with a goal of establishing a health and safety management system.

3. NC proactively identifies hazards and risk factors, and takes action to reduce risks to sincerely place prevention at the center of our occupational health and safety management.

4. NC assigns necessary roles and responsibilities to respective actors for systematic and efficient health and safety management, and practices self-directed safety on the basis of proactive engagement and cooperation of all employee and workers.

Environmental Management Policy

Chapter 1 Business Overview
NCSOFT (NC hereinafter), as a global IT company developing and delivering online and mobile game software, provides customers with digital entertainment services, including game content, software, and sports content. NC is committed to meeting the demands of customers, employees and the global community in resolving environmental challenges by leveraging its information technology.

Chapter 2 Overview of the Environmental Management Policy
NC is aware of the importance of the environment and the ethical responsibility it bears as a business, and has established a responsible and sincere environmental management policy as part of its long-term commitment.

Chapter 3 Implementation Principles for Environmental Management
1. NC recognizes its environmental impact, develops response measures, and engages in on-going management and monitoring.

Category	Cause behind Environmental Impact	Our Response
Respond to climate change	GHG emissions generated from electricity and other energy consumption	- Increase the use of clean energy and switch to energy efficient facilities in operating buildings and offices - Encourage employees to reduce energy consumption and arrange conducive daily facilities
Conserve clean water resources	Water discharged from employee consumption, including in the office	- Comply with laws and regulations concerning water treatment - Install a gray water system to reuse such water after the self-treatment of domestic sewage - Switch to water-saving facilities
Recycle natural Resources	Waste discharged including end-of-life IT assets and waste generated from the office	- Manage waste discharge through registered recycling companies

2. NC considers the environment in developing technology and delivering services.
3. NC complies with the environmental laws and regulations in the countries where its offices and data centers are located.
4. NC provides employees with environmental training and information, and encourages them to participate in environmental protection.
5. NC transparently discloses its environmental performance through sustainability reports and other corporate media.

Chapter 4 Environmental Management System
The ESG Steering Committee, attended by NC's top management, is mandated to manage, oversee and make decisions on the environmental management policy. The ESG Management Division is exclusively responsible for the working-level implementation and operation of environmental management.

Chapter 5 Purpose and Scope of the Environmental Management Policy
NC's environmental management policy aims to present action principles for its environmental management and to transparently disclose its management system for policy implementation to the general public. This environmental management policy applies to NC's entire business operations, from product R&D and launching to customer support, and may apply to NC's business partners, service providers, contractors within the same scope.

GRI Standards 2021

GRI 2: General Disclosures 2021

Standard	Disclosure			Description
GRI 2: **The organization and its reporting practices**	2-1	Organizational details	Name of the organization	NCSOFT Corporation (referred to as NC within the report as the name of the organization)
			Location of headquarters	12, Daewangpangyo-ro 644-geon gil, Bundang-gu, Seongnam City, Gyeonggi Province, Korea, 13494 (zip code)
			Location of operations	Korea, North America, Japan, Taiwan, Vietnam and Europe (UK)
			Ownership and legal form	Legal form: Limited company
				Shareholders with 5% or more ownership (as of Dec. 31, 2022) - Taek-Jin Kim: 2,628,000 shares, 11.9% - Public Investment Fund: 2,032,411 shares, 9.3% - Netmarble: 1,950,000 shares, 8.9% - National Pension Service: 1,841,180 shares, 8.4%
	2-2	Entities included in the organization's sustainability reporting		298~299p of the 26th Period Annual Report
	2-3	Reporting period, frequency, and contact point	Reporting period	Jan. 1, 2022 ~ Dec. 31, 2022, including performance for H1 2023 for a portion of the data
			Reporting frequency	Annual
			Contact point for questions regarding the report	ESG Management Division at the Brand Strategy Center (E-mail: esg@ncsoft.com)
	2-4	Restatements of information		Energy consumption and GHG emissions (reason: extended scope of management)
	2-5	External assurance		76~77p - Independent Assurance Statement 78p - Greenhouse Gas Verification Report
GRI 2: **Activities and workers**	2-6	Activities, value Chain and other business relationship	Sectors	Industry: Online and mobile game software development and publishing
			Activities, products, services and markets	Geographical locations where products and services are provided: More than 60 countries across the globe, including Korea, North America, Europe, Japan and Taiwan, on 223p of the 26th Period Annual Report Type of customers and beneficiaries: General individuals and internet café owners, etc.
			Supply chain	- Product: H/W, S/W, supplies, consumables, event items, etc. - Service: Manufacturing, development, advertising, construction, maintenance, events, etc.
			Significant changes to the organization and its supply chain	None

GRI 2: General Disclosures 2021

Standard	Disclosure		Description				
GRI 2: **Activities and workers**	2-7, 8	Employees, Workers who are not employees	Item (unit: No. of persons)		2019	2020	2021	2022

				2019	2020	2021	2022
Total[1]				3,762	4,231	4,627	4,796
By gender	Male			2,566	2,866	3,084	3,140
	Female			1,196	1,365	1,543	1,656
By contract type	Regular	Total		3,646	4,094	4,462	4,596
		Male		2,523	2,803	3,002	3,059
		Female		1,123	1,291	1,460	1,537
	Non-regular	Total		116	137	165	200
		Male		43	63	82	81
		Female		73	74	83	119
		Contract	Total	-	-	161	197
			Male	-	-	81	81
			Female	-	-	80	116
		Dispatched	Total	-	-	4	3
			Male	-	-	1	0
			Female	-	-	3	3

1) Based on the headquarters (including registered executives)

Standard	Disclosure		Description
GRI 2: **Governance**	2-9	Governance structure and composition	49p – Composition of the Board , 50p – Board Committees
	2-10	Nomination and selection of the highest governance body	51p – Appointment of Outside Directors
	2-11	Chair of the highest governance body	49p – Composition of the Board
	2-12	Role of the highest governance body in overseeing the management of impacts	8p – ESG Steering Committee: Role & Responsibility
	2-13	Delegation of responsibility for managing impacts	
	2-14	Role of the highest governance body in sustainability reporting	
	2-15	Conflicts of interest	Director who has special interests cannot exercise his/her voting rights as stipulated in the BOD regulations.
	2-16	Communication of critical concerns	22p – NC Tong's Grievance Reporting and Handling Process Cases submitted through NC Tong, based on its handling outcomes, are reported to the Audit Committee quarterly.

GRI 2: General Disclosures 2021

Standard	Disclosure		Description
GRI 2: Governance	2-17	Collective knowledge of the highest governance body	Training Provided to Independent Directors on 274p of the 26th Period Annual Report
	2-18	Evaluation of the performance of the highest governance body	51p – Board Assessment in 2022
	2-19	Remuneration policies	287~292p of the 26th Period Annual Report
	2-20	Process to determine remuneration	
	2-21	Annual total compensation ratio	Not disclosed
GRI 2: Strategy, policies and practices	2-22	Statement on sustainable development strategy	7p – Chairperson's Message·ESG Steering Committee, 8p – NC ESG Management Core Values
	2-23	Policy commitments	59~61p – ESG Policies
	2-24	Embedding policy commitments	59~61p – ESG Policies NC discloses ESG policies and provides in-house training on related policies such as Code of Ethics
	2-25	Processes to remediate negative impacts	22p – NC Tong's Grievance Reporting and Handling Process NC assists the swift resolution of grievances through relevant departments, should any such grievances be raised in relation to human rights, and protect the identity of whistleblowers.
	2-26	Mechanisms for seeking advice and raising concerns	22p – Employee Grievance Mechanism (NC Tong), 56p - Operating Whistleblowing Mechanisms and Protecting Whistleblowers
	2-27	Compliance with laws and regulations	No regulatory non-compliance
	2-28	Membership associations	45p – Membership at Game Associations NC strictly prohibits any donations and/or sponsorships made for political purposes from the Company's assets or budget pursuant to applicable domestic laws and regulations including Korea's Political Fund Act and Article 10 of our Code of Ethics for Employees.
GRI 2: Stakeholder engagement	2-29	List of stakeholder groups	Shareholders & investors, users, employees, partners, central & local governments, communities, etc.
		Identifying and selecting stakeholders	NC classifies any and all who directly/indirectly interact with the Company as stakeholders.

Stakeholder	Communication channel
Shareholders & investors	• Official website·Annual General Meeting of Shareholders·Quarterly earnings releases·Conference calls • NDR(Non-Deal Roadshow)·One-on-one meetings·Disclosures
Users	• Official website·One-on-one inquiries through the customer center·Official blog and social network channels (Facebook Youtube, Instagram) • Customer counseling via e-mails/phone communications·Disclosures
Employees	• In-house portal·Null·nanowiki·NC Tong counseling center·I&M REPORT (Townhall meetings)
Partners	• Integrated procurement system·Clean Report Center·Disclosures
Central & local governments	• Official website·Disclosures·Public service support activities

| | 2-30 | Collective bargaining agreements | None |

GRI 3: Material Topics 2021

Standard	Disclosure		Description
GRI 3: **Material Topics**	3-1	Process of material topics selection	9p – Materiality Assessment Process
	3-2	List of material topics	10p – Materiality Assessment Results
	3-3	Management of material topics	10p – Materiality Assessment Results

Topic-specific Standards (GRI 200)

Standard	Disclosure		Description				
GRI 201: **Economic Performance 2016**	201-1	Direct economic value generated and distributed	Category (unit: KRW million)	2019	2020	2021	2022
			Sales	17,012	24,162	23,088	25,718
			Net income	3,592	5,866	3,957	4,360
			Assets	33,464	40,812	45,819	44,376
			Liabilities	8,342	9,365	14,307	12,391
			Equity	25,122	31,447	31,512	31,985

Category (unit: KRW million)				2019	2020	2021	2022
Value created	Customers (users and others)		Operating profit	1,701,185	2,416,184	2,308,817	2,571,792
Value distributed	Partners		Payment feeds, advertisement expenses and other expenses paid to partners from operating expenses	516,140	726,375	889,269	965,732
	Employees		Wages paid, training expenses	573,558	737,109	880,509	876,750
	Shareholders & investors		Total dividends paid, interest expenses	115,990	185,172	132,174	145,128
	Central & local governments		Income tax expenses, and utility charges, water, power, gas, and fuel expenses	153,469	240,011	120,663	171,350
	Communities		Donations made	15,775	19,086	7,160	6,878

*Based on consolidated financial statements

| | 201-2 | Financial implications and other risks and opportunities due to climate change | 37p - Environmental Management: Strategy <Risks and Opportunities>

NC identified 25 climate-related transition risks, physical risks, and opportunities in line with the TCFD framework, and chose the risks and opportunities material to NC. Risks were categorized into physical risks that may occur due to natural disasters and the long-term effects of climate change and into transition risks that arise in the transition into a low carbon economy. For physical risks, four physical disasters from IPCC's SSP1-2.6 and SSP5-8.5 scenarios were comprehensively analyzed for their impact on our key operations based on Jupiter Intelligence's global climate modeling and data base. Especially, Quantitative impact analyses were conducted on how physical risks, that may occur due to the four types of disasters (wind speed, flood, wildfire, heat), impact our operations and sales while surveys were performed on internal/external experts to assess transition risks and opportunities for their impact on our finances and business model and for stakeholder (investors and others) interest in them. This process led us to arrive at 10 top priority issues as material issues. |

Topic-specific Standards (GRI 200)

Standard	Disclosure		Description				
GRI 201: **Economic Performance 2016**	201-3	Defined benefit plan obligations and other retirement plans	Category (unit: No. of persons, KRW million)			2020	2021	2022

			Compensation	Retirement Pension	Participants in the defined benefit plan	3,214	3,445	3,562
					Participants in the defined contribution plan	84	142	202
					Participants in the hybrid plan (defined benefit + defined contribution)	279	311	349
					Fair value of plan assets	168,262	204,345	251,279

* Based on non-consolidated financial statements

Standard	Disclosure		Description
GRI 202: **Market Presence 2016**	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	No wage disparities for new hires on the grounds of gender
	202-2	Proportion of senior management hired from the local community	17.8%[1] 1) Reporting scope: NC West Holdings, NC Japan K.K., NC Taiwan Co., Ltd., NC Vietnam Visual Studio Co., Ltd
GRI 203: **Indirect Economic Impacts 2016**	203-1	Infrastructure investments and services supported	42p - NC Cultural Foundation's Creativity Enhancement Activities, 43p - AAC (Augmentative and Alternative Communication), 46p - Supporting Community Public Interest Advocates with Capacity Building, CSR through Sports
	203-2	Significant indirect economic impacts	33p - Efforts to Disseminate AI Ethics, 45p - Contributing to the Advancement of a Game Culture
GRI 205: **Anti-corruption 2016**	205-1	Operations assessed for risks related to corruption	Assessments made on all worksites.
	205-2	Communication and training about anti-corruption policies and procedures	56p - Compliance Training

Topic-specific Standards (GRI 200)

Standard	Disclosure		Description						

GRI 205:
Anti-corruption 2016 — 205-3 — Confirmed incidents of corruption and actions taken

Category (unit: No. of cases)			2019	2020	2021	2022
Confirmed incidents of corruption and actions taken	Type of reports Partners	Regulatory non-compliance	25	11	15	16
		Grievances (reported)	24	44	72	51
		Grievances (adjusted)	24	44	72	51
	Type of non-compliance[1]	Non-compliance with expense-related regulations (malpractice, breach of trust, embezzlement, etc.)	3	5	5	4
		Unauthorized possession of a second job	5	7	2	7
		Other violations within the Code of Ethics	19	11	20	20

1) Cases investigated for regulatory violations through whistleblowing or identification

GRI 206:
Anti-competitive Behavior 2016 — 206-1 — Legal actions for anti-competitive behavior, anti-trust, and monopoly practices — N/A

GRI 207:
Tax 2019

207-1 — Approach to tax

207-2 — Tax governance, control, and risk management

207-3 — Stakeholder engagement and management of concerns related to tax

NC complies with the tax laws and relevant regulations in the countries where it operates, and faithfully performs its tax-paying and tax cooperation obligations. We fully cooperate with the tax authorities when requested to do so, and faithfully engage in tax investigations. We monitor the appropriateness of transactions made between the headquarters and overseas subsidiaries to abide by the implementation plans of the OECD BEPS (Base Erosion and Profit Shifting) and the resulting amendments to country-specific tax principles, while submitting annual integrated reports on cross-border transactions to tax authorities. We preemptively respond to tax laws enacted and revised, nurture internal tax experts to prevent tax-related risks, and actively seek out external advice. In addition, our internal accounting control system includes provisions on tax-related controls, and we perform regular reviews on our management and reporting system.

207-4 — Country-by-country reporting

Category (unit: KRW million, %)		2019	2020	2021	2022
Income tax paid	Korea	130,351	213,724	94,165	168,416
	US	(-)699	512	428	830
	Japan	4,273	1,682	325	2,000
	Taiwan	2,832	1,752	377	2,205
	Others	242	(-)1,026	298	(-) 390
Profit before tax		496,154	803,257	491,328	609,051
Statutory taxes		136,999	216,644	95,593	173,061
Effective tax rate		27.6%	27.0%	19.5%	28.4%
Taxes paid		130,390	173,598	187,306	139,196
Tax rate		26.3%	21.6%	38.1%	22.9%

Topic-specific Standards (GRI 300)

Standard	Disclosure		Description
GRI 302: **Energy 2016**	302-1	Energy consumption with the organization	41p - Environmental Management: Metrics & Targets <Energy Consumption>
	302-2	Energy consumption outside of the organization	
	302-3	Energy intensity	
	302-4	Reduction of energy consumption	38p – Environmental Management: Strategy <Our Response>, Improving the Efficiency of Office Energy Use, Improving the Energy Efficiency of Data Centers * Currently, reductions made concerning this activity are not being measured.
	302-5	Reduction in energy requirements of products and services	None
GRI 303: **Water and Effluents 2018**	303-2	Management of water discharge-related impacts	40p – Environmental Management: Strategy <Our Response>, Reducing Water Consumption
	303-3	Water withdrawal	(table below)
	303-4	Water discharge	Water discharged equals water withdrawn while some of the discharged water is reused as graywater.
	303-5	Water consumption	NC does not use the water withdrawn from our business operations (used, stored, and evaporated in the product and service development process), and partially reuse or discharge such water.

For 303-3 Water withdrawal:

Category (unit: ton, ton/KRW 10 billion)	2019[1]	2020[1]	2021[2]	2022[3]
Water withdrawal	142,829	154,801	176,051	205,237
Water withdrawal intensity (non-consolidated sales)	936	690	827	854
Water reused [4]	7,278	3,229	6,723	9,875

* Concerning the Pangyo R&D Center, Alpharium Tower 1, Alpharium Tower 2 and corresponding to non-consolidated financial statement standards (data centers were excluded as their water consumption is not significant)
1) Only referring to the Pangyo R&D Center
2) Only referring to the Pangyo R&D Center, Alpharium Tower 1 and Alpharium Tower 2 only
3) Increases in intensity-based withdrawal: Attributable to increases in operational spaces at Alpharium Tower 2
4) Only referring to the domestic sewage reused through the graywater system installed at the Pangyo R&D Center

Topic-specific Standards (GRI 300)

Standard	Disclosure		Description
GRI 305: **Emissions 2016**	305-1	Direct (Scope 1) GHG emissions	41p - Environmental Management: Metrics & Targets <GHG Emissions >
	305-2	Energy indirect (Scope 2) GHG emissions	While NC was not subject to the Korean government's GHG emissions trading system or GHG management system as of the end of 2022, NC independently calculated its own GHG emissions in accordance with the Ministry of Environment's guidelines on the reporting and certification of GHG emissions under the GHG emissions trading system for the sustained management of GHG emissions.
	305-3	Other indirect (Scope 3) GHG Emissions	
	305-4	GHG emissions intensity	
	305-5	Reduction of GHG emissions	38~39p - Environmental Management: Strategy <Our Response>, Improving the Efficiency of Office Energy Use, Improving the Energy Efficiency of Data Centers, Deploying Sustainable Infrastructure and Technology, Using and Expanding Renewable Energy * Currently, reductions made concerning this activity are not being measured.
	305-6	Emissions of ozone-depleting substances (ODS)	We do not use nor emit ozone depleting substances (ODS).
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	The following table illustrates the concentration of atmospheric emissions from Boiler No. 1 and Boiler No. 2 at the Pangyo R&D Center measured in the first and second half of 2022.

Boiler	Nitrogen Oxides (NOx) [Unit: ppm]			Sulfur Oxides (SOx) [Unit: ppm]		Dust [Unit: mg/Sm^3]	
	Legal Limit	H1	H2	Legal Limit	H2	Legal Limit	H2
No. 1	60	34.7	32.1	70	0.3	30	0.8
No. 2	40	35.9	33.2	35	0.7	30	0.5

* Emissions may vary depending on the time of measurement.

Standard	Disclosure		Description
GRI 306: **Waste 2020**	306-1	Waste generation and significant waste-related impacts	NC does not assess waste generated from its business operations nor significant impact generated in relation to waste, and none of its worksites create actual or potential adverse impact given the inherent characteristics of the industry.
	306-2	Management of significant waste-related impacts	NC does not manage significant impact generated from waste since none of NC's worksites generate significant impact from waste given the inherent characteristics of its business.

Category (unit: ton)		2019[1]	2020[1]	2021[2]	2022
General waste generated		70.5	65.1	385	454
Treatment method	Incineration/landfill	-	-	242	269
	Recycling	-	-	143	185

1) Solely concerning the waste generated from the cafeterias at the Pangyo R&D Center
2) Concerning the general waste generated from the Pangyo R&D Center

306-3	Waste generated
306-4	Waste diverted from disposal
306-5	Waste directed to disposal

Topic-specific Standards (GRI 400)

Standard	Disclosure	Description

GRI 401: Employment 2016

401-1 New employee hires and employee turnover

Category (unit: No. of persons)		2019	2020	2021[2]	2022
Recruitment[1]	Total	604	708	797	753
	Male	405	459	491	426
	Female	199	249	306	327

1) NC decided not to disclose data on the recruitment of contract workers with 6 months or shorter in contract term as this is not significant in terms of employment stability (job creation).
2) Restated from the previous year based on error corrections made

Category (unit: No. of persons, %)			2019	2020	2021	2022
Turnover[1]	Total		263	188	353	517
	By type	Voluntary turnover[2]	262	186	353	517
		Non-voluntary turnover[3]	-	2	0	0
		Relocation to affiliates	1	0	0	0
Voluntary turnover rate[4]			7.90%	5.10%	8.62%	11.59%

1) Based on regular employees
2) Career change or resignation through which employees leave the organization on their own initiative, regardless of the intention of the Organization
3) Dismissal, employment adjustment or retirement through which work relationships are terminated mainly in line with the initiative of the Organization
4) (No. of voluntary turnover)/(No. of total employees of previous year) X 100

401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees

21p – Flexible Work Arrangements and Benefits

401-3 Parental leave

Category (unit: No. of persons, %)			2019	2020	2021	2022
Parental leave	Employees eligible for parental leave	Male	998	1,032	1,125	995
		Female	230	230	249	223
	Employees who took parental leave	Male	22	18	13	21
		Female	46	42	47	58
	Employees who returned to work after parental leave[1]	Male	100	100	100	100
		Female	100	100	100	100
	Employees who return to work after parental leave and continue to work[2]	Male	72	53	54	71
		Female	91	87	89	85

1) (Employees who returned to work after parental leave during the reporting period) / (Employees whose parental leave ends during the reporting period) X 100
2) (Employees who continued to work for 12 months after parental leave) / (Employees who returned to work after parental leave during the previous reporting period) X 100

Topic-specific Standards (GRI 400)

Standard	Disclosure		Description
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	19p – Care for Employees: Governance <Mandate and Management & Oversight>, 21p - Care for Employees: Strategy <Our Response>, Establishing Our Health and Safety Policy
	403-2	Hazard identification, risk assessment, and incident investigation	19p - Care for Employees: Strategy <Risk and Opportunity>, 21p - Care for Employees: Strategy <Our Response>, Conducting Regular Joint Health and Safety Inspections, 23p - Care for Employees: Risk Management, Health and Safety Risk Assessment
	403-3	Occupational health services	21p - Care for Employees: Strategy <Our Response>, Conducting Regular Joint Health and Safety Inspections, 23p - Care for Employees: Risk Management, Health and Safety Risk Assessment
	403-4	Worker participation, consultation, and communication on occupational health and safety	19p - Care for Employees: Governance <Mandate and Management & Oversight>, 21p - Care for Employees: Strategy <Our Response>, Establishing Our Health and Safety Policy
	403-5	Worker training on occupational health and safety	Not conducted as NC is not subject to worker training on occupational health and safety.
	403-6	Promotion of worker health	21P - Care for Employees: Strategy <Our Response>, Benefits NC realigned our health check-up program in 2023 to extend support from a biannual to an annual basis (comprehensive check-ups and semi-comprehensive check-ups alternating each year).
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	21p - Care for Employees: Strategy <Our Response>, Conducting Regular Joint Health and Safety Inspections, 23p - Care for Employees: Risk Management, Health and Safety Risk Assessment

403-8   Workers covered by an occupational health and safety management system

Category (unit: No. of persons, %)	2020	2021	2022
No. of employees subject to the health and safety management system[1]	4,618	5,047	5,265
Scope of coverage out of total employees covered by an occupational health and safety management system	100	100	100

1) Sum of NC employees and subcontractor employees controlled by NC (Article 10-2 of the Occupational Health and Safety Act), and calculated on the basis of subcontractor employees operating at NC's office building (excluding employees stationed on a non-regular basis)

403-9   Work-related injuries   23p – Care for Employees: Metrics & Targets, Work-related Injuries

403-10   Work-related ill health

Category			Unit	2022
Work-related ill health	Worksites where work-related illnesses occurred	Number of worksites	No. of worksites	0
		Percentage of worksites	%	0
	Occurrence of work-related illnesses	Employees	No. of cases	0
		Partners	No. of cases	0

Topic–specific Standards (GRI 400)

Standard	Disclosure		Description					
GRI 404: **Training and Education 2016**	404-1	Average hours of training per year per employee	Category (unit: No. of hours, No. of hours/No. of persons)			2019	2020	2021	2022
			Average hours of training per year per employee	Total employee training hours		90,061	78,265	101,850	147,648
				Average training hours per person	Total	24.6	19.4	22.9	31.3
					Male	23.8	18.4	21.7	29
					Female	26.5	21.5	25.4	36.1
					Regular	24.7	19.3	22.6	30.9
					Non-regular	23.6	21.3	31.4	41.6
	404-2	Programs for upgrading employee skills and transition assistance programs	54p - NC University 73p - Detailed training data						
			Category (unit: %, KRW 1,000)			2019	2020	2021	2022
			Ratio of employees who received annual training			100	100	100	100
			Training and exercise expenses			1,039,696	922,502	1,058,419	1,250,877
	404-3	Percentage of employees receiving regular performance and career development reviews	Individual performance appraisals are made on regular employees and contract employees who worked 6 months or longer during the performance year.						
GRI 405: **Diversity and Equal Opportunity 2016**	405-1	Diversity of governance bodies and employees	23p – Care for Employees: Metrics & Targets, Employee Diversity						
	405-2	Ratio of basic salary and remuneration of women to men	Category (unit: %, KRW 1,000)			2019	2020	2021	2022
			Average pay per person for male employees[1]			97,177	118,101	118,289	129,113
			Average pay per person for female employees[1]			63,380	79,064	82,038	84,375
			1) No discrepancies in base pay between male and female employees who worked for the same period and in the same job position						
GRI 406: **Non-discrimination 2016**	406-1	Incidents of discrimination and corrective actions taken	None						
GRI 413: **Local Communities 2016**	413-1	Operations with local community engagement, impact assessments, and development programs	NC engages in CSR activities where the Company is based. We do not make impact assessments of our business conduct on communities. Given the inherent characteristics of the industry, none of our worksites pose an actual or potential negative impact on their surrounding communities.						
GRI 417: Marketing and Labeling 2016	417-3	Incidents of non-compliance concerning marketing communications	No regulatory non-compliance						
GRI 418: **Customer Privacy 2016**	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Category (unit: No. of cases, KRW million, No. of persons)			2019	2020	2021	2022
			No. of information security breaches			0	0	2	0
			Financial losses that incurred from such breaches			0	0	3	0
			No. of uses affected due to such breaches			0	0	6[1]	0
			1) Non-compliance concerning B2 advertising information (spam) – advertising texts were sent to users who refused to receive such texts: 1 person, a customer center employee photographed customer data with the mobile phone and sent the data to acquaintances, leading to personal data breaches: 5 persons						

Topic–specific Standards (GRI 400): 404–2 Detailed training data

Type of training (unit: No. of persons)		2019	2020	2021	2022
Employees who attended onboarding training	Introductory training for employees hired through open recruitment	70	77	81	92
	Onboarding training for new hires with previous work experience	1,486	1,943	2,256	2,373
	re:boot program (for employees who worked 10 or more years)	-	90	103	118
Employees who attended leadership training	Onboarding for new team leaders	103	353	310	209
	Leadership·Management	769	1,210	2,355	4,441
Employees who attended organizational development·corporate culture programs	Team program[1]	494	204	423	1,079
Employees who attended job training	Insight classes by jobs·sections[2]	1,984	331	2,203	4,927
	Skill training by jobs·sections[3]	1,729	4,332	5,014	5,207
	Mutual learning by jobs·sections[4]	-	-	-	107
Employees who attended special lectures	NC Culture Class (including the NC Calm Program)	980	862	975	576
	NC Hakdang·Special lectures (to develop leaders' insights)	650	187	692	94
	NC Dev.Class (special lectures·seminars led by external experts)	184	334	1,602	857
Employees who attended legally-mandatory training	Training to prevent sexual harassment	3,812	4,312	4,849	4,948
	Training to improve perceptions on disability	3,812	4,312	4,882	5,023
	Data privacy training[5]	587	772	984	4,622
	Information security training	3,219	3,876	4,488	
	Ethics training[6]	-	-	4,698	4,729
	Training to prevent workplace harassment[7]	-	-	896	-
	Open source license training	-	1,198	251	207
Employees who attended MOOC courses	Global learning platform	-	390	911	562
Employees who attended e-learning courses	NC e-Learning Center[8]	1,984	1,772	659	120
Employees who attended external training	Attendance at/support for external training[9]	1,059	245	250	519
Employees who received support to obtain licenses	Support for the attainment of licenses	67	39	18	36

1) Organizational-level program to create a team culture for sustainable growth, change working methods, and generate performance
2) Internal/external expert lectures and seminars to provide diverse insights
3) Learning platform training program to help learn the knowledge and skills required for different job roles
4) Mutual learning programs including knowledge sharing events and group study through which employees serve both as an educational provider and a recipient
5) Integrated data privacy training and information security training since 2022

6) Expanded to company-wide training since 2021
7) Conducted workplace bullying prevention training as part of ethics training since 2022
8) Its operation ended in February 2022 and was integrated into skills training by job category/area
9) Support participation in external trainings, seminars, conferences, and forums to help improve job competency and growth

SASB Index

Technology & Communication Sector – Software & IT Services Industry

*Based on non-consolidated financial statement

Standard	Code	Disclosure	Description
Environmental Footprint of Hardware Infrastructure	TC-SI-130a.1	(1) Total energy consumed	41p - Environmental Management : Metrics & Targets, Energy Consumption
		(2) Percentage grid electricity	90.0%
		(3) Percentage renewable	None
	TC-SI-130a.2	(1) Total water withdrawn	68p - Water withdrawal
		(2) Total water consumed	68p - Water consumption
		(3) Percentage of each in regions with High of Extremely High Baseline Water Stress	None
	TC-SI-130a.3	Discussion of the integration of environmental considerations into strategic planning for data center needs (Water, Energy consumption, Waste generation, etc.)	38p - Environmental Management : Strategy <Our Response>, Improving the Energy Efficiency of Data Centers
Data Privacy & Freedom of Expression	TC-SI-220a.1	Description of policies and practices relating to behavioral advertising and user privacy	NC gives notice to users in line with our personal data handling guidelines concerning behavioral data – their collection items, collection methods, purpose of collection, and retention period – as well as advertising companies which provide personalized advertising by using behavioral data.
	TC-SI-220a.2	Number of users whose information is used for secondary purposes	None
	TC-SI-220a.3	Total amount of monetary losses as a result of legal proceedings associated with user privacy	None
	TC-SI-220a.4	(1) Number of law enforcement requests for user information	None
		(2) Number of users whose information was requested	None
		(3) Percentage resulting in disclosure	None
	TC-SI-220a.5	List of countries where core products or services are subject to government-required monitoring, blocking, content filtering, or censoring	None
Data Security	TC-SI-230a.1	(1) Number of data breaches	Zero in 2022 (criteria for disclosure are pursuant to Article 34 of the Personal Information Protection Act and Article 28-3 of the Information Communications Network Act)
		(2) Percentage involving personally identifiable information(PII)	None
		(3) Number of users affected	None
	TC-SI-230a.2	Description of approach to identifying and addressing data security risks, including use of third-party cybersecurity standards	26~27p - Information Security and Data Privacy : Strategy <Our Response>
Recruiting & Managing a Global, Diverse & Skilled Workforce	TC-SI-330a.1	Percentage of employees that are (1) foreign nationals and (2) located offshore	23p - Care for Employees: Metrics & Targets, Employee Diversity
	TC-SI-330a.2	Employee engagement as a percentage	Not performed
	TC-SI-330a.3	(1) Percentage of gender and racial/ethnic group representation for management	23p - Care for Employees: Metrics & Targets, Employee Diversity
		(2) Percentage of gender and racial/ethnic group representation for technical staff	R&D workforce: 71% Males (2,397 persons), 29% females (997 persons)
		(3) Percentage of gender and racial/ethnic group representation for all other employees	23p - Care for Employees: Metrics & Targets, Employee Diversity
Intellectual Property Protection & Competitive Behavior	TC-SI-520a.1	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive regulations	None
Managing Systematic Risks from Technology Disruptions	TC-SI-550a.1	(1) Number of performance issues	None
		(2) Number of service disruptions	None
		(3) Number of total customer downtime	None
	TC-SI-550a.2	Description of business continuity risks related to disruptions of operations	None

TCFD Index

Pillar		Status at NC	Reporting page
01. Governance	The organization's governance around climate-related risks and opportunities	NC reports to the ESG Steering Committee composed of four top management members at least on a quarterly basis to manage, oversee, and make decisions on key environmental management plans and achievements. NC designated the ESG Management Division as a dedicated environmental management organization in 2022, which engages in developing and implementing environmental management strategies and policies and managing company-wide environmental data. In this regard, the Division closely communicates and collaborates with relevant departments at our domestic/overseas subsidiaries as well as at NC. To bolster the expertise of the Board of Directors in relation to environmental management, NC appointed Jae-Chun Choe, an expert in the field of environment and biodiversity, as an outside director in March 2023.	36p
02. Strategy	The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	To understand key climate-related risks and opportunities that may affect our stakeholders and corporate sustainability and to develop response strategies, NC identified 25 climate-related transition/physical risks and opportunities in line with the TCFD Framework and selected those risks and opportunities material to NC. We categorized risk factors into physical risks that occur due to natural disasters and long-term weather changes and into transition risks that stem from a transition into the low-carbon economy. For physical risks, quantitative analyses were performed on how our operations and sales could be impacted when four types of physical disasters (wind speed, flood, wildfire, heat), occur under the IPCC's SSP1-2.6 and SSP5-8.5 scenarios based on Jupiter Intelligence's global climate modeling and data base, and this report illustrates the assessment results generated under the SSP5-8.5 scenario. For transition risks and opportunities, internal/external experts were surveyed to assess these risks and opportunities from the aspects of their impact on our finances and business model as well as stakeholder (investors and others) interest to select top 10 risks and opportunities as material ones.	37p~40p
03. Risk Management	The processes used by the organization to identify, assess, and manage climate-related risks	NC identified key risks and opportunities in the short-, mid-, and long-term and assessed their impact in 2022 while reviewing the financial impact from physical risks under the IPCC scenarios. We will develop strategies to respond to identified risks and opportunities, and build on this to establish a process to consider these risks and opportunities in our decision-making.	41p
04. Metrics and targets	The metrics and targets used to assess and manage relevant climate-related risks and opportunities	NC extended the boundary of our GHG emissions management from the Headquarters to consolidated domestic subsidiaries in building our GHG inventory in 2022. We also expanded our coverage of Scope 3 emissions from supply chains from one to five categories in line with global disclosure and assessment requirements. Going forward, we aim to expand the scope of our GHG data management and perform continuous monitoring to make necessary improvements.	41p

Independent Assurance Statement

To readers of NCSOFT ESG PLAYBOOK 2022

Introduction

Korea Management Registrar (KMR) was commissioned by NCSOFT to conduct an independent assurance of its ESG PLAYBOOK 2022(the "Report"). The data and its presentation in the Report is the sole responsibility of the management of NCSOFT. KMR's responsibility is to perform an assurance engagement as agreed upon in our agreement with NCSOFT and issue an assurance statement.

Scope and Standards

NCSOFT described its sustainability performance and activities in the Report. Our Assurance Team carried out an assurance engagement in accordance with the AA1000AS v3 and KMR's assurance standard SRV1000. We are providing a Type 2, moderate level assurance. We evaluated the adherence to the AA1000AP (2018) principles of inclusivity, materiality, responsiveness and impact, and the reliability of the information and data provided using the Global Reporting Initiative (GRI) Index provided below. The opinion expressed in the Assurance Statement has been formed at the materiality of the professional judgment of our Assurance Team.

Confirmation that the Report was prepared in accordance with GRI standards 2021 was included in the scope of the assurance. We have reviewed the topic-specific disclosures of standards which were identified in the materiality assessment process.

- GRI Sustainability Reporting Standards
- Universal Standards
- Topic Specific Standards
  - GRI 205: Anti-Corruption
  - GRI 206: Anti-competitive Behavior
  - GRI 302: Energy
  - GRI 305: Emissions
  - GRI 401: Employment
  - GRI 404: Training and Education
  - GRI 418: Customer Privacy

As for the reporting boundary, the engagement excludes the data and information of NCSOFT' partners, suppliers and any third parties.

KMR's Approach

To perform an assurance engagement within an agreed scope of assessment using the standards outlined above, our Assurance Team undertook the following activities as part of the engagement:

- reviewed the overall Report;
- reviewed materiality assessment methodology and the assessment report;
- evaluated sustainability strategies, performance data management system, and processes;
- interviewed people in charge of preparing the Report;
- reviewed the reliability of the Report's performance data and conducted data sampling;
- assessed the reliability of information using independent external sources such as Financial Supervisory Service's DART and public databases.

Limitations and Recommendations

KMR's assurance engagement is based on the assumption that the data and information provided by NCSOFT to us as part of our review are provided in good faith. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. To address this, we referred to independent external sources such as DART and National Greenhouse Gas Management System (NGMS) and public databases to challenge the quality and reliability of the information provided.

Conclusion and Opinion

Based on the document reviews and interviews, we had several discussions with NCSOFT on the revision of the Report. We reviewed the Report's final version in order to make sure that our recommendations for improvement and revision have been reflected. Based on the work performed, it is our opinion that the Report applied the GRI Standards 2021. Nothing comes to our attention to suggest that the Report was not prepared in accordance with the AA1000AP (2018) principles.

• Inclusivity

NCSOFT has developed and maintained different stakeholder communication channels at all levels to announce and fulfill its responsibilities to the stakeholders. Nothing comes to our attention to suggest that there is a key stakeholder group left out in the process. The organization makes efforts to properly reflect opinions and expectations into its strategies.

• Materiality

NCSOFT has a unique materiality assessment process to decide the impact of issues identified on its sustainability performance. We have not found any material topics left out in the process.

• Responsiveness

NCSOFT prioritized material issues to provide a comprehensive, balanced report of performance, responses, and future plans regarding them. We did not find anything to suggest that data and information disclosed in the Report do not give a fair representation of NCSOFT actions.

• Impact

NCSOFT identifies and monitors the direct and indirect impacts of material topics found through the materiality assessment, and quantifies such impacts as much as possible.

Reliability of Specific Sustainability Performance Information

In addition to the adherence to AA1000AP (2018) principles, we have assessed the reliability of economic, environmental, and social performance data related to sustainability performance. We interviewed the in-charge persons and reviewed information on a sampling basis and supporting documents as well as external sources and public databases to confirm that the disclosed data is reliable. Any intentional error or misstatement is not noted from the data and information disclosed in the Report.

Competence and Independence

KMR maintains a comprehensive system of quality control including documented policies and procedures in accordance with ISO/IEC 17021·2015 - Requirements for bodies providing audit and certification of management systems. This engagement was carried out by an independent team of sustainability assurance professionals. KMR has no other contract with NCSOFT and did not provide any services to NCSOFT that could compromise the independence of our work.

June 2023 Seoul, Korea

CEO *E. J Hwang*

Greenhouse Gas Verification Report

Introduction

The Korea Management Registrar Inc. (hereinafter "KMR") has conducted the verification on the greenhouse gas (hereinafter "GHG") emission (Scope1, 2&3) of NCSOFT Corp. & 4 other affiliates (hereinafter "the Companies") in 2022.

Scope

• Organization and operation boundary:
  ✓ Greenhouse gas emissions: Business and emission facilities NCSOFT CO.,Ltd and its 4 subsidiaries operational control
  ✓ Energy usage: Business and emission facilities under NCSOFT CO.,Ltd and its 4 subsidiaries operational control
• Verification period: 01/01/2022 ~ 31/12/2022
• Types of Greenhouse Gases: CO_2,CH_4,N_2O,HFCs,PFCs,SF_6
• Verification scope: Scope 1 (Direct emissions), Scope 2 (Indirect emissions), Scope 3 (other Indirect emissions)
  ✓ Scope 3 emissions are including Category 1, 2, 5, 6 and 13.
• Performed verification work:
  ✓ Interviewing with the site manager responsible for calculating data of greenhouse gas emissions
  ✓ Reviewing the MRV system and process for gathering method for greenhouse gas emission and energy consumption
  ✓ Examination on raw data including information system, bills and payment statements related to verification scope
  ✓ Comparative examination through on-desk review, risk analysis, observation and inspection, etc.
  ✓ Level of assurance: Limited Assurance

Standards

▪ ISO 14064-1:2006, ISO 14064-3:2006 ▪ WRI/WBCSD GHG Protocol
▪ IPCC Guidelines for National Greenhouse Gas Inventories (2006)
▪ Guidelines for Reporting and Certification of Emissions in the Greenhouse Gas Emissions Trading Scheme

Results

1. Greehouse Gas Emissions

Unit : tCO_2eq

GHGs Emission (2022)	Direct Emission (Scope 1)	Indirect Emission (Scope 2)	Corporate Value Chain (Scope 3)	Total
NCSOFT	711.084	24,204.966	130,974.965	155,888
NCSoft Service	20.918	149.464	230.815	401
NC Dinos	144.534	1,433.380	3,028.522	4,605
NC ITS	0	23.376	125.453	148
Ntreev Soft	7.716	213.460	0	221
Total	884.252	26,024.646	134,359.755	161,263

※ Total emissions are summed by company after cutting the decimal point at the workplace.
※ Scope 3 Category: CAT 1 / 2 / 5 / 6 / 13

2. Energy Consumption

Unit : TJ

Energy Consumption (2022)	Fuel	Electricity	Steam	Total
NCSOFT	13.023	469.872	46.233	525
NCSoft Service	0.412	3.123	0	3
NC Dinos	2.443	29.952	0	32
NC ITS	0	0.434	0.070	0
Ntreev Soft	0.152	4.241	0.282	4
Total	16.03	507.622	46.584	564

Limitations

The verification has inherent limitations that may arise in the process of applying standards and methods.

Opinion

KMR verified the greenhouse gas emissions and energy consumption of NCSOFT CO.,Ltd and its 4 subsidiaries in 2022. GHG verification has been performed to meet the limited assurance level according to the verification standards. We express that no significant errors were found in the calculation of emissions during the verification process, and that relevant activity data and evidence were appropriately managed and calculated. As a result, we express an "qualified" opinion.

KMR
ISO 14064-1

KMR

June 20th, 2023 Korea Management Registrar

President Hwang Eun Ju