

Connecting People and Space with LX

2020 LX Sustainability Report



To minimize impact on environment and maximize the use of natural resources, spot color printing and coating were avoided and soy ink was used for this report.

2020 LX Sustainability Report



2020 LX Sustainability Report

About this Report

In order to fulfill its social responsibilities as a public enterprise, LX has been issuing sustainability reports and sharing its innovative and inclusive growth with stakeholders. This is LX's ninth sustainability report since the first edition published in 2008.

Reporting Standards

This report was prepared in compliance with the core Global Reporting Initiative (GRI) Standards as well as fulfilling the requirements of ISO 26000 (international standards for social responsibilities) and the UN Sustainable Development Goals (SDGs). The financial information contained in this report are based on Korean International Financial Reporting Standards (K-IFRS).

Reporting Period and Boundaries

This report covers substantial business activities including key sustainability management activities and outcomes of LX's domestic and overseas offices from January 1 to December 31, 2020. For some quantitative achievements, details of the past three years are reported to enable trend analysis.

Cycle of Report

Annual report (last report published in March 2020)

Assurance of Report

To ensure reliability of the activities and outcomes reported, a verification was conducted by BSI, an independent external agency, and the result is listed in the Third-party Assurance Statement (refer to pages 84 and 85).

Download Report

This report was issued in Korean and English and can be downloaded from LX website (<https://www.lx.or.kr/eng.do>).

Inquiry

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CEO Message



To all the people, stakeholders, and executives and employees,
Thank you for your interest and support to LX even in the midst
of the COVID-19 crisis.

With COVID-19 prolonged for more than a year, everyone is going through a difficult time and accordingly, LX is also overcoming the national crisis with extraordinary determination.

LX has made this year a “year of leap and recovery.” But without inclusion, recovery and leap cannot be achieved. The core of inclusive recovery is to create quality jobs and to create an ecosystem for shared growth.

In line with this, LX developed the “Local Economy 119” to revitalize the local economy, which has been suffering difficulties due to the pandemic.

We have conducted 12 tasks including reduction and exemption of rent for local small business owners, purchase of local community gift certificates, and support for establishing a COVID-19 status map. With the efforts to reduce the burden of rent, including extension of good rent tax support, we have strengthened the revitalization of local business by purchasing local community gift certificates.

LX also has further enhanced the hope created by SMEs and innovative venture companies. This is because the employment of non-face-to-face venture companies has increased even in the COVID-19 crisis, contributing greatly to job creation.

We have been strengthening the innovative ecosystem for startups with a range of supports such as providing one-stop support at the “LX Geo-Dream Center,” holding industry-academia R&D contests using core technologies of the 4th Industrial Revolution, and expanding the “Fund for Win-win Growth” to support SMEs in spatial information industry.

We have also strived to help SMEs grow into digital economic leaders that open the post-COVID-19 era through the support of the “Innovation-led Win-Win Cooperation Program” of the Foundation of Small, Medium, and Large Enterprise and

Agricultural and Fisheries Industry Cooperation, and the “Public-Private Joint Investment Technology Development Project” of the Ministry of SMEs and Startups.

Thanks to these efforts, LX was able to win the 2020 Korea Shared Growth Award hosted by the Korea Commission for Corporate Partnership, followed a Gold Award in the Sustainable Management category of the 2019-2020 LACP Vision Awards.

As a public enterprise moved to Jeollabuk-do Innovative City, LX will heavily recognize its role for balanced and sustainable national development and will make greater efforts to create social values.

We will also expand and provide inclusive national land information services that enhance the safety and convenience of the public by digitalizing SOC. In addition, in this era of digital transformation, we will strive to make an inclusive transformation so that there are no marginalized classes or industries.

As a member of the UN Global Compact, LX supports and faithfully implements the ten principles of human rights, labor, environment, and anti-corruption. Although the daily lives of the people are undergoing drastic changes due to the COVID-19 crisis, LX will surely overcome this crisis through solidarity and cooperation.

I would like to sincerely ask all of you to wait and watch LX making a new leap forward and ask for your continued interest on and support for LX. Thank you.

April 30, 2021
Kim, Jeong-ryeol, President & CEO of LX

김정열

About LX

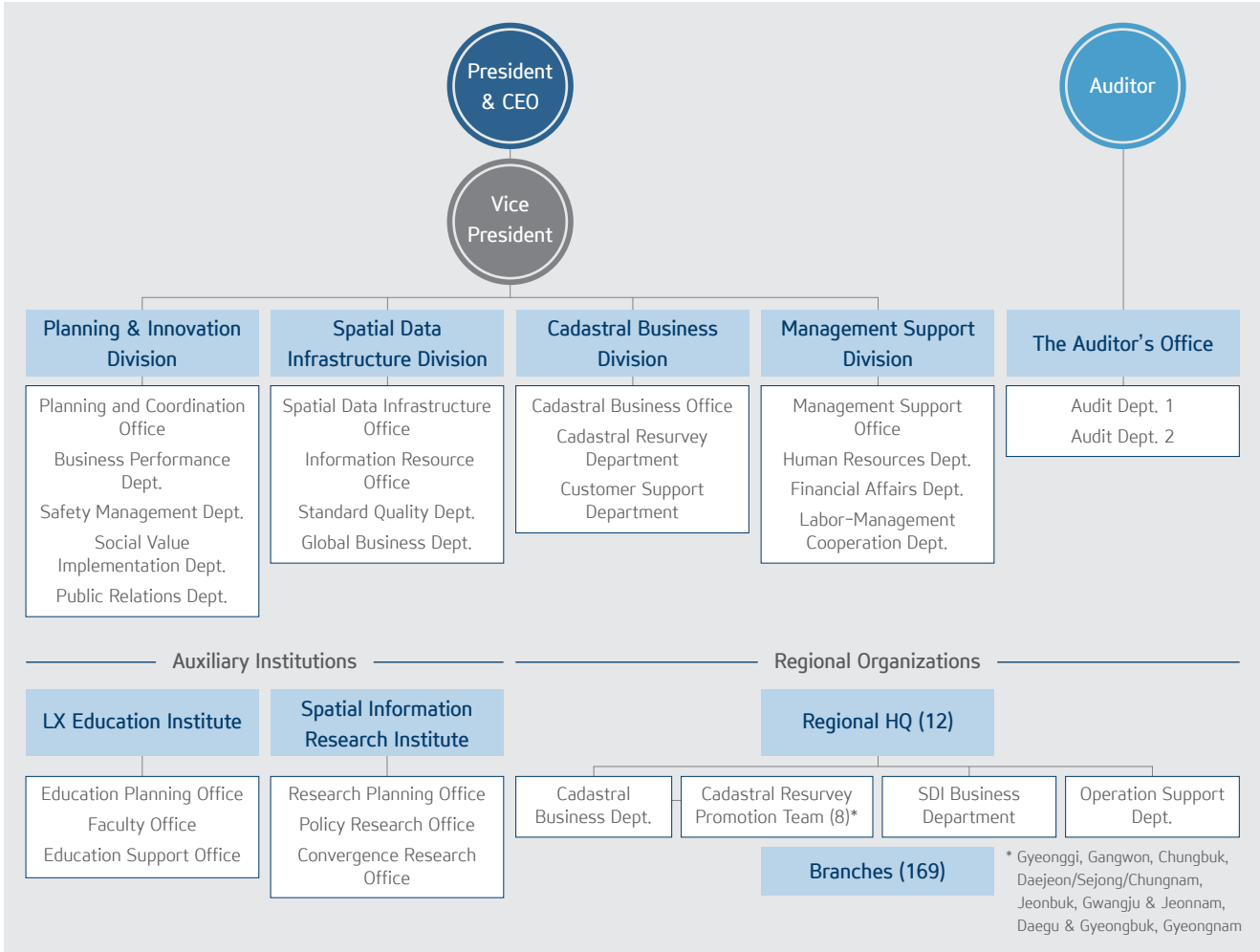
LX is a leading organization specializing in national land information. It was established on July 1st, 1977, based on the Framework Act on National Spatial Information System which was introduced for an efficient establishment and holistic management of the system. LX carries out various responsibilities such as support for the establishment of the national land information system, research in the field of geospatial information and cadastre system, technology development, cadastral survey, and etc. Through providing trustworthy national land information to citizens, LX has been firmly establishing itself as an organization leading the culture of focus on social values.

LX Overview

(As of the end of March 2021)

Organization Name	Organization Type	President & CEO	Date of Establishment
Korea Land and Geospatial InformatiX Corporation (LX)	Quasi-governmental organization	Kim Jeong-ryeol	July 1, 1997
Capital	Competent Authority	No. of Employees	Location of HQ
KRW 10 billion	Ministry of Land, Infrastructure and Transport	4,449	120, Giji-ro, Deokjin-gu, Jeonju-si, Jeollabuk-do, 54870, Republic of Korea

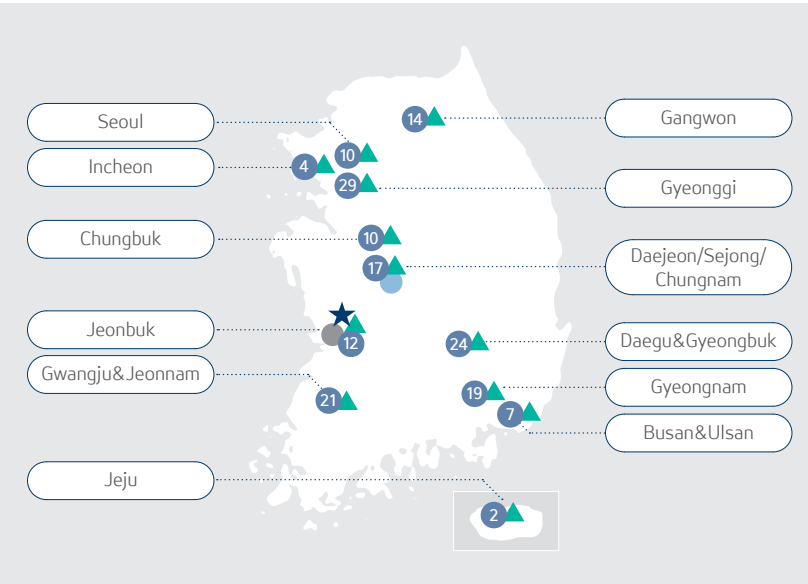
Organization



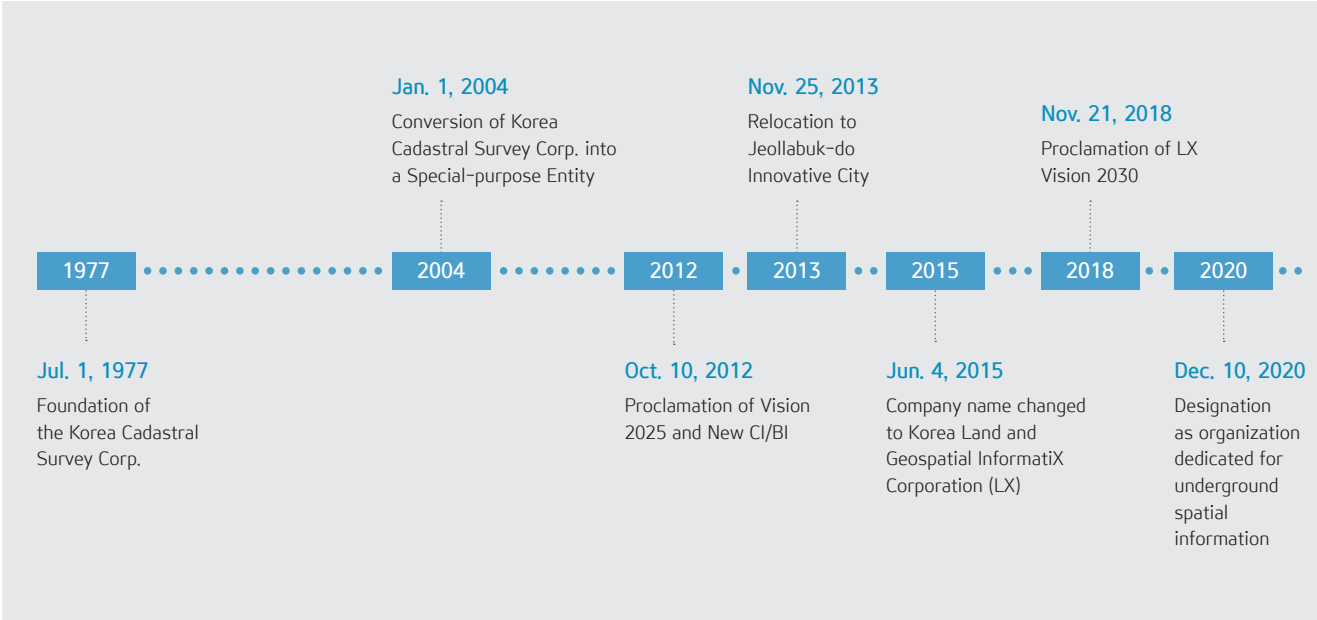
Organization Status

(As of the end of March 2021)

★ HQ	
● LX Education Institute	1
● Spatial Information Research Institute	1
▲ Regional HQ	12
● Branches	169



History of LX

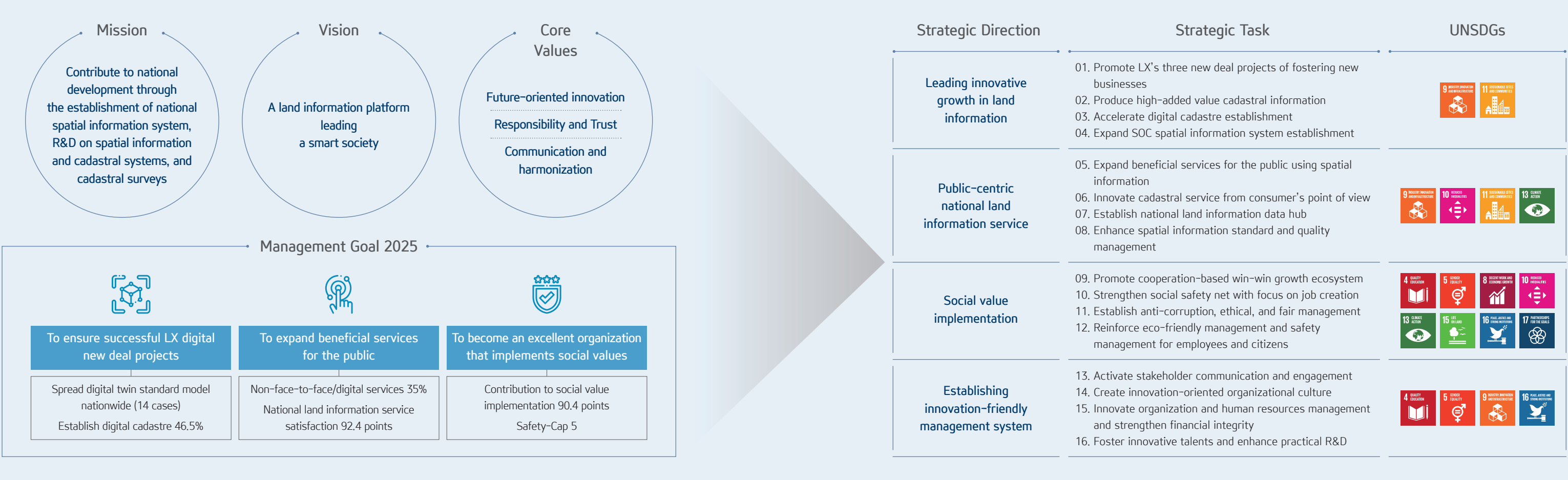


Performance of LX

Total Assets	Total Capital	Business Revenue	Credit Rating
(Unit: KRW 1 billion)	(Unit: KRW 1 billion)	(Unit: KRW 1 billion)	(Unit: rating)
2018 691.1	2018 465.6	2018 563.3	2018 AA+
2019 723.1	2019 484.9	2019 547.7	2019
2020 804.3	2020 508.3	2020 591.8	2020 AA+
11.2%▲	4.83%▲	8.05%▲	

LX Mid to Long-term Management Strategy System

In response to the Fourth Industrial Revolution and the post-COVID-19 era, LX intends to provide national land information that can be easily accessed by anyone. Under the vision of functioning as the national land information platform leading smart society, LX will improve the quality of life for the citizens and ultimately contribute to national development by promoting digital new deal projects, expanding services to improve citizens’ convenience, and implementing social values.



LX Business Overview



Cadastral Survey



Cadastral is a national system of registering and managing the status of real estates (land and building). It provides basic information in suggesting the standard for the values of land, which is necessary in the use and management of national land. LX efficiently manages national land by registering the latest land information in the national cadastral records, contributing to protecting the property rights of the people through reliable cadastral survey service and offering cadastral services that form a consensus among the people.

Efficient Management of National Land

Increasing values of national land use through continuous updates and by offering reliability in cadastral information

Protection of Property Rights

Ensuring universal protection of the rights and interests of the people through provision of swift and accurate cadastral survey service

Cadastral Services that Form a Consensus Among People

Fulfilling social responsibilities to implement people-oriented values



Cadastral Resurvey



Paper cadastral maps are produced through surveys using the outdated technologies, and this results in the mismatch of the current national land information by approximately 14.8%. Moreover, paper maps get damaged as time goes by. To solve these issues, LX conducts cadastral resurvey business using high-tech equipment, such as drones and Global Navigation Satellite System (GNSS), and digitalizes paper cadastral maps by surveying land accurately, thus enhancing the value of land and securing a foundation for spatial information industry.

Accelerate Digital Cadastre Establishment

Providing a driving force to promote cadastral resurveying and strengthening business execution capabilities through development of national policy projects and establishment of foundation for growth

Conversion of the World Geodetic System

Enabling development of various contents through convergence of cadastral and other spatial information

Implementation of Social Inclusion

Expanding business effects by discovering and resolving social issues, such as to resolve public complaints, implement government projects, and supporting win-win growth in private sector



Spatial Information



Comprised of national land information (topography and land use) and urban land information (roads and land), spatial information can now be recorded in the form of digital maps to include even the natural, social, and economic characteristics compared to the past when only the topographical shapes and information on natural features could be recorded in the form of paper. LX, through its spatial information businesses, is leading the country's innovative growth by collecting and managing national land information in an efficient manner and also supporting the government's decision-making process so as to improve the quality of life of the people.

National Land Enjoyed by All

Creating national land equipped with uniqueness and competitiveness through enhancement of activities to resolve pending issues

Strengthening of Foundation for Spreading Innovative Growth

Supporting innovative growth through securing of key technologies in preparation for social changes

Inclusive Growth through Cooperation

Strengthening cooperation for win-win growth with spatial information industry



Overseas Business



Land is the direct cause of global poverty, which the international community is striving to resolve. In response, LX is contributing to the efficient use of land and establishment of responsible land policy by sharing the status and innovation cases of land management in countries around the world.

Land and Spatial Information Consulting

Transferring informatization of land administration and establishment of land information management system to the developing countries

Capacity Building

Strengthening land informatization capacity of the developing countries through education

Spatial Information Package

Establishing comprehensive spatial information infrastructure through export of individual businesses as a package



Education



LX Education Institute, Korea's only training and educational organization specializing in national land information, provides national land information education on the convergence of time, space, and human by offering advanced technical programs according to the educational demand. Through practical and tailored educational planning, LX Education Institute is dedicated to foster future-oriented human resources and lead technological development and promotion of national land information industry.

Training and Education

Enhancing job competencies of employees (e.g., technical skills and knowledge)

Consigned Training

Providing customized education on national land information government employees and the private sector

Distance Education

Strengthening employees' capacity of through establishment of self-directed learning system



Research



Spatial information is emerging as a core infrastructure to create high added values through convergence with new industries, such as autonomous-driving, drone, and augmented reality. With the endless spatial information system advancement and practical technology development of Spatial Information Research Institute, LX will evolve from a "spatial information think tank that leads national policy development" to a "spatial information R&D thinktank that leads the smart society."

Research and Planning

Research and planning and operation by Spatial Information Research Institute to enhance operational efficiency and produce high-quality research outcomes

Policy Study

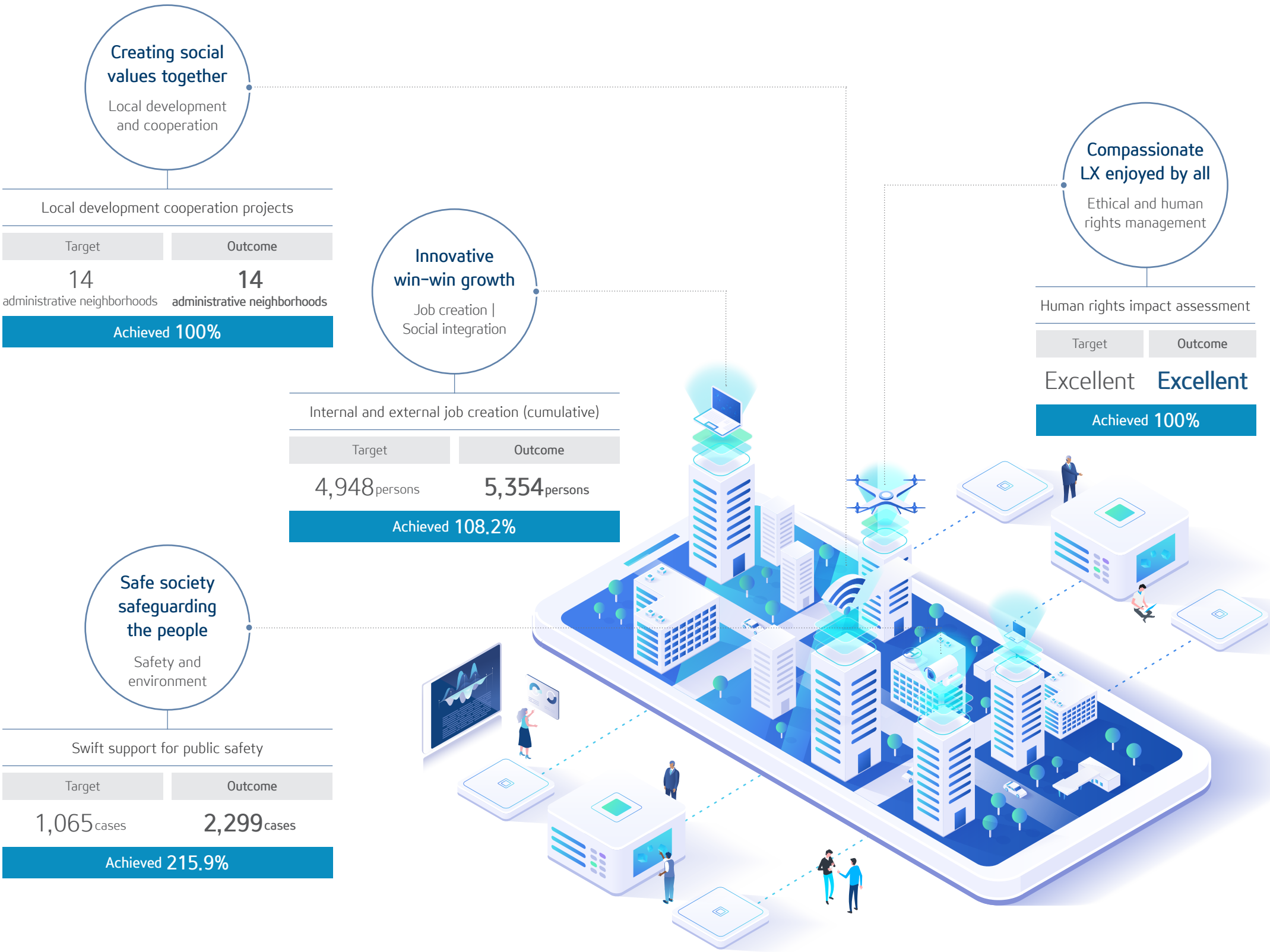
Conducting various policy studies for advancement of spatial information-related policies and spatial information-based added value creation

Convergence Study

Supporting national and LX operations through convergence of latest IT and spatial information

Key Outcomes of LX Social Values

LX social values refer to the values of LX and the people to contribute to the community development and benefits in all national land information-related areas including social, economic, environmental, and cultural. Based on the four core values and through national land information, LX will be implementing people-oriented social values to share happiness and values with the people.



Directions and Tasks

Creating social values together	Target in 2020	Outcome in 2020	Achievement rate (%)
Social value models discovered (No. of models)	5	5	100
Public opinion application rate in policies (%)	12	14.3	119
Local agricultural and manufacturing industry support plan achievement rate (%)	70	83.3	119
Industry - academia cooperation R&D projects promoted (No. of projects)	10	13	130
Local cooperation projects (No. of projects)	14	14	100
Digital twin modeling (Jeonju)	16 administrative neighborhoods	16 administrative neighborhoods	100

Innovative win-win growth	Target in 2020	Outcome in 2020	Achievement rate (%)
Jobs created in the private sector (No. of persons)	4,129	4,488	108.7
Jobs created in the public sector (No. of persons)	819	866	105.7
Employment ensuring social equity (%)	96.5	94	97.4
Excellent organization for shared growth	Excellent	Excellent	100
Companies of joint overseas market entry (No. of companies)	47	50	106.4
Spatial information standardization rate (%)	40	40	100
National spatial information quality management rate (%)	20	20	100

Safe society safeguarding the people	Target in 2020	Outcome in 2020	Achievement rate (%)
Industrial accident rate (%)	0.18	0.29	62.1
Swift support for public safety (No. of cases)	1,065	2,299	215.9
Environment-related projects completed (No. of projects)	290	329	113.4
Eco-friendly vehicle distribution rate (%)	73.1	73.1	100

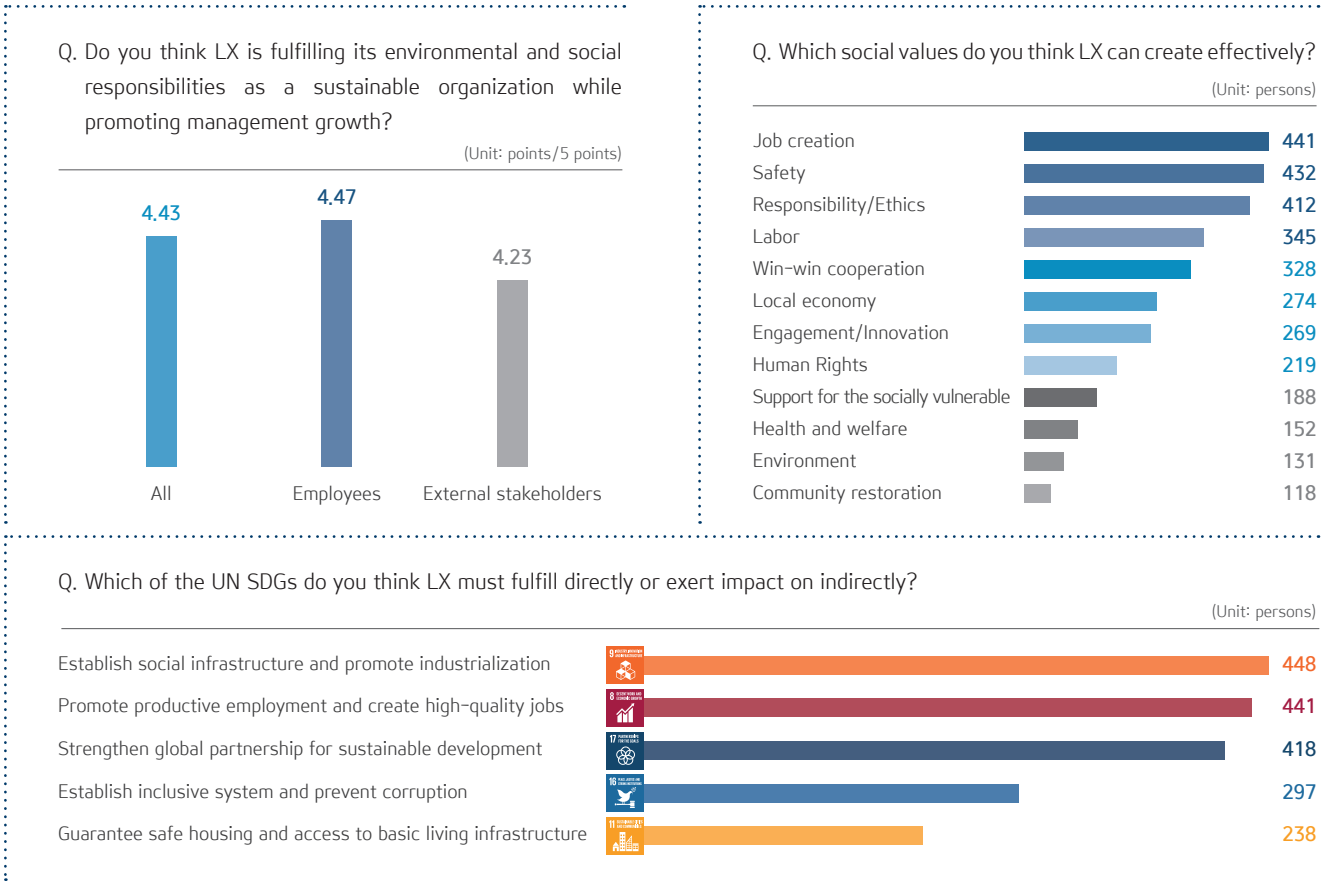
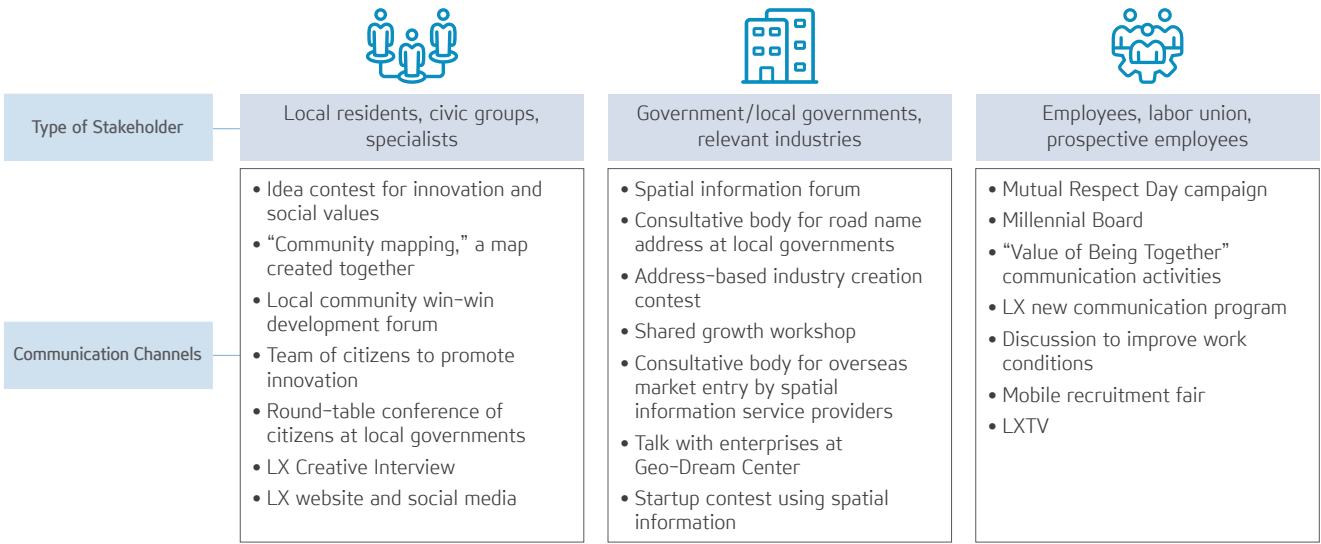
Compassionate LX enjoyed by all	Target in 2020	Outcome in 2020	Achievement rate (%)
Human rights impact assessment	Excellent	Excellent	100
Overall integrity (Grade)	1	3	33.3*
Anti-corruption policy assessment	1	Exempted	100**

* External integrity dropped due to the occurrence of corruption case (Grade 2 → Grade 3)
** Selected as institution exempted from anti-corruption policy assessment in 2020 (institution recording overall integrity level 2 or higher for 2 years in a row with no point deduction due to corruption cases for 2 years and level 2 or higher in anti-corruption policy assessment in 2019)

LX Growing alongside Stakeholders

LX’s internal and external stakeholders are comprised of the citizens, government, local governments, local residents, partners, and the press. By establishing communication channels with each stakeholder to understand their needs and demands in detail, LX is willing to employ them in its management activities.

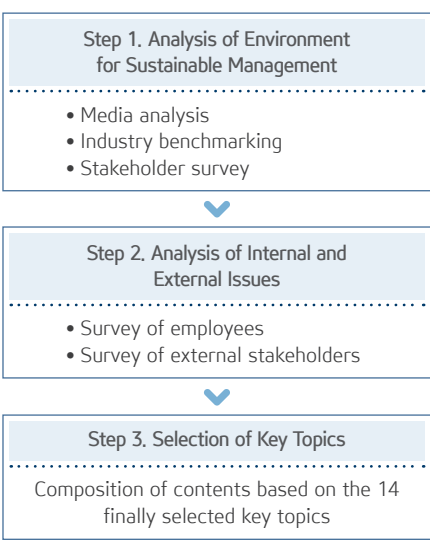
Stakeholder Communication Channels



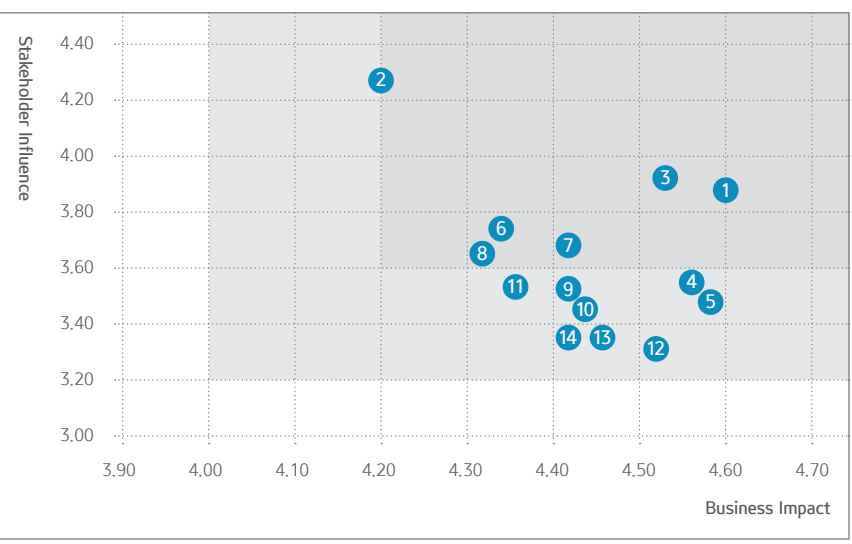
Materiality Assessment

In December 2020, LX conducted a materiality assessment targeting 843 internal and external stakeholders and selected key topics to be disclosed through the sustainability report. The activities and outcomes have been reported in a transparent manner centering on 14 topics selected through stakeholder survey, media analysis, and industry benchmarking.

Process of Materiality Assessment



Key Topics Derived



Material Issues and Reporting Boundary

Priority	Key Topic	Internal	External		Page
		Employees, labor union, prospective employees	Local residents, civic groups, industrial experts	Government, local governments, relevant private industries	
1	Creating safe work environment	○			44, 48, 49, 77
2	Strengthening shared growth and cooperation with local communities	○	○	○	38, 41, 42, 79
3	Embedding culture to respect human rights	○	○	○	52, 58-59
4	Improving employees' quality of life	○			52, 76-77
5	Implementing accurate cadastral survey service		○	○	24, 25
6	Strengthening R&D of future innovative technologies		○	○	29
7	Establishing compliance and ethical management system	○			60-63
8	Creating sustainable jobs	○	○	○	11, 20-21
9	Implementing reliable labor-management culture	○			56-57
10	Reinforcing privacy and information security management	○	○		49
11	Enhancing disaster safety management	○	○		44-45
12	Operating fair employment and rational remuneration system	○			52-53
13	Supporting employees' competency development	○			52, 54, 78
14	Supporting efficient national spatial information system establishment		○	○	24, 27-29, 31-33

Interview with Experts on Social Value Creation in the Post-COVID-19 Era

LX conducted 1:1 interviews with experts from various fields in order to reflect stakeholders’ opinions so as to derive the directivity of and identify areas requiring improvement in relation to social value creation. By inviting expert members who have outstanding expertise in relation to LX’s key businesses and social value issues, LX intends to receive suggestions about its sustainable management covering the areas of business, society, environment, job creation, shared growth, and safety, and reflect them in its management strategies and operation.

Key Discussions		
Sustainable management trends at home and abroad	Suggestion of directions for sustainable management and social value implementation in the post-COVID-19 era Suggestions for Implementation Directivity	Social Value implementation Diagnosis and Areas Requiring Improvement by Key Issue



Master Planner (MP) for Busan Smart City National Project

Dr. Hwang Jong-seong

“Must concentrate on building digital twin platform that can be accessed by all ...”

If a specific company monopolizes “digital twin” technology and controls the information flow, it will create the negative value of realization of private interests. Therefore, I believe that digital twin led by LX, an organization managing national land information, will be a starting point for the establishment of an open and democratic digital twin that can be accessed by all.

However, major risks that can occur in relation to digital twin, such as privacy, system failure*, and data accuracy, require substantial—rather than perfunctory—response and incessant monitoring. Also, LX, as a quasi-governmental organization, must focus its capacities on developing digital twin as a product and establishing a platform open to several companies with their products linked to it, rather than to compete against one another.

* System failure refers to the phenomenon where a problem occurs upon system error as human dependence on system increases.



Labor Corporation Hangil

Certified Labor Attorney Lee Seong-ok

“Increasing female employment will increase the organization’s competitive power...”

While employment shock caused by COVID-19 leads to increased rigidity in Korea’s labor market, public enterprises must contribute to inclusive recovery of the people’s everyday lives and sustainable growth of Korean economy by creating more stable and higher-quality jobs. LX is operating Cadastre of Land Senior Club to stably provide high-quality jobs using field experiences of the retired cadastral engineers, and is leading job creation for senior citizens in the fast-aging Korean society.

As a cadastral survey business, LX has higher male employee rates. Therefore, the company may face human rights issues due to its lack of gender diversity. Women handle data more delicately in changed environment and soften organizational culture. More female employee will increase the organization’s competitiveness. It is also needed to increase the ratio of female managers and executives to control human rights risks in advance.

“Must set higher goals for female leadership, safety and environment...”

A public enterprise that aims to fulfill its social responsibilities and create public values must establish a clear set of criteria and policies in relation to social values including human rights and ethical issues. In this regard, LX appears to have established an implementation system of a relatively higher standard, and thus is receiving favorable responses externally.

Even so, it is important to make an effort to set detailed mid to long-term goals to cover wider areas and to evaluate the implementation of goals and improve them. In particular, I would like to see LX establish and manage higher goals in terms of key issues, such as fostering female leaders, conducting safety management, and responding to climate changes. I hope LX will continue keeping its eyes on substantial and potential risks that lie behind its management system and steadily establish a healthy organizational culture.



UN Global Compact Network Korea

Director Lee Eun-gyeong

“A reserve team to support the operation in case of emergency is required...”

Safety is one of the core elements that must be ensured for Korea to take a leap towards becoming a developed country. LX’s accomplishment to record zero industrial fatality and zero death at new construction sites for seven years in a row is the result of continuous investment in safety, such as to discover and improve on risk factors through the introduction of a company-wide safety management system, and provide safety education led by Safety Management Office.

To further improve LX” s capacity to ensure safety, it is necessary to strengthen cadastral operation support from the headquarters. In addition, employees with expertise in construction must be assigned to construction site management tasks so as to activate the system to efficiently manage construction works.



Hankook Total Safety Co., Ltd.

Vice President Lee Yong-su



Korean Women Entrepreneurs Association
(Former Director of the Korea Foundation for Cooperation of Large&Small Business, Rural Affairs)

Full-time Vice Chairman Park Noh-seop

“Must strengthen support for SMEs and ventures based on the works of LX...”

It seems that LX employees have an exceptional thirst for shared growth. From selecting and supporting startups through contests to offering office space and incubating programs at Geo-Dream Center, I have been deeply impressed by LX’s effort to promote shared growth activities and create a spatial information industry ecosystem. LX is also implementing the value of win-win growth by providing oriental medical service to rural regions where access to medical and educational facilities is vulnerable and donating educational materials for local children’s centers.

Support is necessary in relation to the introduction of big data and innovative technologies on the basis of disaster prevention using drones. As spatial information technology is essential in creating smart rural villages, such as through water pollution prevention and quality improvement, it is also necessary to prepare extensive fostering plans with expanded support scale to help startups grow into unicorn companies that are capable of creating jobs.



Seoul National University Corporate Social Responsibility Network

Leader Kim Ji-hu

“Must be able to predict and make preparations for personal information leakage and human-rights violations as a result of digitalization...”

In addition to direct response to COVID-19, LX is actively responding to the crisis local communities are facing. COVID-19 has accelerated digital transformation as it led to the spread of non-face-to-face culture. Under such circumstances, LX is strengthening its digital competency to lead digital twin and create jobs through new business, such as by establishing an integrated map for the underground space. However, LX must also be ready to respond to the problems that may occur in the process. For example, LX must be able to predict and improve the elements that may cause sustainability deterioration, such as privacy and human rights issues, until it can steadfastly fulfill its social responsibilities and lead the industry.

LX Highlight 01.

Participating in Overcoming COVID-19 Crisis

As of March 2021, the number of COVID-19 confirmed cases has exceeded 120 million across the globe. With the social and economic impact of the pandemic amplifying, risk situation caused by uncertainty is expected to continue into the future.

In response, LX, as a public enterprise, has set national safety as the top priority and intends to overcome the crisis together with the people by supporting its partner SMEs and the socially vulnerable in preparation for the prolongation of domestic and international economic stagnation.

“Local Economy 119” Project to Overcome COVID-19 Crisis

LX is performing continuous and efficient activities through the “Local Economy 119” project, which comprises of 12 tasks, with a goal to recover consumption and revitalize local economy that have become contracted due to COVID-19. LX manages the project performance real-time through “Local Economy 119” COP installed within the internal network (We Land), and expanded individual participation, such as by promoting the campaign to promote Community Love Gift Voucher purchase. LX has also secured an opportunity for swift small business support through constitutional improvement of local economy based on COVID-19 emergency response. While supporting marketing channels for social economic enterprises and local farmhouses by opening direct trading and online markets, LX is continuously executing online promotion using LX YouTube channel (LXTV). As a result of LX’s commitment and dedication, this project was selected as the “Excellent Case of Innovative City Season 2 Promotion in 2020” by the Ministry of Land, Infrastructure and Transport.



Community Love Gift Voucher Purchase

Purchase of local community gift certificates and Onnuri gift certificate

KRW **1,063**million
in total



Rental Reduction

Reduction of rental fees for small businesses and SMEs

33 businesses
KRW **225**million



Early Budget Execution

Early execution of budget for the first half and advance payment promotion

KRW **494**million



Support for small businesses

Support to flower farms, purchase of farm produces, support for traditional markets

KRW **133**million
in total



Donation of epidemic prevention items

Masks, hand sanitizers, epidemic prevention kits, etc.

72times
KRW **173**million



Participation in blood donation campaign

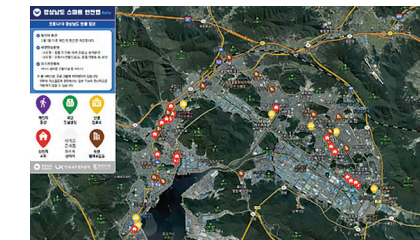
Company-wide participation in overcoming blood shortage risk

349times
1,503persons



Reduction of Cadastral Survey Service Charges for Areas Affected by COVID-19

LX reduced service charges for all items of cadastral surveying conducted in Daegu Metropolitan City and three other cities and counties by 30% in order to prevent secondary damages of COVID-19 in these areas that had been declared as special disaster zones. Following the declaration of the special disaster zone on March 14, 2020, LX preemptively organized an emergency TF in only ten days and expanded the targets for reduced service charges. Through the reduction of KRW 2.84 billion in total, LX contributed to alleviating national economic burden and preventing proliferation of local economic stagnation.



Supporting “National Safety Information System” Establishment Using LX’s Spatial Information Technology

Upon the request of Gyeongsangnam-do Province to produce a “Smart Safety Map” amid the rising trend of COVID-19, LX, through cooperation with Gyeongnam Institute, established a general map information service to provide information on where masks were sold and the routes of confirmed patients within the province. This is a case of LX actively supporting the Gyeongsangnam-do residents to overcome the crisis using its spatial information technological power. LX also contributed to paying a partial cost of a cloud server for the “COVID-19 general situation map” established by a private IT company, thereby implementing public safety and win-win development.

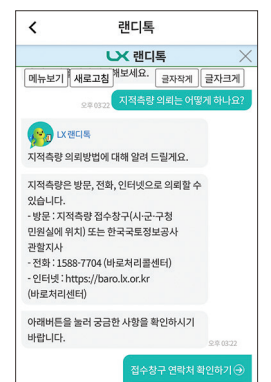


Promoting “Comfort For Each Other” Campaign to Overcome COVID-19 Crisis

LX conducted the “Comfort For Each Other” campaign using masks, the easiest and most powerful means for overcoming COVID-19. The campaign was conducted until December 18, 2020, aimed at overcoming the crisis brought about by the pandemic by encouraging the people to “comfort” one another while wearing masks for the safety of each other. Data on participation status by region were collected weekly and included in the “Overcoming COVID-19 Together Map” to promote nationwide participation.

Enhancing Tailored Non-Face-to-Face Services

In line with the social demand for conversion into digital-based working as triggered by the pandemic, LX is enhancing tailored non-face-to-face services by reflecting the characteristics of each customer. In particular, through LANDY-i, a fast and convenient cadastral survey consulting service developed by LX, LX is providing mobile service to customers using drawings without requiring customers’ visits in person. LX is also offering education to all employees by standardizing consulting knowledge and expertise so as to ensure high-quality consulting service to customers. As a result of the effort, LX recorded 92.5 points in customer satisfaction with its cadastral survey consulting service in 2020, which increased by 2.9 points from the previous year. Turning the COVID-19 crisis into opportunity, LX will cultivate a smart organizational culture at the same time as escaping from the unnecessary work practices through innovation.



LX Highlight 02.

Advancing into Leading Organization for Korean New Deal

With LX's digital twin project being selected as one of the top 10 projects for Korean New Deal and LX being designated as an organization dedicated to create integrated map for the underground space, LX takes a leap forward to an organization leading the era of a smart national land. LX strives to resolve all kinds of urban issues and bring out its utmost efforts to protect the people's safety by digitalizing the national information and creating integrated maps for the underground space.

Digital Twin Selected as One of the Top 10 Projects for Korean New Deal —

On July 14, 2020, LX's "Digital Twin"* was selected as the Top 10 Korean New Deal Projects" for the great transformation of Korea. Korean New Deal is a government policy that creates jobs and strengthens the safety net with two pillars: "Digital New Deal" which emphasizes digital innovation in the overall economy, and the "Green New Deal" which accelerates the transformation of eco-friendly and low-carbon economy. Digital twin, which is drawing attention as a key project of Korean New Deal, is a technology that creates twins of objects in reality in a computer virtual space and predicts the results through simulation of various situations that can occur in reality.

LX plans to lay the foundation for new businesses such as self-driving cars and drones by supporting the construction of 3D maps, precision maps, common utility ducts and dams, smart ports, and smart cities through digital twin, a project in the field of digital and green convergence. Since the scope of digital twin data construction is currently limited, LX has built individual SOC infrastructures such as precision maps and 3D integration of underground structures (15 types), and then designed and managed the integrated digital twin object 3D model. In the future, LX will continue to lead the smart national land era by digitizing major SOC infrastructures in the country and establishing a Korean digital twin standard model for local governments.

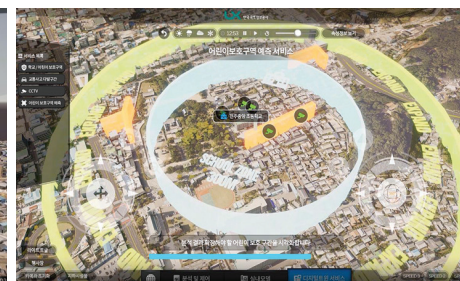
* Digital twin: It is to realize the twin of real spaces and things in a three-dimensional digital space, supporting new industries and strengthening national land safety management by analysis and prediction through simulation

[Use Cases of Digital Twin]

Smart City Provide real-time information on urban infrastructure, services, and facilities through spatial information technology	Autonomous Vehicles Support autonomous driving using precision maps and precision positioning technology	Intelligent Robot Accurate position control and real-time control of intelligent robots using positioning technology of spatial information
Spatial Data + Administrative/Private Information		
Drone Provide drone utilization environment with the use of 3D spatial information and precision positioning measurement technology	Big Data Creating value through efficient collection and management of data with spatial attributes	Virtual and Augmented Reality Realization of an augmented reality world using ultra-realistic 3D spatial information



Simulation of child protection zone selection



Simulation of city development

Example of integrated map for the underground space



LX Designated as Organization Dedicated to Create and Support Integrated Map for the Underground Space

As accidents at workplace continue to arise as social issues, LX carried out the integrated map for the underground space* project in 2014, which is one of the MOLIT projects that aims to systematically manage accidents at underground space-related facilities and establish underground spaces.

Since 2018, LX has been conducting a project to integrate more than 15 types of underground information (e.g., water and sewage, electricity, communications and gas) from the local governments nationwide with the 3D integrated map for the underground space. However, difficulties arose due to the diversity of and errors in the information provided by the information processing agencies, which resulted to the increase of time and cost for creating the map and the possibility of accidents during underground facility construction.

To resolve such issues, in December 8, 2020, LX was designated as an organization dedicated to establish underground information, create integrated map for the underground space, and provide support for accuracy improvement, in accordance with the partial amendment of the Special Act on Underground Safety Management. Upon the recognition, which resulted to the introduction of real-time information update system, it is expected that LX will be further enhancing the efficiency and usability of spatial information business.

* Integrated map for the underground space: A 3D map to help analyze the status of underground space-related facilities and manage them in a systematic manner.

[Scope of work of the organization dedicated to underground information]

- Support for the creation of **integrated map for the underground space**
- Support for the establishment of **underground information improvement plan**
- **Quality verification and management of the underground information accuracy improvement project performance**
- Support for the reflection of **the updated information and improved underground information** into the integrated map for the underground space
- **Survey, research and data standardization** related to the creation of integrated map for the underground space and improvement of accuracy of underground information
- **Development of technologies, introduction of foreign technologies and international cooperation** necessary to create an integrated spatial map and improve the accuracy of underground information

LX Highlight 03.

Establishing Shared Growth Ecosystem and Creating Sustainable Jobs

By operating the LX Shared Growth Program in response to the post-COVID-19 era, LX is cultivating an environment for shared growth with the private sector. LX is also striving for sustainable job creation through the establishment of “National Land Information New Deal Job Creation Road Map.”

Growing Alongside LX, Your Lifetime Companion

Shared Growth to Connect between Ideas and Space

Spatial Information Startup Support

LX is creating a startup ecosystem of virtuous circle by discovering excellent business contents through public idea contests and providing step-by-step tailored support, such as for funding, office space, and consulting. From 2016 to 2020, LX discovered 52 startups and funded them with KRW 2.6 billion in total along with office spaces. As a result, 160 jobs were created and approximately KRW 13.79 billion of sales were recorded up to 2020. To help startups achieve rapid growth, LX will expand its startup competency improvement program offered at Geo-Dream Center by means such as raising startup support investment fund.

Startup Idea Contest



Shared Growth to Connect between Businesses

SME Support Fund

Having entered into a memorandum of understanding (MOU) with Jeollabuk-do Provincial Government and Industrial Bank of Korea (IBK) in 2014, LX is contributing to shared growth with and job creation by SMEs through low-interest funding support. As of the end of December 2020, LX has raised KRW 20 billion in Hope Fund and is providing low-interest loan through its partner bank mainly to the spatial information service partners and SMEs in Jeollabuk-do Province to assist them in terms of insufficient management fund. Having provided loans to an amount of KRW 17.3 billion to 128 companies from 2014 to 2020, LX plans to expand beneficiaries by doubling the fund scale and support amount based on the "land and transportation win-win cooperation agreement" aimed at supporting SMEs in the land and transportation-related areas.

Grand Prize at Korea Shared Growth Awards



Shared Growth to Connect between Universities and Technologies

Industry - Academia Cooperation R&D Project

Through cooperation with universities in Jeollabuk-do Province, LX is deriving research outcomes that can be used in the Fourth Industrial Revolution technology development and spatial information industry advancement. For three years since 2018, LX implemented 45 projects to a scale of KRW 8 billion in total, which included the following: establishment of strategies to promote social value implementation, development of Geo-AI hub-based technologies for urban environment, and spatial information quality management using drones. Among them, R&D on cadastral survey support system using drones—which is one of the representative industry - academia cooperation R&D projects—is expected to reduce the total survey operation hours by approximately 23%. As such, LX plans to discover and operate excellent industry - academia R&D projects in the future.

LX's “National Land New Deal Jobs”

[LX Job Creation Road Map]

Vision for Job Creation	National Land Information New Deal Job Creation to Connect Smart Society		
Job Creation Goal for 2021 - 2025	1,390 public jobs	13,720 private jobs	
Strategic Directions	Jobs to Connect National Land	Jobs to Connect between People	Jobs to Connect the Future

Jobs to Connect National Land

Job Creation for Senior Citizens

LX is operating Cadastre of Land Senior Club to provide stable jobs to the retired. LX has improved work efficiency by using field experiences of the retired cadastral engineers and technicians and employed 195 senior cadastral workers in 2020 by discovering new jobs, such as surveying on the status of road name-based address system. On August 4, 2020, LX signed an MOU on creating non-face-to-face senior jobs with four organizations. 40 senior citizens aged 60 years or older collected and provided safety, consumption, and spatial information in Gwangju, Jeollanam-do, and Jeollabuk-do regions for around five months. With the provided information, LX established a big data platform and plans to further expand its cooperation with related organizations such as the Korean Senior Citizens Development Institution.

Jobs to Connect between People

Fostering Young Global Leaders

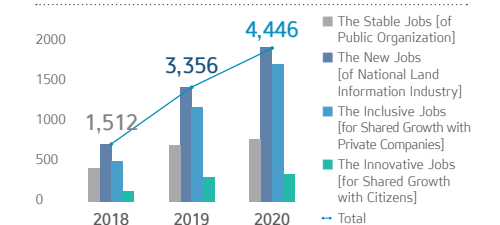
Since 2018, LX has been operating an overseas infrastructure youth internship program based on a business agreement with four public enterprises. In 2020, LX employed two interns and developed them into young global leaders. As such, LX will foster young global leaders through joint personnel selection and education with specializing agencies, thereby constantly expanding jobs for young people and increasing demand for competent human resources in the global market.

Jobs to Connect the Future

Participation in Korea Job Expo 2020

While promoting the “Korea New Deal” in national land information field, LX participated in the Korea Job EXPO 2020 in order to publicize its performance in high-quality job creation and the related success cases. At the same time as introducing its job creation strategies under the title of “National Land Information Job Creation to Connect Smart Society,” LX prepared and offered experience-type contents using spatial information to connect between the virtual and real worlds centering on the keyword of “digital twin,” which was selected as one of the ten Korean New Deal tasks.

Promotion Outcomes According to Strategic Direction(Cumulative) (persons)

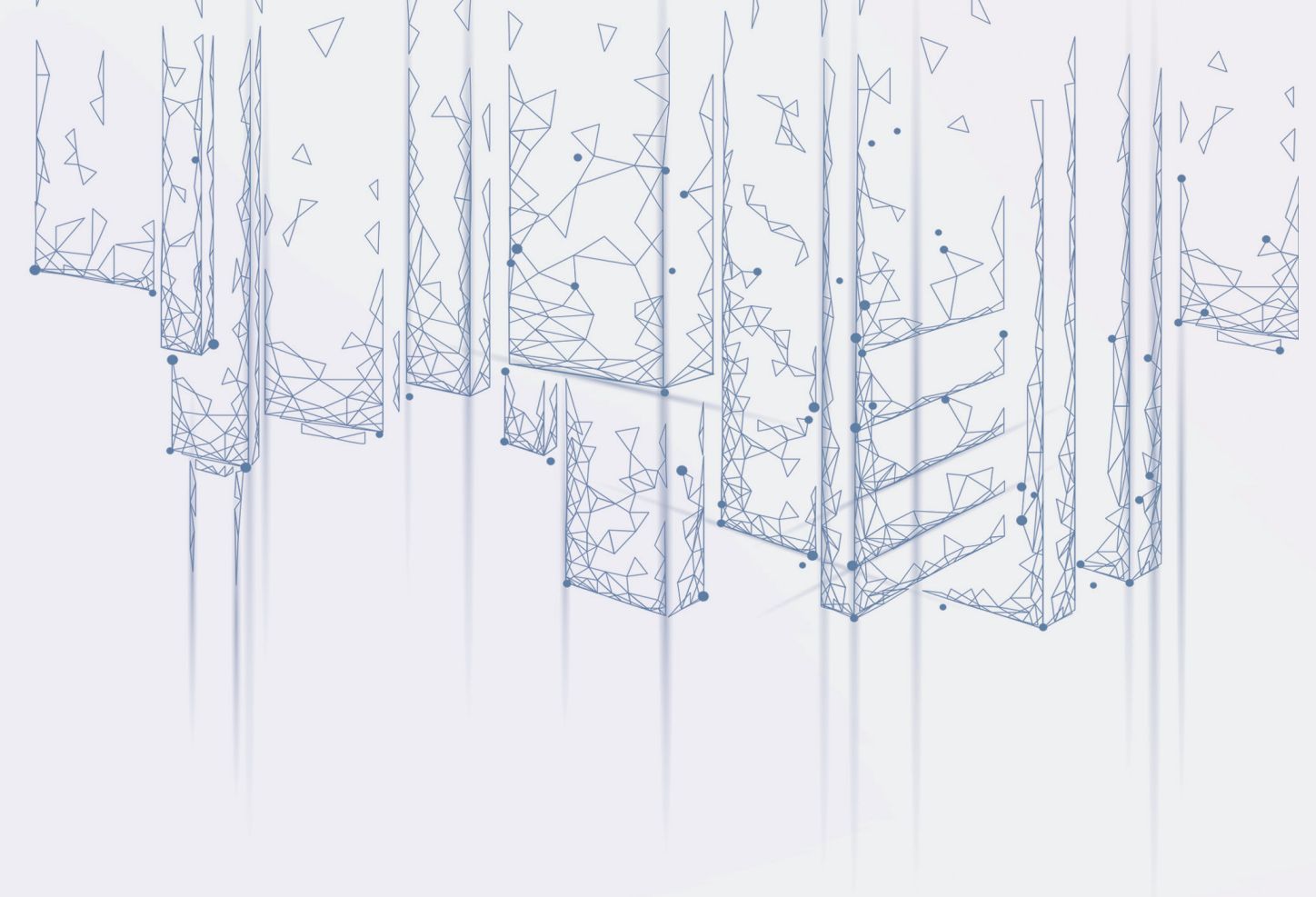
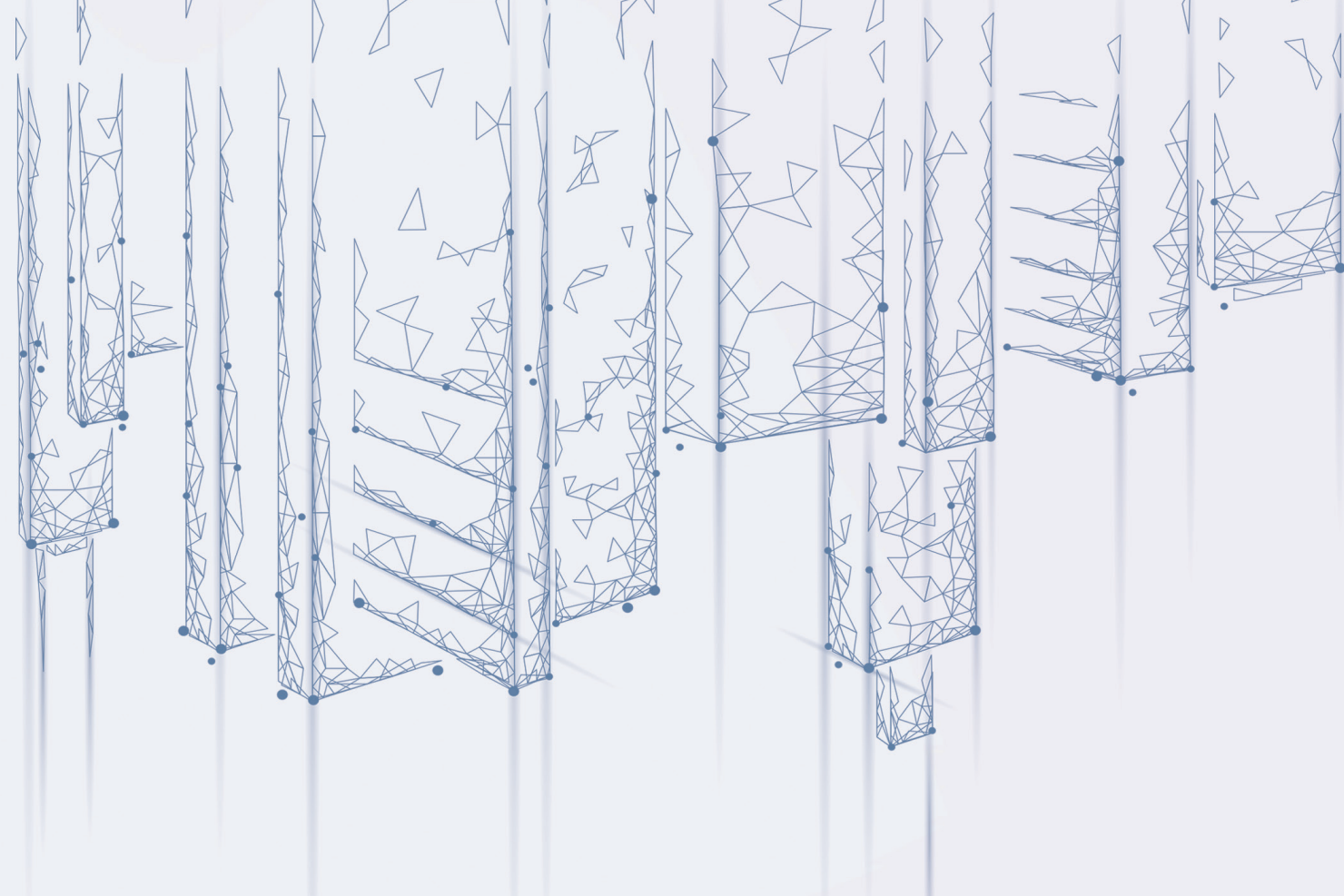


MOU with economic organizations and awarding of the top shared-growth leader



Korea Job Expo 2020





Leading Smart Society

Innovative National Land Information Management 24

Inclusive Services for the People 30

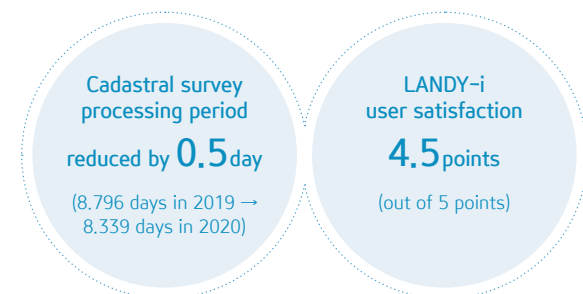


Innovative National Land Information Management

Sustainability Status

Amid rapid changes in the global environment triggered by the Fourth Industrial Revolution, the pandemic, and climate change, the Korean New Deal is being promoted to bring great transition to Korea as a leading nation. For successful establishment of digital new deal and green new deal according to the government's policy directions, LX intends to contribute to improving the people's quality of life by establishing a standard digital twin model for local governments and providing services using the model. For LX to secure competency in its own works in line with the changing trend of the time, the necessity for LX to collect and provide data-based information and ensure more efficient use of national land information is increasing.


Key Performances



Directions for Sustainable Management Promotion

As an organization responsible for national cadastral resurveying, LX leads the Fourth Industrial Revolution by connecting digital cadastral information with spatial information. LX's Korean digital twin model contributes to improving people's quality of life by resolving urban issues that are closely related to their lives, such as traffic congestion, particulate matter, urban heat island, and waste collection. In addition to general mobile-based cadastral survey information, which can be accessed anytime, anywhere, LX provides customized public service by establishing LANDY-i, a convergence data platform, that enables not only land information search, but also development simulation.

Contribution to achieve the UN SDGs

-  **8.2** Achieve higher levels of economic productivity
-  **9.1** Develop quality, reliable, sustainable and resilient infrastructure
-  **9.5** Enhance scientific research and upgrade industrial technologies
-  **11.3** Enhance inclusive and sustainable urbanization and capacities for participatory, integrated and sustainable human settlement planning and management
- 11.a** Support positive economic, social and environmental links between urban, per-urban and rural areas

Strengthening National Land Information Use

Cadastral Surveying

Establishing Accurate National Land Information

LX is striving to establish accurate national land information by correcting the location and area information, such as through correction of errors that hinder accuracy of cadastral records as caused by overlapping and omission of information, and finding hidden land. LX intends to correct the status of islands designated as inaccessible regions due to limited technologies at the time of cadastral information registration to accessible regions by 2025. In addition, errors caused by overlapping and omission of information in the process of map computerization will be corrected by 2030. In 2020, LX corrected 1.2 million errors in cadastral records and adjusted the locations of 10 islands after one hundred years.

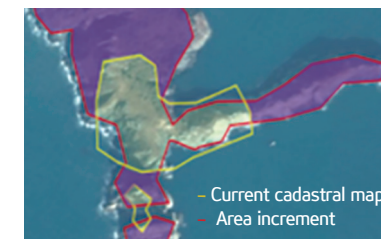
Advancing Cadastral Service by Establishing Smart Work Environment

By establishing LANDY GO, an integrated survey operation system, LX is efficiently improving the cadastral operation process and providing swift and accurate cadastral survey service. LANDY GO, which maximizes user-friendliness by operating a team that collects and provides consulting service in relation to the requirements of customers and employees, increased the rate of survey data use by 3.9 times through collective data processing. In addition, having established a smart environment with real-time survey data sharing without limitation by time and space, LX can provide better-quality cadastral survey service to customers.

LANDY-i, a National Land Information Service App

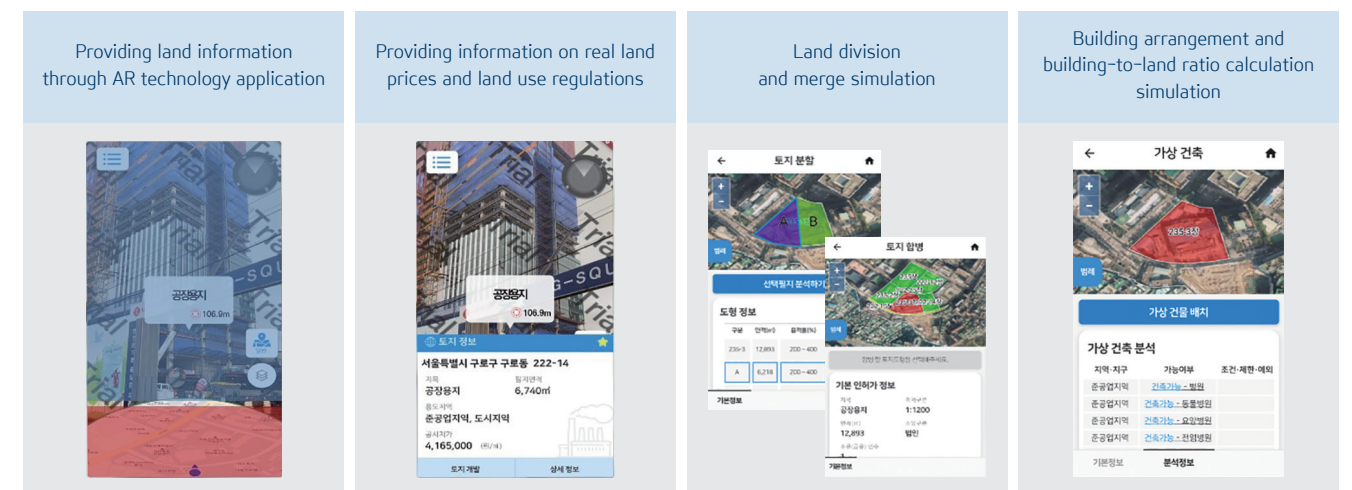
LX provides free real-time service on real estate information search and analysis as well as information on the directivity of real estate development through LANDY-i, a national land information consulting platform application. LANDY-i offers land information using augmented reality (AR) technology and helps users experience virtual building, and land division and merge simulation. LX will continuously improve LANDY-i so that it can effectively provide land information that is closely related to the citizens' lives.

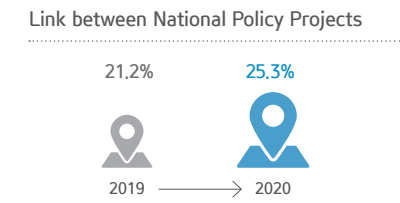
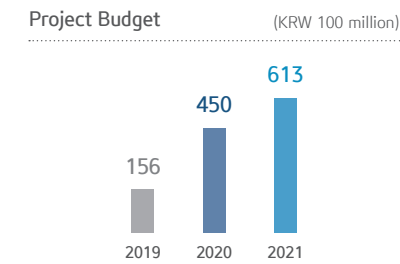
Islet Location Adjustment Project



LANDY-i User Satisfaction Survey 4.5 (out of 5)

LANDY-i





Contribution to National Property Management through Nationalization of Terra Nullius and Organization of State-owned Land

Won Prime Minister's Award and Deputy Prime Minister's Award

Cadastral Resurvey

Organization Responsible for National Land Information Digitalization

As an organization responsible for national land information digitalization, LX intends to create an environment to promote shared growth with the private sector and job creation, and also to expand its public functions. LX established a shared growth system through which private companies implement the projects of short duration and high profitability so as to reduce the project period. By doing so, LX proved its competitive power as an organization responsible for cadastral resurvey. As a result of the effort, LX supported KRW 45 billion in project budget, which is as large as 41.5% of the amount spent on cadastral resurveys so far, and led amendment of the Special Act on Cadastral Resurvey.

Urban Digital Cadastral Information Establishment

While promoting cadastral resurvey projects, LX is preventing lowered effect of government policy promotion, which can be caused by inconsistency of cadastral information after urban improvement projects, by expanding the link between urban regeneration new deal projects to promote urban regeneration and job creation. To strengthen cooperation among ministries, LX preemptively discovered and investigated on the feasibility of cooperation for a variety of land development projects. As a result, LX could expand the areas of cooperation (urban regeneration, Fishing Village New Deal 300, improvement of living conditions on vulnerable regions, urban regeneration new projects). As a result, LX discovered 33 new projects in 2020 and improved environment of backward regions through a link to the projects.

Cadastral Resurvey in Punchbowl Village, Yanggu-gun

To develop a plan for resolving the collective civil petition regarding ownership of terra nullius (nobody's territory) in Punchbowl Village near the Demilitarized Zone, LX conducted a cadastral resurvey by designating six "Ri" areas of one "Myeon" as a project district, which was attempted for the first time in Korea. Having organized a TF with the Ministry of Land, Infrastructure and Transport, Gangwon-do, and Yanggu-gun, LX completed the reference point monitoring operation swiftly and efficiently using human resources, equipment, and technological power of the central and regional headquarters. Then, after dividing three out of six "Ri" areas into 15 sectors of four zones, it conducted a preemptive survey by introducing 15 teams from the headquarters. LX will strive to contribute to resolving disputes concerning land property rights of rural residents by continuously conducting cadastral resurveys around the Demilitarized Zone.

Informatization Strategy Planning

With a goal to strengthen its position as an institution specializing in platform operation and establish a foundation for national land information service, LX developed an informatization plan and selected, and thus implemented nine strategic tasks. By doing so, LX is solidifying the framework for national land information service that satisfies both suppliers and users.

Informatization Vision	To establish platform as an institution specializing in national land information service		
Informatization Goal	To arrange a foundation for national land information service that satisfies both suppliers and users		
Strategic Direction and Task	Innovative spatial information service	Strengthen digital innovation capacity	Strengthen basis for informatization service
	<ul style="list-style-type: none">· Turn intelligent national land information into assets· Expand service through asset development· Establish global business support system	<ul style="list-style-type: none">· Innovative business support capabilities· Achieve smart work innovation· Improve application management competency	<ul style="list-style-type: none">· Strengthen data management basis· Prepare cloud-based information center/infrastructure· Improve IT governance and related legal systems

National Spatial Information Standard Quality Management

National Spatial Information Standard Development

For the efficient establishment and amendment of national standard (KS) in spatial information field, LX was designated as a standard development cooperating organization, and thus is performing spatial information standard development and standardization support activities. To establish a foundation for standardization, LX is developing new standards that conform to changes in the industrial environment and the trend of technological development, such as digital twin, by reviewing conformance of spatial information project standards in addition to developing standards and performing standard support activities. Having established the international standards (ISO) as national standard (KS), in which immediate action was required to be taken, LX completed the introduction of 70 international standard items so as to contribute to the spatial information industry development.

Key Operations of National Land Information Standardization

Goal	To activate data convergence by preparing basis for standardization		
Three Operations	Standard development	Standard supporting activities	Standard conformance review
	<p>Develop high-quality national standard</p> <ul style="list-style-type: none">· Introduce international standard (ISO) and develop internal standard· Operate standard working group· Develop registry for standard terminologies	<p>Provide support for active use of standard</p> <ul style="list-style-type: none">· Educate standard users· Prepare guide for standard use· Perform activities to promote standard use· Develop integrated standard support system	<p>Establish reviewing system to ensure standard compliance</p> <ul style="list-style-type: none">· Execute pre/post standard conformance review· Provide standard consulting service

Support for National Spatial Information Quality Management

National spatial information is the key infrastructure for the future society and industries that exerts considerable impact on the development of various fields, such as safety, national defense, agriculture, environment, and education, in connection with the core technologies (AICBM: AI, IoT, Cloud, Big Data, Mobile) of the Fourth Industrial Revolution era. Spatial information is a future growth engine to bring about large effects to the industry. To help businesses use the massive spatial information generated by the state and public organizations, it is necessary to establish a spatial information quality management system on a national level. As a high-quality spatial information convergence management institution, LX is leading innovative growth through new industry development by providing national spatial information to the private sector. LX has established a large-scale data quality diagnosis system by developing spatial information quality criteria and management system. Through the "public data (spatial information) quality management assessment" conducted in 2020 by the Ministry of Interior and Safety and the Ministry of Land, Infrastructure and Transport, LX's quality error improvement rate was found to have increased by 75%. In addition, spatial information DB provided by LX contained zero quality error (0%). As such, LX is expanding the public service to provide accurate spatial information through continuous quality management.

Key Operations of Public Data Quality Management

Goal	To implement data convergence by preparing basis for standardization		
Three Operations	Expand quality management	Execute quality management on key targets	Strengthen quality management basis
	<p>Expand assessment on spatial information owned by the state (central/local governments, public organizations)</p>	<p>Strengthen customized quality management on key and basic spatial information</p>	<p>Strengthen basis for promoting quality management, such as to develop 3D quality diagnosis function</p>

History of Digital Twin System Establishment in Jeonju-si

August 2018

- LX-Jeonju-si MOU for smart city development

November 2018 ~ July 2019

- Established high-precision 3D map for ground and underground areas of Hyoja-dong, Jeonju-si (approx. 16km)
- Produced urban administration service model

August 2019 ~ November 2020

- Confirmed administrative service models for eight cities together with citizens, public organizations, and experts
- Expanded target area to Jeonju-si and conducted simulation by combining urban, administrative, and private sector data and applying them to 3D map

Securing Smart Innovative Technologies

Korean Local Government digital twin model

LX has been working on a digital twin construction project by building a digital twin demonstration model in Jeonju-si, even before the government announced Korean New Deal to develop a representative Korean model. Starting with a digital city construction project agreement with the city in 2018, LX built a pilot digital twin demonstration model in parts of Wansan-gu the following year and continued to expand it. In 2020, LX presented a digital twin 3D model of ground, underground, surface, administration, and IT in the entire district of Wansan-gu. In addition, LX designs and applies indoor and outdoor digital twin models, such as public indoor buildings (LoD*4), transportation facilities (LoD3), and downtown buildings (LoD2) that are optimized according to regional characteristics. LX also provides monitoring and simulation services by developing a digital twin service model based on the needs of local governments and citizens to solve regional urban problems in all areas such as administration, environment, disaster, and tourism. In addition, LX cooperates with central and local governments, and private enterprises to discover new projects and promote commercialization to contribute to investment and job creation.

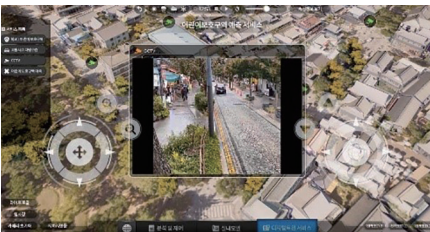
* LOD (Level of Detail): It represents the level of building details of a 3D model defined in CityGML, an international standard for storage and exchange of a 3D city model, and the higher the level, the more sophisticated data is built.

Solving Various Urban Problems Through Digital Twin

Food waste increase and wastes collecting companies's strike due to COVID-19	Traffic congestion due to illegal parking and stopping	Expansion of renewable energy distribution	Response to environmental issues, such as fine dust and heat island
Food waste collection system <ul style="list-style-type: none">· Analyze seven types of data, such as about legal districts, waste collecting businesses, food waste weights, and civil complaint status· Reestimate waste collection vehicle operating routes and necessary human resources by administrative "Dong" based on difficulty level	Analysis on illegal parking and stopping <ul style="list-style-type: none">· Analyze six types of data, such as on civil complaints about illegal parking and stopping, illegal parking and stopping control performance, parking lot distribution, and CCTV distribution· Install additional CCTVs and identify areas requiring preferential control	Analysis on efficiency of solar power generation <ul style="list-style-type: none">· Collect five types of data, such as on buildings, electricity use, and status of solar power generation facilities· Select optimal locations for solar power facilities based on analysis on facility installation efficiency, etc.· Contribute to implementing "Green New Deal" through the use of customized facilities	Selection of sites for planting ten million trees <ul style="list-style-type: none">· Collected 15 types of data, such as on national and public land, floating population, soil level, and particulate matter· Conduct simulation on suitable areas for tree planting as well as suitable species and quantities of trees· Identify optimal locations for Baramgil forest establishment



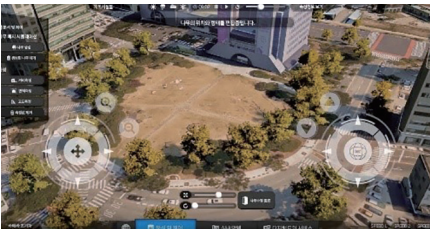
COVID-19 response



School zone prediction



River and stream monitoring



Tree planting area analysis

Selected as Best Institution Using Domestic Drones in Public Sector (November 2020)

No. 1 among 59 central/local governments and public organizations

On-site demonstration on cadastral survey operation method improvement research



Promoting the Drone Industry

LX is using drones throughout its business to lead the drone industry, the new growth engine of the country, and to provide quick and accurate public cadastral survey services. In particular, LX is playing a role of accelerating the localization of drones by introducing domestic drones for the first time in Korea for cadastral survey. LX is also providing more professional and objective data-based public services than before by using drones to predict the supply and demand of crops and investigate damage in disaster areas. In addition, to foster drone pilots in the public and media sectors, LX expanded specialized training for national land survey missions as well as for journalism to foster a total of 109 drone experts. Furthermore, LX intends to build a drone value chain ecosystem by revitalizing the drone industry in all areas of education, demonstration, and technology through the establishment of the LX drone utilization center (Namwon, Jeollabuk-do, 2023).



3D measurement in Dokdo

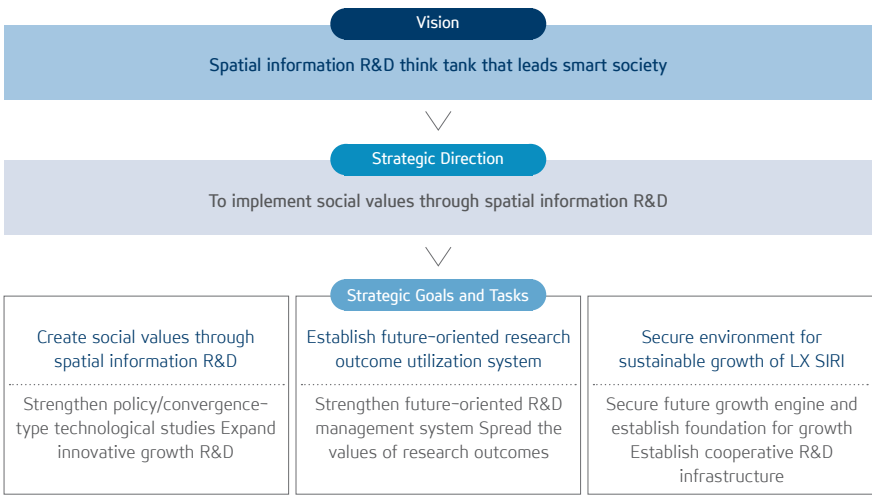


Damage survey on flooded areas

Strengthening R&D Capacity

LX is leading the spatial information convergence R&D, a technological platform for innovative growth of the private sector. LX secures R&D competitiveness in the Fourth Industrial Revolution by intensively supporting universities and private enterprises with innovative technology convergence R&D as well as studies. Furthermore, LX is leading innovative growth by implementing internal and national R&D projects, expanding joint R&D with universities and the private sector, and sharing its patented technologies. As a result, LX was acknowledged as a key data provider by the Open Data Strategy Council for the "study for carrying out intelligent automobile recognition technology development support. "

R&D Strategies (Mid to Long-term R&D Strategies)





Inclusive Service for Citizens

Sustainability Status

The accelerated transition to digital-centered online and untact social structure and economic stagnation caused by COVID-19 has led to rapid changes in citizens' lifestyle. Changing the form of service and communication method according to the current trends is essential for an organization to strengthen its sustainability and competitive power.



Directions for Sustainable Management Promotion

As a public organization responsible for national cadastral service, LX provides citizens with an inclusive service. By operating the national spatial information portal, LX provides map, real estate development, and brokerage information search service as well as open API. It is also developing cloud-based spatial information services and building integrated maps for the underground space. To improve communication with citizens in the contact-free era, LX is also dedicating greater efforts to customer service by developing various communication channels.

Key Performances

“LX Digital Twin Standard Model Development”
selected as the Korean New Deal key task

Cadastral survey consulting service satisfaction level improved
(90.7 points in 2019 → 92.5 points in 2020)

Contribution to achieve the UN SDGs

1.5 Build the resilience of the poor

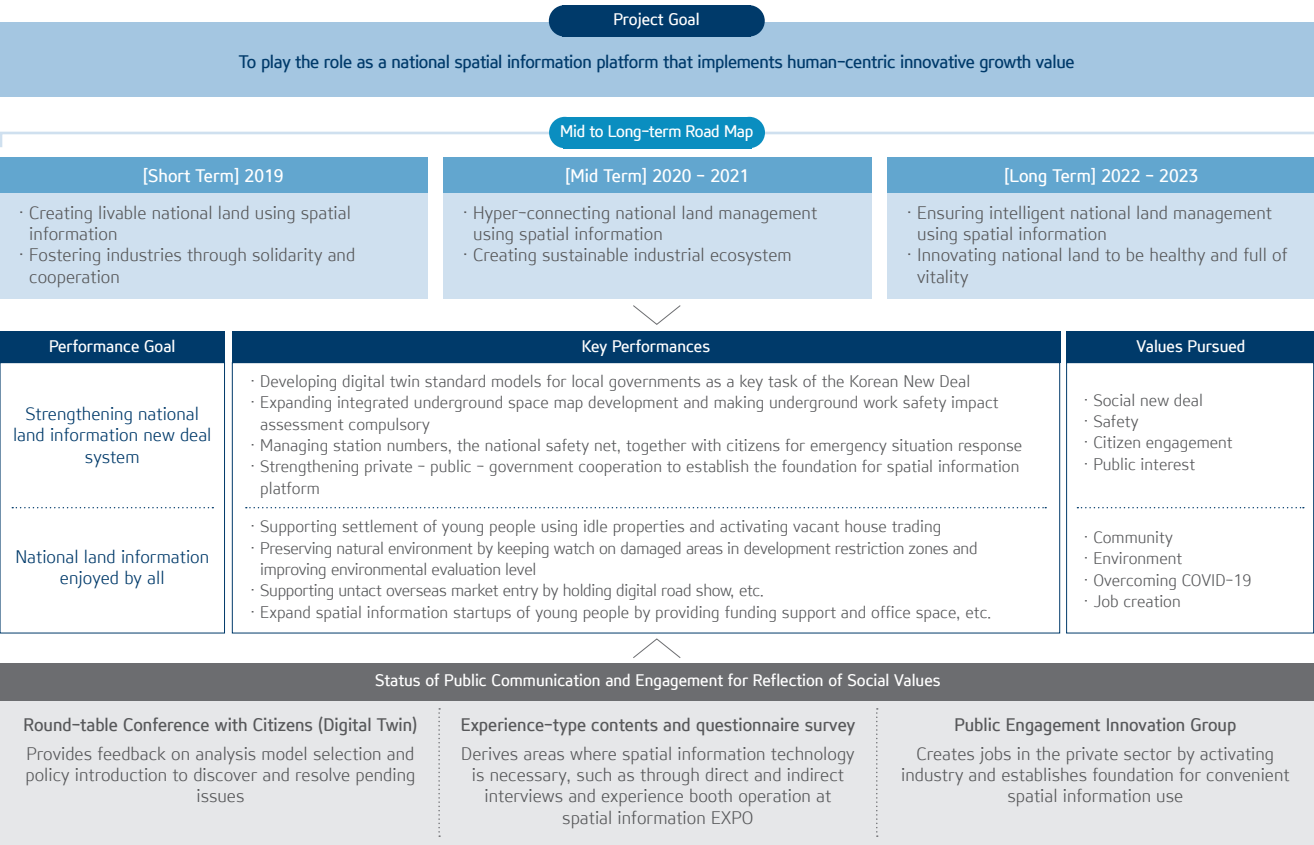
9.1 Develop sustainable infrastructure
9.c Significantly increase access to ICT and strive for Internet distribution

11.3 Enhance inclusive and sustainable urbanization
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas

Creating Shared Value in Spatial Information

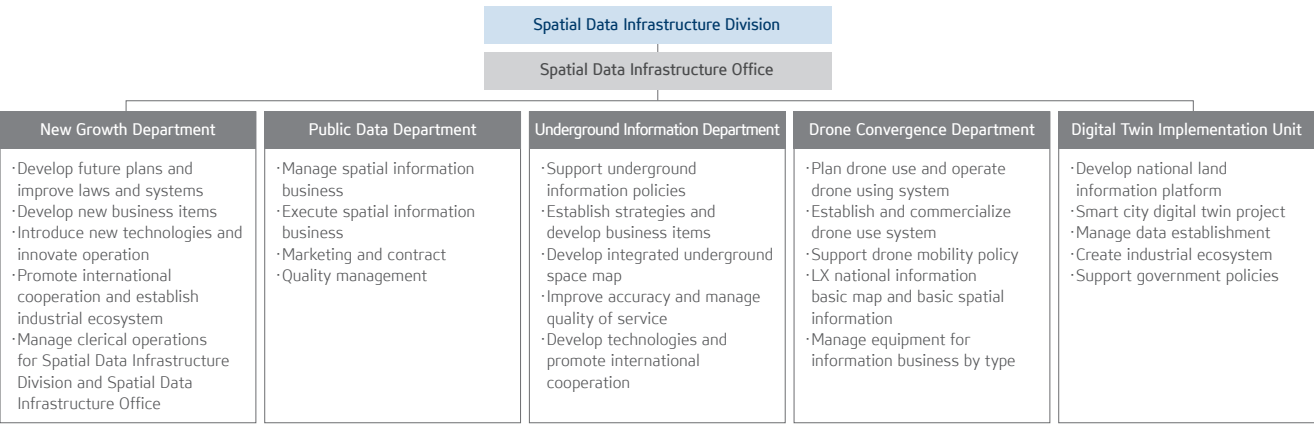
LX's Strategy for Spatial Information Industry

LX is striving to fulfill its management goals by establishing mid to long-term spatial information industry strategy framework for efficient national spatial information establishment and management. While supporting national innovative growth by assisting in the government's decision-making process, LX contributes to resolving social issues by using spatial information based on engagement and communication.



National Spatial Information Governance

LX has restructured its organization and increased human resources in order to create new growth engine and implement social values from its spatial information business. LX is improving business efficiency by organizing temporary TFTs and managing dispatched personnel for integrated underground space map development, self-driving, and road name address basic map maintenance projects, etc.



LX Platform



LX Platform, a Marketplace for Spatial Information

In order to enhance the value of national land use, LX is identifying and improving on the related issues. LX understood the necessity of converging service beyond data provision and identified insufficiency especially in collecting the data link system and spacial data. Considering this, LX started LX platform service that supports administrative service by combining administrative information of local governments with its integrated national spatial information system based on the administrative information online channel Enterprise Application Integration. LX platform is currently used by Chungcheongbuk-do, Jeonju-si, Ulju-gun, Busan Port Authority, and Korea Federation for Environmental Movements.

Real-time Update of Road Information Through Collaboration with Related Organizations

LX cooperates with related organizations to prevent duplicate construction of road spatial information, improve the accuracy of road registers*, and establish a real-time update system. To enable real-time updates, LX establishes a system that automatically collects and provides road change information based on AI, and provides road change information to the National Geographic Information Institute (NGII). The NGII then builds a high-precision 25-cm-level 3D precision road map*, and shares it with LX. Through such information sharing, LX has shortened the update cycle of the precision road map and improved the accuracy of the road registers, thereby expanding the use of road management and reducing the budget by 32%.

- * Road registers: A public register prepared by the Road Management Office to make it possible to know the list of facilities (assets) that must be managed and maintained (including details) and the geometry of roads.
- * Precision road map: An electronic map that expresses the regulatory lines (lanes, borders, etc.), road facilities (tunnels, bridges, etc.), and sign facilities (traffic safety signs, signals, etc.) in three dimensions.

Article 56 of the Road Act (Road Register)

The Road Management Office should prepare and keep a road register for the road under its jurisdiction.

Article 24 of the Enforcement Regulations of the Road Act (Road Register)

The Road Management Office should prepare a road register pursuant to Article 56, Paragraph 1 of the Act for each road in accordance with the attached form No. 22 for each road based in unit of the type of road, route number, and route name.



Improvement of Management Process of Development Restricted Zones to preserve Spaces for Urban Nature

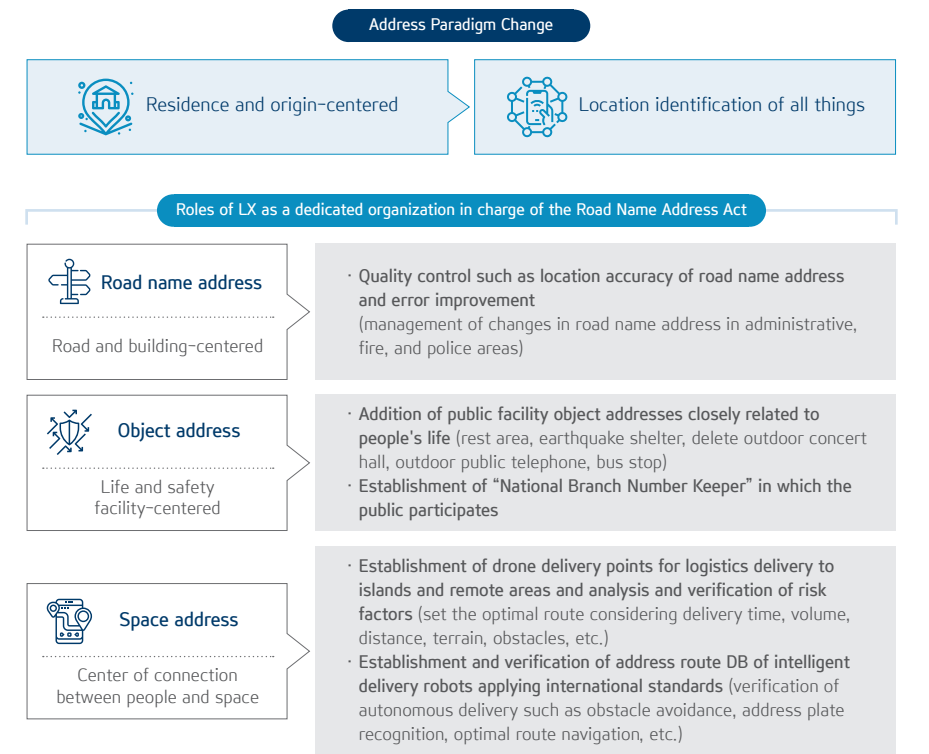
The total area of green areas is decreasing as illegal damage such as logging and construction in development restricted zones increased. To prevent this, LX specializes in crackdowns on damaged areas and is assisting the management of restricted development zones using spatial information and drone technology. Through digitalization, LX collected and standardized illegal activity management ledgers that were managed without harmonization across the country, and visualized data such as building ledgers and zone release status to establish a spatial information-based development restricted zone management system. In addition, as a result of pilot-switching from a manpower-oriented field survey to a field survey of detecting damaged areas using satellite and aerial images, the survey period was shortened from five months to two months.

Designated as consignment organization according to the amendment of the Road Name Address Act (Dec. 2020)

Supporting address information management and use and promotion of the related industries

Advancement of the National Address System that Connects People and Space

Addresses in the future society will expand their role as a medium of communication between people and people, and between people and space; therefore, a preemptive response is required. As the concept of address has changed from “residence and origin-centered” to “location identification of all things,” LX is also advancing the national address system in line with this address paradigm as a dedicated organization in charge of the Road Name Address Act.



Spatial Information Forum as Win-win Cooperation Channel between Public and Industrial Sectors

In order to contribute to the spread and development of digital twin, LX hosted the Spatial Information Forum 2020 where relevant organizations including MOLIT, Spatial Information Industry Promotion Institute, Korean Association of Spatial Information, Surveying & Mapping, and Korea Geospatial Information Industries Cooperative participated. The forum offered policy and technology announcements and presentations under the subject of new technology sharing, such as for the high-precision portable 3D scanners, AI-based data editing technologies and digital twin administration model for Jeonju-si. By displaying and demonstrating the entire process from data collection, processing and convergence to administration service model development, it has given LX a chance to enhance the public's level of understanding of digital twin.



Spatial Information Experts' Forum

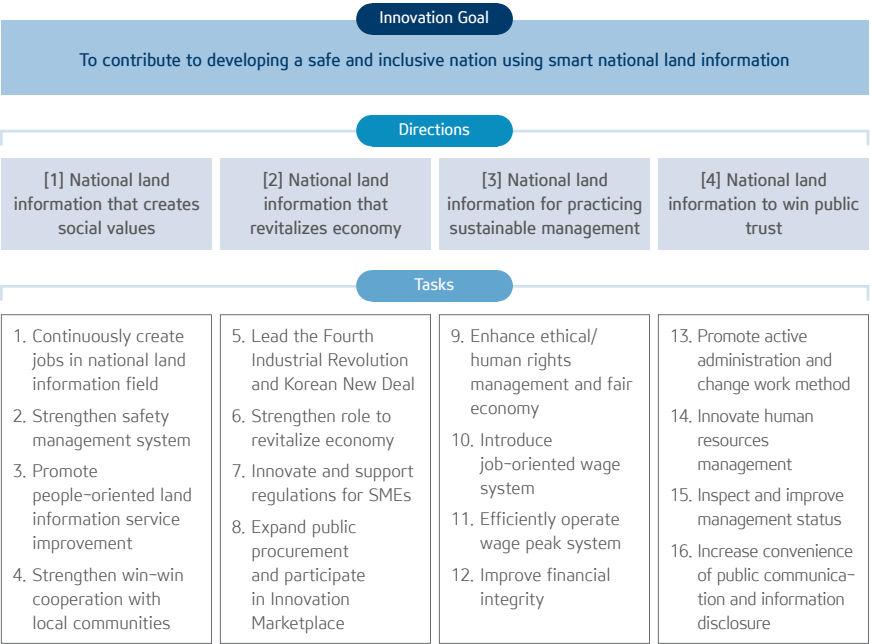


Demonstration of digital twin

Increasing Public Convenience

Public Innovation

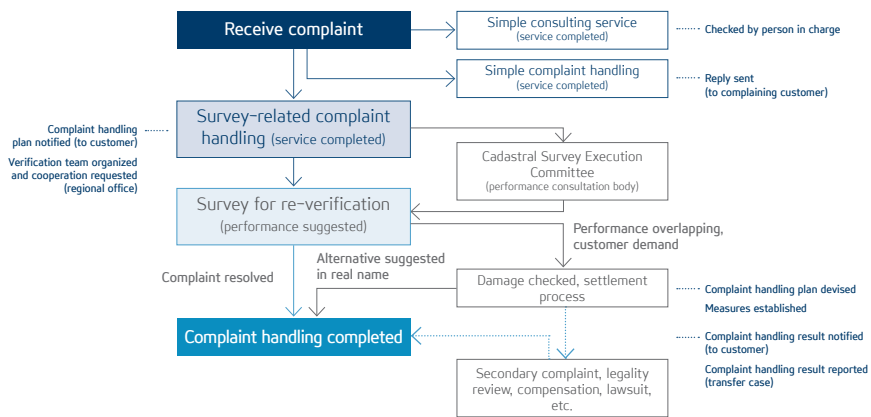
LX has been continuously creating innovation synergy by expanding public engagement since the stage of its innovation strategy establishment through the Public Engagement Innovation Group and innovation network. Due to this effort, the employees' satisfaction level has increased. In addition, LX won the prize of excellence at the Land and Transportation Success Case Contest 2020 in public organizations category and introduced the “Digital Twin Establishment in Jeonju-si” as a success case at the Korea – ASEAN Special Summit.



Customer Service Management

According to its Customer Service Charter, LX strives to listen to customers' voices and swiftly handle their complaints in order to advance to an organization specializing in national land information that provides reliable services. LX operates a separate page within the website to receive survey-related complaints online and listen to customers' opinions that cannot be heard in the field.

VOC and Complaint Handling Procedure



Anti-Corruption and Civil Rights Commission in 2020

No. 1 innovation success case

(No. 1 among 17 cases)

Public Enterprise Customer Satisfaction 2020

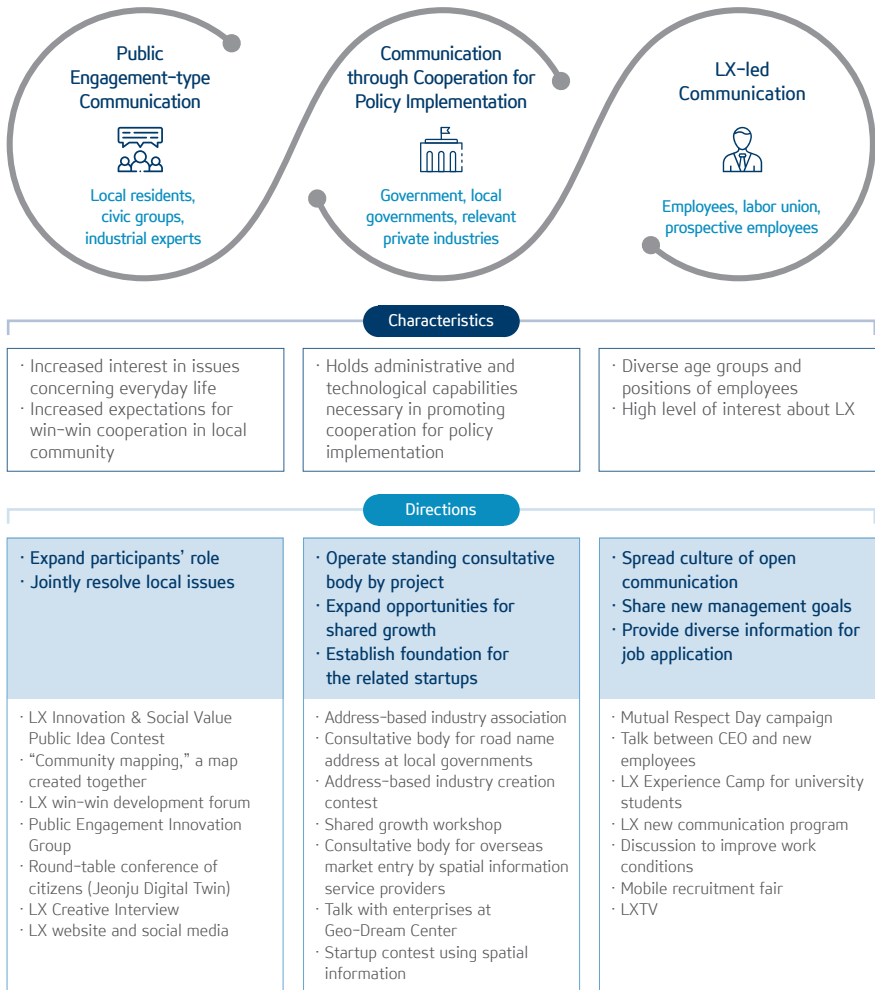
“Satisfactory” level achieved

LX Sustainability Report

wins “Gold Award” at LACP Vision Awards

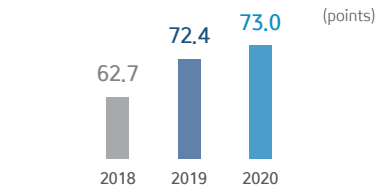
Advancing Customized Communication Channels

LX intends to create an environment that enables communication with the people and stakeholders through its initiative engagement. To understand the needs of stakeholders, LX has set the direction for communication considering the characteristics of each stakeholder type. LX has also developed and is operating various communication channels including LX Innovation & Social Value Public Idea Contest and LX Millennial Board.



Survey on Public Enterprises' Contribution to Social Value Implementation

Highest level



LX Millennial Board



LX Win-win Development Forum



Sharing Happiness and Values

Cooperation-based Win-win Development	38
Implementation of Safe Society	44
Culture to Respect Employees	52
Improvement of Public Confidence based on Responsible Management	60



Cooperation-based Win-win Development

Sustainability Status

Large enterprises and public enterprises, as influential members of our society, have the responsibility to develop with SMEs in order to promote inclusive economic growth and resolve polarization. LX, as a responsible public enterprise, strives to contribute to creating an ecosystem of win-win cooperation on the basis of the three strategies : COVID-19 response programs, build an environment for solid growth, and cultivate a culture for shared growth.

Key Performances

Grand Prize at Korea Shared Growth Awards 2020

(Korea Commission for Corporate Partnership, December 2020)

2nd MOLIT Innovative Urban Performance Awards

Presidential Committee for Balanced National Development Chairperson's



Directions for Sustainable Management Promotion

LX intends to implement social values by promoting sustainable shared growth and spreading the culture of win-win cooperation with SMEs. Having established Geo-Dream Center, LX is supporting prospective startups in spatial information field to grow into unicorn companies. In addition, it contributes to enhancing the spatial information industry ecosystem by supporting SMEs to enter the global market. At the same time, LX held the L(link)X-MAS event to present products of local small businesses as gifts to children of vulnerable class for two years in a row and purchased products of local social enterprises and female-led businesses and donated them to low-income senior citizens. As such, LX is performing all kinds of sharing activities to contribute to local community development.

Contribution to achieve the UN SDGs

1 NO POVERTY

10 REDUCED INEQUALITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

1.3 Implement social protection systems

1.5 Build the resilience of the poor

10.2 Empower and promote the social, economic and political inclusion of all

10.3 Ensure equal opportunity and reduce inequalities of outcome

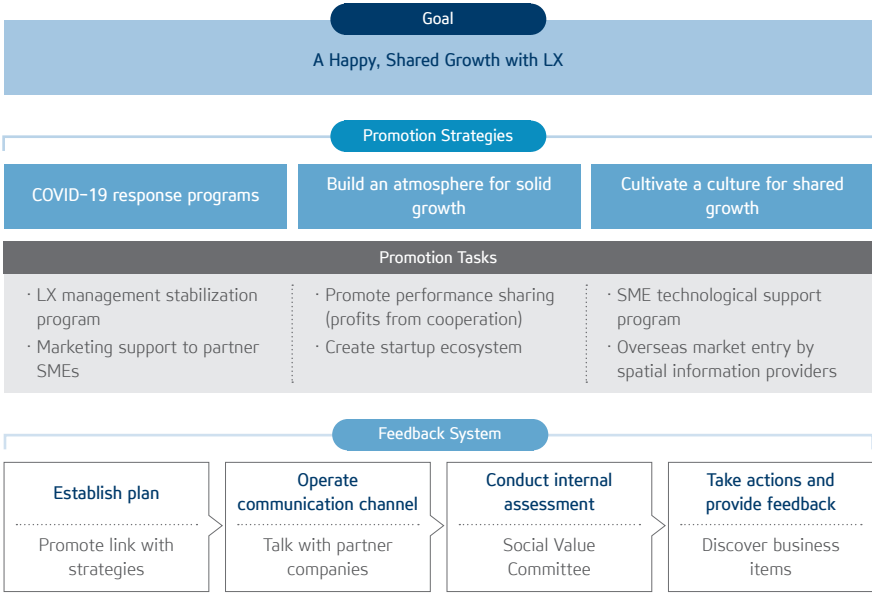
12.7 Promote public procurement practices that are sustainable

12.b Develop and implement tools for sustainable tourism that creates jobs and promotes local culture and products

Supporting Growth of the Private Sector

Shared Growth Strategies

LX has established and is promoting the shared growth strategic system to achieve win-win cooperation by reflecting its characteristics and the needs of its partner SMEs. At this, LX will grow together with SMEs by developing win-win cooperation infrastructure and spreading the culture of shared growth in the industry.



Marketing Support to Partner SMEs

Having secured a budget of KRW 2.5 billion through participation in the government project contest and evaluation, LX provides marketing support to SMEs that are experiencing difficulties due to the pandemic. Through 'a joint investment-type technological development' project, difficulties suffered by SMEs in technological development and market development are resolved concurrently. In case of 'the land and transportation technology commercialization support project', LX supports both SMEs' technological innovation and new market creation by promoting the 3D cultural heritage data implementation and self-driving car-related projects. For SMEs that do not have sufficient capacities to enter the overseas market, LX hosts spatial information road shows including technical seminars and business meetings abroad.

LX Startup Success Model

Through the "LX Geo-Dream Center," a facility aimed at activating spatial information startups, LX connects the creativity and ideas of prospective and operating startups to national economic development. By creating startup ecosystem of virtuous circle comprised of customized supports by stage—idea contest, commercialization, and market entry—LX helps new businesses grow into unicorn companies. At the idea contest held in December 2020, the ideas for "fire monitoring mobile robot tele-operation using 3D spatial information linked to precision indoor GPS" and "self-driving HD map-based local dynamic map (LDM) automatic update solution" were selected as the top prize winners. In the forthcoming years, LX plans to provide support for start-ups nominated in competitions for up to 3 years through IT infrastructure suport and consulting services.

Key Performances of LX Geo-Dream Center Tenant Companies

KRW 7 billion in sales

30 jobs

26 intellectual property rights

Non-face-to-face business meeting



Performance Sharing System Promotion Result

Finally approved cases: 12

Volume and sales expansion by KRW 360 million

Grand Prize at Shared Growth Awards 2020 in Public Enterprise Category



Non-face-to-face Overseas Market Entry Platform

LX has developed, non-face-to-face overseas market entry platform to support businesses experiencing difficulties in developing global markets due to the pandemic. By means such as online exhibition halls, technology and policy seminars, and business meetings, LX helps private spatial information providers in Korea seek export routes and establish a global network. In 2021, to maximize promotional effects, LX held an international digital roadshow for spatial information providers' overseas market entry. At the same time, LX intends to increase opportunities for new business item development using a multi-channel network.

Platform	Description	Key Performance
Online exhibition hall	3D virtual exhibition hall	· Participated by 20 countries · Participated by 30 domestic companies (8 startups)
Technical and policy seminar	Introduction of latest technological trend and policies	· 25 promotional videos produced · 20 promotional events at home and abroad
Business meeting	Support for pre/post-buyer matching	· 120 business meetings, 20 seminars · 5 MOUs signed

Performance and Cooperation Profit Sharing

LX has introduced the performance sharing system and cooperation profit-sharing system to create a healthy growth environment for SMEs and thus is sharing technological competencies and protecting the core technologies. Through the performance sharing system, LX's patented technologies are registered and shared with performance management agencies. Also, the outcomes of private-public joint investment projects are mutually shared. Recently, in an effort to spread the culture of performance-sharing with partners, LX submitted tasks mandatory through system improvement and also offered internal and external performance-sharing academy programs to discover excellent performance-sharing tasks. At the same time, LX lowered rentals for tenant companies of its office buildings by introducing the cooperation profit-sharing system. It also maximized profit generation through the transfer of its patented technologies that can be commercialized by private enterprises.

SME Support Programs

LX operates a variety of SME support programs in order to resolve liquidity risk and support the management stability of SMEs amid the COVID-19 crisis. By expanding the scale of funding support and offering management stabilization programs, LX is leading the establishment of a shared growth culture to promote shared growth with SMEs and ventures.

SME Support Programs

Category		Performance in 2020
Technological competency sharing	Joint study	27 joint research projects (KRW 1.79 billion) implemented with 24 industrial/academic institutions (increased by 1 project)
	R&D expansion	Continuous investment in R&D (KRW 8.5 billion, cumulative) such as to support 16 research projects relating to LX management and Fourth Industrial Revolution technologies
	Technology sharing	16 patented technologies of high usability (autonomous driving, IoT) shared
Core technology protection	Technology protection	Consulting service offered to five companies and seven advisory service cases on legal and security-related areas by technology protection experts
	Technology education	Activities to improve employees' awareness of SME technology protection (employee education rate increased by 112.%)
	Technology safe	Supported registration of ten technologies including unmanned payment system at technology data storage center

Contribution to Local Development

Local Community Engagement

Strategies for Win-win Cooperation with Local Communities

To take part in overcoming the COVID-19 crisis, LX established strategies for win-win cooperation with local communities in line with the response directions of the central and local governments. In detail, LX is strengthening its capabilities to perform social contribution activities by communicating with various stakeholders through win-win development forums and social value network, and is practicing social responsibility management to revitalize local economy. To lead the post-COVID-19 era, LX will exert its utmost efforts to improve local economy and achieve balanced local development centering on Korean New Deal (K-New Deal).



Balanced Local Development through National Land Information-based K-New Deal

LX is supporting a project of establishing a smart waterfront city in the area around Saemangeum Embankment—which has lost its purpose of food production due to land reclamation that has been carried out over a long period / long time—by applying autonomous driving and digital twin technologies. To assist the project, LX transferred the technologies built at the Pangyo Self-driving Test Site and through Jeonju Digital Twin project to Jeollabuk-do Saemangeum site and established database for precise road design. It also supports permit and approval processing for swift city construction. In addition, LX plans to build an LX integrated center for drones on Namwon Air Field, a symbol of the Korean War tragedy, in an effort to promote balanced development of backward regions. Meanwhile, at the drone utilization center, LX plans to assist the vitalization of drone-related industries such as by fostering duty-specific pilots in the public sector and cultivating crops, and developing management models with the help of drones.



Autonomous driving and green energy city

Plan for building a regional drone utilization

Local talent recruitment rate 26.4%

(2.4% higher than the goal (24%))

Purchase of products from social enterprise increased by KRW 290 million

KRW 1.61 billion (2019)
→ KRW 1.9 billion (2020)

Employment Safety Net Developed with Local Colleges

With a goal to resolve the issue of insufficient infrastructure for the fostering of national land information human resources and to support customized human resource development for the Fourth Industrial Revolution as promoted by the government, LX, through cooperation with local colleges, offers scholarships to local talents, develops educational curriculum, and carries out various other supporting activities. A total of 33 students completed LX's educational program targeting students of five colleges in Jeollabuk-do Province. In line with this, LX is also developing a convergence education program to foster experts. With the project to foster convergence-type local talents for the Fourth Industrial Revolution, LX was selected as a prize winner at a contest organized by the Ministry of Trade, Industry and Energy.

Support for Social Economic Enterprises

LX is aiding the social-economic enterprises to provide stable services to their respective local communities. A win-win development forum was held to help local businesses affected by the pandemic and by doing so, LX was able to develop social and economic improvement plans through efficient communication-based support. Moreover, to establish a cooperation channel for overcoming economic crisis of local communities, LX operated 'Jeollabuk-do Social Value Network', thereby preparing a foundation for securing online and offline marketing channels. LX also opened cafes at the headquarters and Education Institute in Gongju-si to use them as a space for high-quality job creation and technical education targeting workers participating in self-support program. Cafe 120 and Cafe 182 offered jobs to eight people who were young people and people with interrupted careers. Also, by providing barista education and support for menu development using local produces, such as Gongju chestnut coffee and Jeongeup ssanghwacha (medicinal herbal) tea, LX has led win-win cooperation with local communities.

Developing Zestful Innovative City with the People

LX strives to build an innovative city that is enjoyed by everyone. Utilizing an idle space in Gochang-gun, Jeollabuk-do, LX is building a youth center to help young people grow while nurturing their dreams. Also, 132 residents have experienced cultural activities at exhibitions and flea markets hosted by LX, and an "LX Drive-in Concert" was held to encourage all the medical personnel who have gone through hardships and trials with the outbreak of COVID-19. The concert was enjoyed by 100 people offline and approximately 46,000 online. Moreover, to provide emergency childcare service and joint childcare service over the weekends, LX, through cooperation with National Pension Service and Wanju-gun, established "Raising Together Social Cooperative." To this end, LX will continue growing with the people through a variety of activities.



Farming village experience together with local residents



Jeollabuk-do Social Value Network

L(link)X-MAS event for children from vulnerable class



Sharing Briquettes of Love



Agreement ceremony for win-win cooperation fund donation to rural villages in 2021



Spatial Information Technical School in Tanzania



LX Social Contribution

Investing Back to Local Community

LX is continuously performing sharing activities to support the neglected class in local communities. In Lunar New Year (Seollal), LX delivered gift packs of holiday food to a scale of KRW 5 million to 200 households within the region. LX also purchased products from local social enterprises and female-operated businesses and donated them to 500 low-income senior citizens in Wanju-gun, Jeollabuk-do. A "L(link)X-MAS" event is being held for children from the vulnerable class in Jeollabuk-do for two years in a row to share gifts purchased from small businesses operating in the local communities. As such, LX is striving to fulfill its social responsibility as a member of the local community.

Joint Social Contribution by Public Enterprises in Jeollabuk-do Innovative City

To promote win-win growth and cooperation with local communities, LX is performing various social contribution activities together with enterprises that have relocated to Jeollabuk-do Innovative City. In particular, through cooperation with National Pension Service and Korea Electrical Safety Corporation, LX donated 7,500 briquettes to vulnerable households. At the year-end, "2020 Sharing Kimchi of Love" ceremony was hosted to deliver kimchi to 660 households in the Jeollabuk-do Province. Along with the joint social contributions made, LX will continue its contribution activities through cooperation with the relevant enterprises and strive to resolve the social issues.

Social Contribution Activities

LX continues to stay by the people's side to develop as the best national land information provider while fulfilling its social responsibilities. At present, LX is advancing as "Happy LX," an organization providing services using its scope of operations, "Hopeful LX," an organization fulfilling its social responsibilities, "Companion LX," a voluntary organization formed using its nationwide network, and "Emotional LX," an organization that promotes culture, art and sports. On World Blood Donor Day, 318 people from 79 institutions of "Companion LX" participated in the activity. With this service recognized, LX won an award certificate from the Jeollabuk-do Assembly. LX also provided voluntary oriental medical service and donated KRW 100 million of win-win cooperation fund to 38 local children's centers and social enterprises. As a result, LX received the plaque of appreciation for win-win cooperation from the Foundation for SMEs, Large Enterprises, and Agricultural and Fisheries Industry Cooperation.

Global CSR

Global CSR is a project that carries out social responsibility activities abroad to support the development of respective regions and help the SMEs in the spatial information industry enter the overseas market. Since 2014, LX has been operating local technical schools together with private enterprises in spatial information-related fields. In 2019, LX implemented the "drone-based cadastral survey technology improvement project in Tanzania" and started operating "technical school for land information acquisition and management in Laos." By transferring technological experiences to the local government or project ordering institutions, LX supported the fostering of local professional human resources and, at the same time, improved the recognition of LX and SMEs in the spatial information industry. While steadfastly operating technical schools abroad, LX will not only hand over Korea's technological experiences, but also expand opportunities for joint overseas market entry with SMEs.

Implementation of Safe Society



Sustainability Status

LX strives to achieve management with the highest focus on safety. In January 2021, with the enactment of 「the Severe Corporate Accident Punishment Act」, which prescribes strengthened criminal punishment of the business owners upon the occurrence of industrial accidents, the roles of companies and organizations in creating safe workplace and society have become all the more important. As LX's operations are mainly executed in dangerous locations, such as on the road, on islands, in construction sites and in mountains, the highest priority is placed on the safety of employees. LX recognizes its duty and responsibility to swiftly secure the safety of all stakeholders, including the people, employees, and partners, and activate local economy amid the COVID-19 pandemic situation.

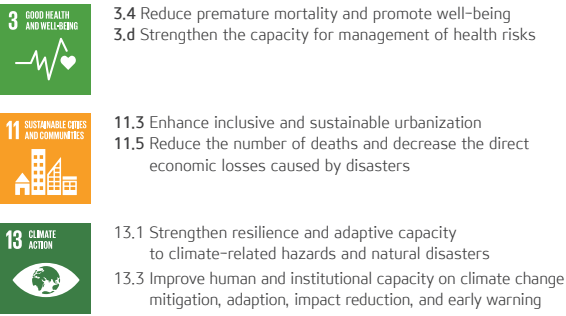
Directions for Sustainable Management Promotion

Using its spatial information capacities, LX is striving to resolve the issues of environmental blind spots and vulnerable class by discovering and preemptively managing risk factors in a living environment. LX established an optimal food waste collection system (Jeonju-si) using a digital twin model based on spatial analysis, and reduced the use of automobiles in downtown areas with the Commute on Bicycle Challenge. As such, LX is responding to climate change and contributing to reducing the environmental pollution.

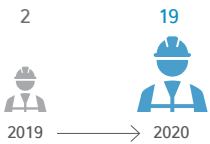
Key Performances



Contribution to achieve the UN SDGs



Safety personnel increased



Support for areas affected by disasters such as COVID-19

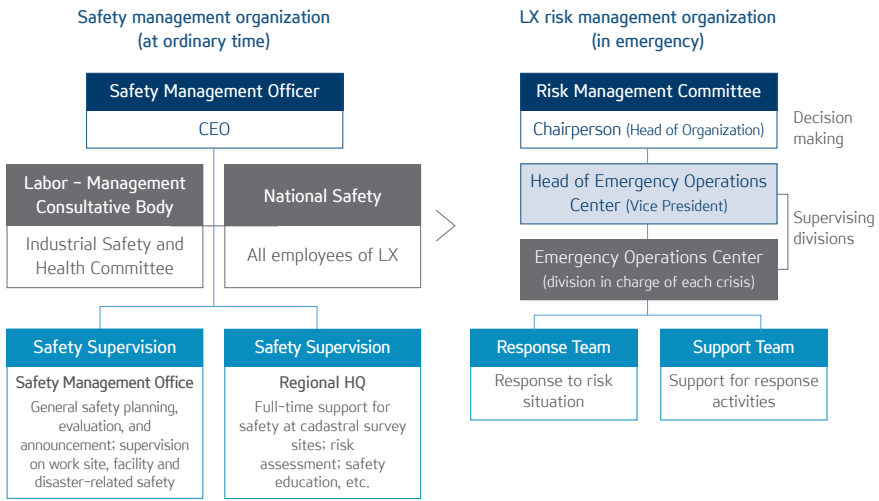
Cadastral survey service charge reduced by KRW 2.8 billion

Safe Living Environment for the People

Disaster Safety Management Promotion System

For the safety of citizens and its stakeholders, LX is operating the disaster management system. It is also performing disaster prevention activities, which include the revision of the disaster safety manual. As a result of improving disaster response capacity through safety education in preparation for disaster and terrorism LX's study paper titled "spatial information use for suppression of fire" won the top prize at the disaster safety paper contest of the Ministry of Interior and Safety held in 2020. In addition, for the swift response to disaster situations, LX established an emergency response system to convert from a safety management organization at ordinary times to a risk management organization in an emergency. Under this system, LX identifies national risk situations and blocks the spread of disasters. Having established an emergency disaster recovery mutual support and response system by agreeing with the relevant institutions and private sector, LX successfully responded to local infectious disease outbreak, particulate matter, and typhoon. It also established a safe environment by responding to heatwave through the heatwave shelter operation.

Emergency Response System at Disaster Occurrence



Disaster Response Cooperation System with Relevant Organizations and the Private Sector

To ensure people's safety even in the national crisis, LX is strengthening its disaster response capabilities by cooperating with private companies and related organizations. LX established a mutual support system by designating 14 companies to provide building support, quarantine service, and supply of daily necessities according to individual disaster situations, and exchanging emergency contact networks with the relevant institutions. In particular, when a disaster, such as a flood, occurs, LX operates the swift response team and provides the necessary supplies and human resources according to the hot-line response system with local governments. At the same time, LX conducted a damage investigation for recovery in areas designated as special disaster zones due to COVID-19 and provided these areas with a benefit of reduced cadastral survey cost. As seen by the support provided, LX will continue strengthening its cooperation system with the relevant organizations and the private sector and lead swift recovery of damaged areas while securing national safety.

Effort for Securing Public Safety

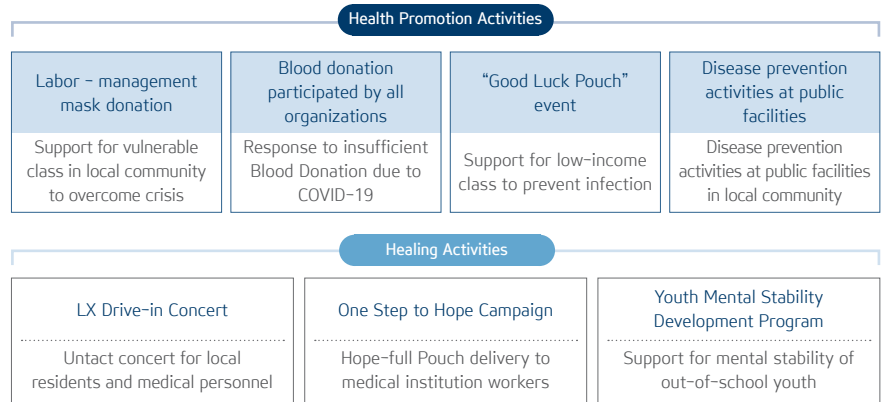
Overcome COVID-19

“Mask up! Consolation, Each Other!” Campaign

The prolongation of the COVID-19 pandemic has led to numerous changes in everyday life. Accordingly, citizens are growing more tired of the situation and, as a result, their wariness about disease control is dropping. To stress the importance of wearing masks correctly and increase the people’s wariness, LX organized the “Comfort For Each Other” campaign and delivered a message of hope to overcome COVID-19. In particular, LX promoted the campaign by producing public campaign advertisements and disseminating them via online and offline channels, which encouraged public engagement while emphasizing the importance to observe the basic quarantine rules. This campaign recorded 6.3 million online hits and played an important role in delivering a message of consolation and hope to the people.

LX’ Public Safety Promotion Activities

LX is performing public safety promotion activities for the vulnerable and the medical personnel fighting against COVID-19 at the forefront. As such, LX will continue with its public health promotion and healing activities to fulfill its social responsibility as a public enterprise and contribute to spreading a safe culture.



Disease prevention activities at public facilities



LX Drive-in Concert



Blood donation



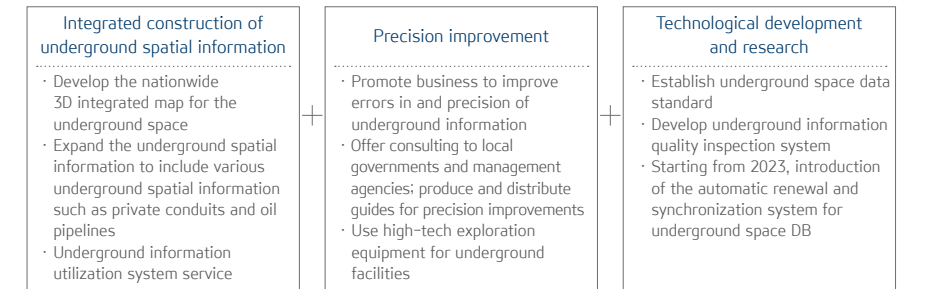
One Step to Hope Campaign

Securing Public Safety based on LX’s Businesses

Establishing Underground Space Information Using 3D

Accidents caused by rupturing of underground facilities and ground subsidence can threaten the people’s lives are increasing as of late, such as the steam pipe explosion in Ulsan, as well as other accidents that occurred in Baekseok-dong of Goyang-si, Sangdo-dong of Seoul, and Gyomun-dong of Guri-si. To increase data accuracy concerning underground information change and ensure a flexible response to underground accidents, LX is strengthening underground facility safety management by following the four-stage process using independent underground space database: preventive measure, system establishment, promotion planning, and safe use.

Efforts for Facility Safety Management



Eliminating Safety Blind Spots from Living Environment

As vacant houses are increasing in small and medium cities outside the capital and metropolitan regions due to population outflow, vacant houses are being used in violent crimes, such as the incident in Deokpo-dong, Busan, and thus are causing a social issue. To contribute to resolving such issue, LX conducted status survey starting from small and medium cities outside capital and metropolitan regions. As a result, LX has built and is operating a vacant house platform system in order to activate vacant house trading and data management. In addition, based on the standard improvement plan, LX is providing locally customized services that reflect the requirements of respective local governments.

Business Continuity Plan (BCP) in Preparation for Pandemic

To effectively prevent and respond to the risk of infectious diseases such as COVID-19, LX has prepared and is implementing the “business continuity plan (BCP) in preparation for pandemic” that prescribes the response system, business continuity plan, and employee management method, among others. At the headquarters, access is controlled and employees’ activities outside, such as business trips, are kept to a minimum. Employees’ body temperature is measured at all times and those with fever are switched to telecommuting or arranged to return to work after recovering from their condition. Also, to ensure stable management of staff operation by division in preparation for extensive absence of employees, LX established an HR management plan for an emergency situation, such as by reorganizing the shift system and the related operations and adjusting alternative work locations and hours.

Safe Workplace for Employees

Improving Work Environment

System Development for Sustainable Safety Management

LX established safety infrastructure in order to develop a safety and health management system with the top priority placed on the value of safety. In particular, by increasing its safety management system and capabilities, LX intends to enlarge the scope of safety and health management in line with the strengthening of public enterprises’ safety management guidelines.

System Enhancement for Safety Management Paradigm Shift

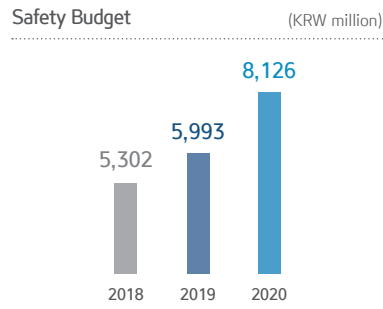


Sharing LX’s Safety and Health Management Model with Measurement Industry

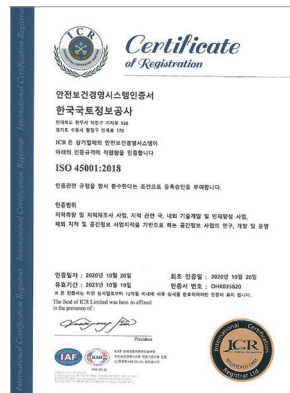
LX shares its safety and health management model to prevent repetitive industrial accidents caused by the absence of safety standards in the private measurement industry and presents safety standards to the same industry. LX establishes a management model by establishing safety rules for each measurement stage, seasonal type, and cause of accidents, and apply them to safety and health management regulations and safety management responsibility plans. In the future, LX will do its best to establish a safety culture by sharing the safety and health management model with the private sector.

Safety and Health Management System International Standard (ISO 45001) Certification

To actively respond to changes in the labor environment, LX is revising safety and health management regulations and continuously dedicating efforts to preventing employees’ accidents. LX preemptively implements government policies and establishes a foundation for sustainable safety management by introducing an advance permit system for dangerous operations and revising cadastral survey safety manual, thereby promoting advancement of its safety management model. As a result of the efforts, LX won the safety and health management system international standard (ISO 45001) certification in October 2020 and the industrial accident rate has decreased by 24.5% compared to the previous year.



Safety and Health Management System International Standard (ISO 45001) Certification



Industrial Accident Rate 24.5% ↓ in 2020

17 cases in 2019, 13 cases in 2020

Safety and health management for vulnerable workers (disabled, pregnant) “Perfect” score in human rights impact assessment

“Zero” death at new construction sites


Privacy management level evaluation “Zero” personal information leakage for five years in a row

97.6 points, the highest score in record, at MOIS evaluation
Higher by 13.30 points than average of all organizations

Safety and Health Programs

LX operates safety and health programs customized to the characteristics of its operations in order to reduce the likelihood of accidents and help employees manage their job-related stress. LX conducts safety evaluation on the “4, 4, 4, Safety Day” under the policy of “safety comes first.” In addition, together with safety education, LX inspects the status of safety management in the field without prior notification so as to ensure a safe workplace for all employees.

Safety and Health Programs

01. [Physical Safety: Accident Prevention] LX Company-wide Risk Assessment				
<ul style="list-style-type: none"> · 3,135 risk factors discovered and 2,625 improved (84%) · Develop continuous risk factor discovery and improvement system through establishment of basis for risk assessment 				
02. [Physical Safety: Disease Prevention] Evaluation on Risk of Cardiovascular Diseases and Follow-up Management				
<ul style="list-style-type: none"> · 1,040 persons suspected of disease selected as follow-up management targets · Prevent industrial accidents through systematic management of high risk group 				
03. [Mental Health: Disease Prevention] Expanded Operation of Employee Assistance Program (EAP)				
Category	2018	2019	2020	Call center employees' EAP participation by 100% 
Job stress diagnosis	324 persons	469 persons	221 persons	
Professional psychological counseling	55 persons	123 persons	171 persons	
Healing program	125 persons	707 persons	173 persons	

Safety Management at Project Sites

Before ordering a construction work, LX selects companies with excellent safety through Public Procurement Service. It evaluates the companies based on their safe operating execution capabilities. Having conducted joint safety inspection at five sites, such as LX Education Institute, LX improved its safety management capabilities in the field by developing measures to reduce hazard and risk factors in work sites at the same time as holding meetings to review safety and health management plans and those participated by safety and health experts. Moreover, to prepare for the post-COVID era, LX reflects spatial arrangement, entrance and exit adjustment, and natural ventilation in its designs. Through the effort to strengthen risk factor management, LX secured the safety of customers and employees in facilities under construction. As a result, LX achieved "zero" death at new construction sites for eight years in a row.

Cyber Safety

With the importance of privacy rising, the demand for strengthened security assessment criteria is increasing. Accordingly, to improve information reliability and secure cyber safety, LX improved information security level and provided mandatory cyber safety education to all employees, enhancing its expertise and cyber threat response capabilities. Also, as a result of designating a division in charge of privacy protection and establishing personal information leakage and tampering prevention system, LX received 97.6 points, the highest in record, at the personal information management level evaluation conducted by MOIS. To meet the demand of the public, LX will establish a sound security organization and increase its expertise and response capabilities and improve stability against cyber safety issues.

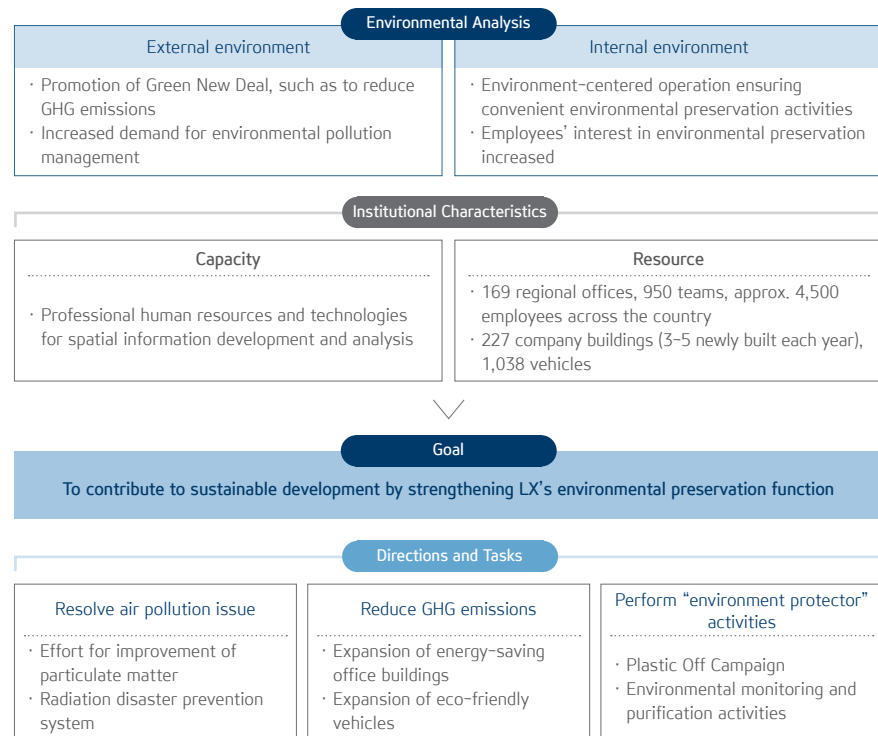
Eco-friendly Management

Promoting Environmental Preservation

Environmental Management Strategies

As the value of coexistence between humans and environment is gaining greater importance concurrently with the rapid economic growth, the engagement in “eco-friendly and low-carbon” movement is being demanded across the globe. LX, in response, using its resources and capacity, will contribute to sustainable development by establishing and promoting environmental management strategies in order to achieve efficient energy-saving and reduction of greenhouse gas (GHG) emissions.

Environmental Preservation Process Reflecting LX Characteristics



Contributing to Resolving Environmental Issues based on Spatial Information

LX actively uses spatial information in its environmental policy-related decision-making. By suggesting an optimal plan with a digital twin model developed through spatial analysis, LX led the way in resolving environmental issues in Jeonju-si by improving the food waste collection system. Using the IoT-based environmental analysis technology, LX improved the accuracy of particulate matter prediction. It also supported the government's particular matter response policy establishment through a patent application on the method to estimate chemical substances in particulate matter. LX analyzed particulate matter generation and reduction factors in residential, lumbering sites and factory zones by installing particulate matter measuring devices on drones and buses and collecting the corresponding data. After analyzing air quality through 334 times of measuring and monitoring, LX proposed a response plan for areas where air pollutants are stagnant, and, subsequently, applied for a patent on the related technology. By doing so, LX won recognition for its technological power.

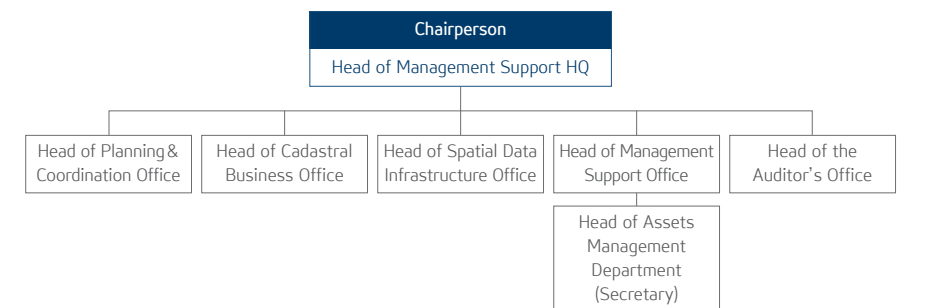
2 patent applications

1 particulate matter and prediction system
1 smart sensor for air pollution measuring

Response to Climate Change

Energy Saving Promotion Committee

Operating the Energy Saving Promotion Committee, a GHG emission reduction and energy saving-related decision-making body, LX analyzes annual energy saving, GHG emission reduction goal setting and promotion performances on a half-yearly basis, and thus is striving to achieve the government's environmental policies. In addition, LX internalizes a company-wide eco-friendly management culture by establishing bodies in charge of environmental preservation by organization (department), and performing energy protector activities and practicing environmental preservation policies set by each organization.



Renewable Energy Facilities

For climate change response and GHG emission reduction, LX not only installs and repairs facilities in its office buildings, but also leases and operates eco-friendly vehicles. LX saved 150 kWh of energy by applying solar power and geothermal energy facilities to its Education Institute, Daejeon/Sejong/Chungnam and Jeju Headquarters, and Wanju/Ulju offices, and using energy saving system, standby power outlets, and water-saving and rainwater recycling system, and energy monitoring system. In addition, LX obtained green building certification for the newly established buildings, and at the same time as opening three new electric car charging stations, LX opened 101 electric car charging stations across the country for public access.

Plastic Off Campaign

Through Plastic Off Campaign aimed at protecting the people's lives and health, LX reduced CO2 generation by 8.1 tons and plastic use by 3.2 tons. Each year, 150,000 plastic cups and straws used at the cafeterias have been replaced with eco-friendly ones made with sugar cane. Also, LX showed active participation in the campaign by replacing plastic holders for 240,000 cadastral records with paper holders annually.



Additional installation of electric car charging station

Cadastral survey record in paper

Culture to Respect Employees



Sustainability Status

Employees' increased competency, work and life balance and respect for their diversity are directly related to LX's competitiveness and sustainable growth. As the disclosure of non-financial information (E.S.G) is strengthened both domestically and internationally and the recommendation of National Human Rights Commission of Korea for public enterprises to practice human rights management is expanding, it is necessary for LX to carefully manage the human rights-related issues of its stakeholders.

Key Performances



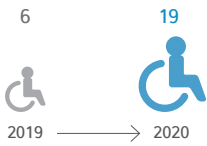
Directions for Sustainable Management Promotion

LX provides systematic capacity building programs to employees and encourages employees to leave work at the regular time by designating every Wednesday as Love Family Day. In addition, to respect human rights of all stakeholders including employees, partners, and local communities in its entire management process, LX conducts human rights impact assessment every year so as to check on the status of and improve on human rights management.

Contribution to achieve the UN SDGs

- 4 QUALITY EDUCATION**
4.3 Ensure access to technical, vocational and tertiary education
4.7 Ensure that all learners acquire knowledge and skills needed to promote sustainable development
- 5 GENDER EQUALITY**
5.5 Ensure women's full participation and equal opportunities for leadership
5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality of all women and girls
- 10 REDUCED INEQUALITIES**
10.4 Adopt policies and achieve greater equality
- 16 PEACE, JUSTICE AND STRONG INSTITUTIONS**
16.3 Ensure equal access to justice for all
16.7 Ensure responsive, inclusive, and participatory decision-making

Expanding the Job Market for the Disabled



Open position for contract workers Achieved operation ratio of 7.5% (December 2020)

Exceeded 2.5% of government recommendations (5%)

Fair Employment and Education

Fair Employment Considering Diversity

Enhancing Bias-free Hiring

To ensure a fair and reliable employment system, LX devised the job competency-centered "bias-free hiring process," of which the entire process from employment notice to announcement of successful candidates is verified. As a result of strengthening cooperation with specializing agencies, such as for cross-checking of written examination scores, and striving to ensure transparent employment by consigning the entire process from application system operation to exam question setting, and assessment system management to external agencies, LX achieved zero employment corruption and error as well as zero complaints from applicants who did not pass written examination and interview screening.

LX GOGO Package Recruitment

Having recognized the necessity of human resource fostering through the improvement of competencies of persons with disabilities, LX implements "LX GOGO Package," a fair and transparent employment program for the disabled that focuses on the applicants' job competencies. Moreover, cooperation with Korea Employment Agency for Persons with Disabilities for consulting on the employment of persons with disabilities resulted in development of customized training process and introduction of an internship system. As a result, in 2020, LX employed 19 persons with disabilities, the largest in its history. The newly hired were immediately assigned to the field, and thus time and expenses of retraining were saved.

Fostering Female Managers

In order to expand the pool of female human resources and provide female employees with various career development opportunities, LX has set systematic goals by growth stage for the development of female managers. By discovering suitable jobs, LX increases employment opportunities for women with interrupted careers. LX also provides various supports to help female employees focus on their work, such as by installing workplace childcare center, introducing childcare leave system, and allowing employees to take parental leave from six months after their employment as opposed to one year in the past. In 2020, to promote gender equality through the expansion of female executives' management participation, LX appointed the first female executive director (head of Management Support HQ) since its foundation.

HR System Innovation

According to the public enterprise HR management innovation plan of the Ministry of Economy and Finance, LX is promoting three key tasks (personnel exchange, special promotion, and open position system) to improve its organizational management performance through job-centered organization management and expansion of openness in HR management.

Personnel Exchange	Personnel Exchange	Open Position for Private Experts
<ul style="list-style-type: none">Positions for which cooperation and experience sharing with organization is necessary; work for at least one yearEach organization to execute personnel exchange for at least one position	<ul style="list-style-type: none">Special promotion system applied to at least 2% of personnel subject to promotion each yearOperation of HR Committee separately for special promotion systemExcluding government employees and people with experience of working at public enterprises who have retired less than three years ago	<ul style="list-style-type: none">Key positions for which experience and ability of working at public enterprises and continuous securing of competitiveness through internal and external competition are necessary; positions for which reassessment and improvement of the existing operations from external perspective are necessaryExcluding government employees and people with experience of working at public enterprises who have retired less than three years ago

Satisfaction Improvement with training and education

(93.0 points in 2019 → 94.9 points in 2020)

Drone pilot license obtained by 198 persons

(As of the end of December 2020)

Fostering Human Resources

Education by Vocational Competency Level for Capacity Building

LX is operating educational programs by vocational competency level in order to secure the Korean New Deal implementation capacity by fostering the next-generation human resources. LX, centering on its key businesses which are cadastral survey and spatial information supply, provides educational and training service customized to trainees by offering curricula in beginner, intermediate, and advanced levels. As a result, the satisfaction with training and educational programs increased by 1.9 points compared to the previous year.

Fostering National Land Information Experts

LX fosters future convergence-type talents to lead the Fourth Industrial Revolution. Through the professional educational curriculum, LX have fostered 100 national land information experts for over five years and they have been assigned to appropriate positions at the central and regional headquarters. The capacity to implement future business strategies has been enhanced by strengthening education on drone use and cadastral operation system (LANDY GO). Accordingly, 33 and 27 people obtained drone pilot license in 2019 and 2020 respectively, leading to a total of 60 drone experts. In addition, 177 employees completed a working-level course on convergence projects using drone. National land information experts and drone pilots are working on LX's core mid to long-term new deal projects, such as digital twin, drone map, and autonomous driving, and they are performing as leaders in the Fourth Industrial Revolution.

Spatial Information Academy

LX operates the Spatial Information Academy in order to improve job competency of workers in spatial information field and create jobs for young people. LX cooperated in fostering talents for the government's Digital New Deal policy by providing education on the latest IT convergence technologies and customized spatial information to the workers of its partners (587 workers in 2020). LX provides employment-linked education to around 30 young job seekers every year. Over the last five years LX contributed to creating jobs for young people by at least 90% (30 each in 2019 and 2020). As such, LX played a part in establishing the national employment and social stability network. Through Spatial Information Academy, LX is reinforcing the job competency of over 500 workers and achieving at least 90% employment rate of trainees each year, proving that LX is contributing to fostering spatial information application software experts and resolving the unemployment issue for young generation. LX will faithfully perform its role to promote the growth of spatial information field by continuously providing and improving high-quality customized educational programs.



Selected as Best Training Organization by Consortium for HRD Ability Magnified Program for two consecutive years (hosted by the Ministry of Employment and Labor)



Top Prize at Best of Champ Day in Joint Training Center category

Cadastral Survey Manual



Healthy Organizational Culture

Work Innovation

LX Digital Transition

In line with the spread of COVID-19, transition to the digital-based work system is being demanded along with the innovation of working method according to changes in the organizational members, which resulted from an increase of employees born in the 90s. In order to achieve the transition to the digital-based work system, LX has established short to mid-term targets and using the system, LX is focusing on creating an organizational culture of smart working increasing work efficiency, promoting work and life balance, and eradicating unnecessary process.

Goal			
To change working method and improve homeworking system			
Plans			
Form consensus	Simplify reporting process	Change meeting method	Activate remote working
<ul style="list-style-type: none"> Revise company rules to eradicate unnecessary work practice by collecting employees' opinions 	<ul style="list-style-type: none"> Standardize report format (1 page) and simplify reporting method (simple report using e-mail or text message) 	<ul style="list-style-type: none"> Develop video conference system and strive to establish it through monitoring Distribute "standard meeting guideline" to improve meeting efficiency 	<ul style="list-style-type: none"> Prepare and distribute manual for remote working and security management
Direction for Mid-term Innovation			
2021 <ul style="list-style-type: none"> Develop and spread mobile electronic approval system Develop business report system (company-wide sharing of key issues) 	2022 <ul style="list-style-type: none"> Fully inspect analog-based work environment and promote work innovation in response to changing work environment 		

Improvement of Field Work Performance Method

LX successfully developed an integrated system development using artificial intelligence (AI) and big data technologies so as to help the people have conveniently and swiftly access to cadastral survey service. While cadastral survey service was only provided as face-to-face in the past, LX intends to realize one-stop service by introducing online reception, simple payment, and mobile payment systems using LANDY-i, its mobile service application.

Improvements		
Classification	As-Is	To-Be
Survey equipment	Using equipment such as notebook computers and survey equipment - Increase of on-site operation time and higher level of work intensity	Downsizing equipment using new mobile technology - Reduce surveying time and increase convenience
Survey support system	Delay in survey standby time due to restriction of simultaneous connection to GPS (1,225 persons)	Reduction of survey standby (delay) time with the introduction of unlimited connection to GPS
Boundary decision consultation	When conducting cadastral resurvey or consulting boundaries, too much time is consumed with the participation of clients and demands for explanations	Reduction of boundary consultation process (time) with the 360VR aerial-view decision-making system
Operation manual	Operating 5 types of manuals including surveying, reception, administrative affairs - Delay in processing due to complicated procedures according to each task	Integration into 1 type of cadastral survey operation manual - Increase work convenience and save time

Labor-management communication satisfaction level in 2020: 75.43 points

(increased by 6.41 points from 2019)
Labor – Management Joint Declaration

Labor – Management Joint Declaration



Labor – management mask donation



Labor – Management Win-win Cooperation

Improving Labor – Management Communication Satisfaction through Communication Channel Improvement

LX supports effective communication between labor and management by reorganizing multiple communication channels that have duplicate functions. For the reorganization, LX formed a TF team consisting of external labor consulting experts, vice-chairmen of the labor union, and a director in charge, and diagnosed the effectiveness of the communication channels according to utilization and effectiveness of them. As a result, inappropriate channels were integrated into appropriate channels, and appropriate channels were reorganized by communication value, so the existing 17 communication channels were merged into six.

Communication Channels for Three Communication Values

Three Communication Values		
Guaranteeing Participation (Channel 3)	Internal Integration (Channel 2)	Respect for Labor (Channel 1)
Collective bargaining, operation of the safety and health committee of the joint labor and management consultative body (held 28 times)	Management's site-visit for communication (held 25 times)	On-scene discussion to exchange policy opinions (held 32 times)

Complaint Handling Committee for Labor – Management Communication

To form a bond of sympathy between the labor and management, LX operates the Complaint Handling Committee using professional human resources, such as an internal certified labor attorney. Through the committee, which focuses on the issues relating to HR management, work conditions, workplace bullying, etc., 80 cases of HR-related complaints were received and handled and zero sexual harassment and workplace bullying was achieved.

Promotion Performance by Type

Complaint handling system operation by type	Key functions by system	Promotion performance
<ul style="list-style-type: none"> · (HR) Complaint Handling Committee · (Labor affairs) Consultation with internal certified labor attorney 	<ul style="list-style-type: none"> · Reflect difficulties experienced by employees when transferred · Provide consultation service in relation to personal difficulties and work conditions 	<ul style="list-style-type: none"> · Receive and handle HR-related complaints (80 cases) · Mobile labor consultation service (12 times)
<ul style="list-style-type: none"> · (Sexual harassment) Sexual Harassment Deliberation Committee · (Bullying) Bullying Deliberation Committee 	<ul style="list-style-type: none"> · Preventative activities to establish preventative measures and increase consciousness in addition to case handling 	<ul style="list-style-type: none"> · Zero sexual harassment and bullying · Deliberation on workplace bullying (1 case)

Operating a Joint Labor – Management Crisis Management Committee to Respond to COVID-19

LX operates a labor – management consultative body to respond to COVID-19 in order to ensure the safety of on-site employees while fulfilling its social responsibilities as a public enterprise. The Joint Labor – Management Crisis Management Committee supports two major activities: on-site safety measures and support for the public. On-site safety measures include requesting MOLIT to extend the survey processing period for the convenience of the public and expanding non-face-to-face business by activating call center reception. In addition, LX is doing its best to prevent COVID-19 by placing non-face-to-face thermometers, masks, distance partitions, and quarantine equipment in the field. As an activity to support the public, the labor and management donated 20,000 masks for the vulnerable, and purchased the Onnuri gift certificate worth KRW 440 million and used it as a management incentive, thereby practicing win-win with the local community.

Ministry of Gender Equality and Family

Certified as Best Family Friendly Management four times in a row

(2020 – 2023)

Activating Work and Life Balance Culture

Expanding Support for Work and Life Balance

In keeping with the government policies, LX proactively expanded the family-friendly system to prepare measures for increasing low birth rate and create an environment for work and life balance. LX strove to improve its organizational culture by providing education on gender equality and family-friendliness with a goal to expand parental leave and including employees taking parental leave in promotion targets. As a result, the number of employees using parental leave in 2020 increased by 8% from the previous year. With its efforts to guarantee family-friendly work environment recognized, LX was selected as Best Family Friendly Management organization by the Ministry of Gender Equality and Family in 2020 for the fourth year.

Work and Life Balance Support Program

Category	Description
Promote family-friendly life	(LX Career Camp) Job experience accompanied by parents
	(Vegetable Farm) Family farm allocation and gardening
	(Family Rural Experience) Peanut harvesting experience
Create family-friendly work environment	(Love Family Day) Leaving work at regular time every Wednesday
	(Workplace Childcare Center) Infant and toddler care service
	(Joint Child Care) Child care service over the weekends

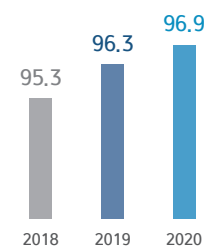
Eradication of Long-hour Work

LX provides various programs to eradicate the long-hour work and improve employees' quality of life. LX increased employees' accessibility to flexible work system by producing a manual and increased flexibility of field work by allocating jobs on a weekly basis. As a result, the number of employees using flexible work system increased by 3,086 (6,581 in 2019 → 9,667 in 2020) and employees' satisfaction level rose by 0.6% from the previous year. In addition, LX encouraged employees to take annual leaves with the management setting an example. It also introduced the annual leave saving system, where employees can save up the 30% of the number of days of mandatory annual leave (for less than 5 years) and use the leave freely whenever needed. Moreover, LX introduced the “PC-OFF” system, which turns off the computer automatically of an employee when he or she has worked for more than 52 hours a week, and designated every Wednesday as “Love Family Day” on which employees must leave the office at 6:30 p.m. to allow them spending the evening with their families (once every two weeks in 2019 → once a week in 2020). As such, LX is striving to help its employees enjoy work and life balance.

Work-life Balance Created by Labor and Management

LX establishes various systems to create a maternity protection and family-friendly culture through consultation between labor and management. The period to use marriage leave has been extended from one month to less than one year, and the system has been reorganized so that infertility treatment leave can be used without any restrictions in the period of use. In addition, various efforts are being made to protect maternity by extending the maternity leave of the spouse within 90 days after childbirth. LX also offers Family Love Events to provide a gift package for family photo and frames, and established an emergency childcare support system at the daycare centers in workplace for the executives and employees to alleviate the burden of raising kids. In the future, LX will continue to create a healthy and happy work-life balance culture with labor and management.

Satisfaction with flexible work system (%)

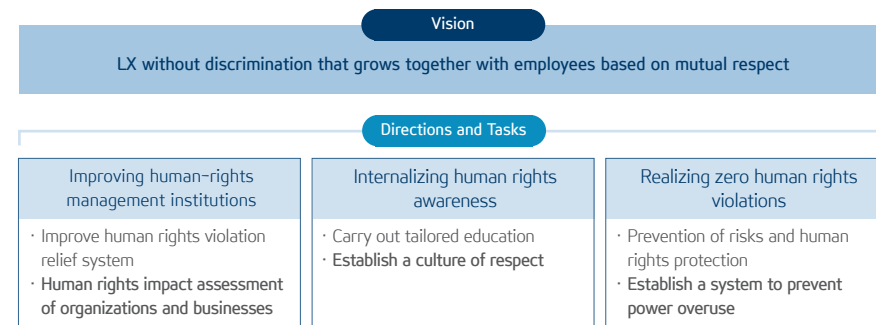


Human Rights Management

Strategies for Human Rights Management

LX always consider the human rights of all stakeholders including not only employees, but also partners, and local communities throughout its whole business process. LX conducts annual human rights impact assessment to prevent human rights-related risks. In addition, LX intends to advance to a leading human rights management organization by improving its human rights management promotion strategies strengthening also human rights management organization and governance.

Human Rights Management Promotion Strategies and Tasks in 2020



Reinforcing Human Rights Management Rules and Organization in Charge

LX strengthened its organization in charge of human rights management in order to monitor the occurrence of human rights violation cases and relieve damages of stakeholders including its employees. The Human Rights Violation Relief Committee is responsible for human rights violation case investigation and relief operations. In addition, the Human Rights Counseling Center was organized with external experts and internal counselors to secure reliability of counseling service, and thus to prevent secondary damages. LX is also suggesting plans to improve human rights-related policies and systems through the human rights execution team and protection team operation. As such, LX is trying to discover and make improvement on elements to hinder human rights according to its characteristics and those of individual departments.

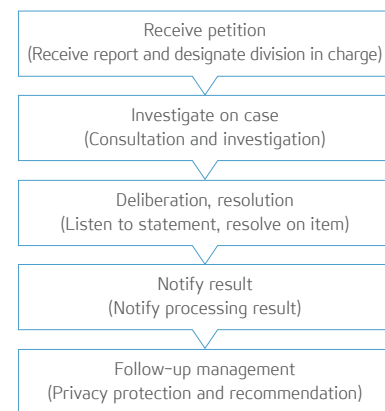
Organization in charge of Human Rights Management

Human Rights Violation Relief Committee	Human Rights Counseling Center	Human Rights Execution Team & Protection Team
Handle complaint reception, investigation, and relief operations <ul style="list-style-type: none"> · Less than five members (external members as majority) 	Provide professional counseling service for human rights violation cases <ul style="list-style-type: none"> · Participation by external experts; service provided in independent space 	Provide opinions on human rights policy and system improvement <ul style="list-style-type: none"> · Working-level personnel from HQ and regional HQs · Human rights meeting held twice in 2020(April and October)

Human Rights Impact Assessment

Since 2018, LX has been conducting human rights impact assessment every year to understand and improve the potential human rights risks that can occur in its management activities. In 2020, LX conducted the assessment on a total of 276 indicators relating to its operation and key businesses through an external advisory group and the Human Rights Management Team. Five tasks requiring improvement measures were derived through the assessment; for insufficiencies in its human rights management system and human rights in the supply network, LX plans to reflect them in the human rights management plan for 2021, and thus promote implementation of the detailed tasks.

Human Rights Violation Relief Process



Zero
sexual harassment and
bullying

Human Rights Management Committee



Human Rights Content Contest



Human Rights Consultative Body in Innovation City, Jeollabuk-do



Human Rights Management Committee

To protect and improve human rights of its stakeholders including employees and efficiently promote human rights management, LX holds regular meetings of the Human Rights Management Committee. In December 2020, the Human Rights Management Committee was held where the committee members(four external members and three internal members) were appointed and human rights impact assessment result was preponderantly discussed. As for the details of the meeting, member appointment letters were presented and the vice chairperson was elected. In addition, the attending members deliberated on items relating to the LX human rights impact assessment result.

Human Rights Content Contest

In order to create a human rights-friendly environment and improve human rights awareness, LX held Human Rights Content Contest targeting the public and its employees. Through this contest, human rights PR materials were presented in the form of a slogan and a poster that conform to LX characteristics, which contributed to the improvement of the people's human rights awareness level and spreading of a people-oriented culture. The hosting of the contest has helped LX fulfill its responsibility of human rights practice and respect for the people.

Education on Human Rights Awareness

LX provides education to strengthen human rights awareness in order to spread the human rights culture and execute human rights management. In addition to face-to-face education, LX internally provides online education using human rights education content it has produced. LX also provides education to prevent suicide and allocates "life protectors" by more than 20% of the total number of employees at each organization. Moreover, LX resolved eight cases of complaint by holding a meeting to listen to the difficulties and opinions of its invested companies. As such, LX performed human rights protection activities targeting external stakeholders.

Human Rights Consultative Body in Jeollabuk-do Innovative City

LX is working hard to spread the culture of human rights and respect in the local community by forming a human rights management consultative body with four organization located in Jeollabuk-do Innovative City. Through regular meetings, the consultative body shares human rights management promotion details and success cases, and thus inspects and improves human rights management in the field. In October 2020, LX distributed approximately 60 cup holders bearing messages of human rights and respect to nearby coffee shops. LX spread the determination to eradicate human rights violation, such as discrimination, power overuse, sexual harassment, and workplace bullying.

Prevention of Stakeholders' Human Rights-related Risks

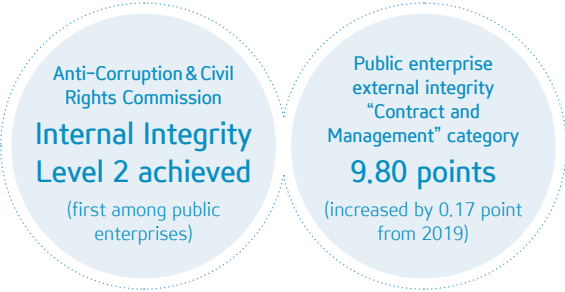
LX is improving systems and facilities for workers from vulnerable class in order to prevent human rights risks that can occur in its internal and external stakeholders. Internally, it established a system to promote unlimited contract workers and expanded employment of persons with disabilities and convenience facilities for them. LX also supports female employees by installing shower booths for them and introducing gender equality promotion system and employment quota system. We are making continuous efforts to protect the human rights of our external stakeholders by operating communication channels and mandating human rights protection in electronic contracts.

Improvement of Public Confidence based on Responsibility Management

Sustainability Status

Public enterprises can enhance its reputation and form the intangible asset of trust through transparent and responsible management. Accordingly, the government has established the “five-year anti-corruption general plan” with the goal to advance to one of the world’s top 20 nations in Corruption Perceptions Index by 2020. As such, the responsibility and demand for transparency of businesses and organizations are being strengthened, and gradual internalization of ethical management system can prevent corruption risks and, at the same time, increase corporate value.

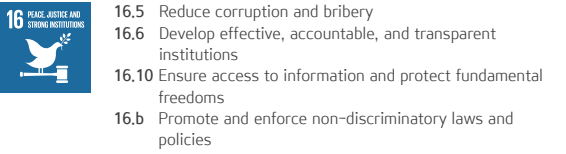
Key Performances



Directions for Sustainable Management Promotion

LX is working hard to implement the LX value that emphasizes the principles and basics. While internalizing employees’ ethical awareness through the integrity newsletters and anti-corruption and ethical management workshops, LX spreads integrity culture to local communities by conducting integrity campaign that is connected to its social contribution activities. By continuously striving to establish fair competition order, such as by making the use of subcontractor protector system mandatory and establishing collusion prevention system, LX will advance to a clean organization that is trusted by the people.

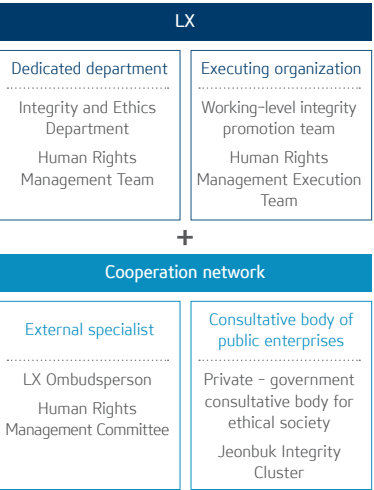
Contribution to achieve the UN SDGs



Anti-Corruption & Civil Rights Commission

Internal Integrity Level 2 (first among public enterprises)

Ethical Management Promotion Organization

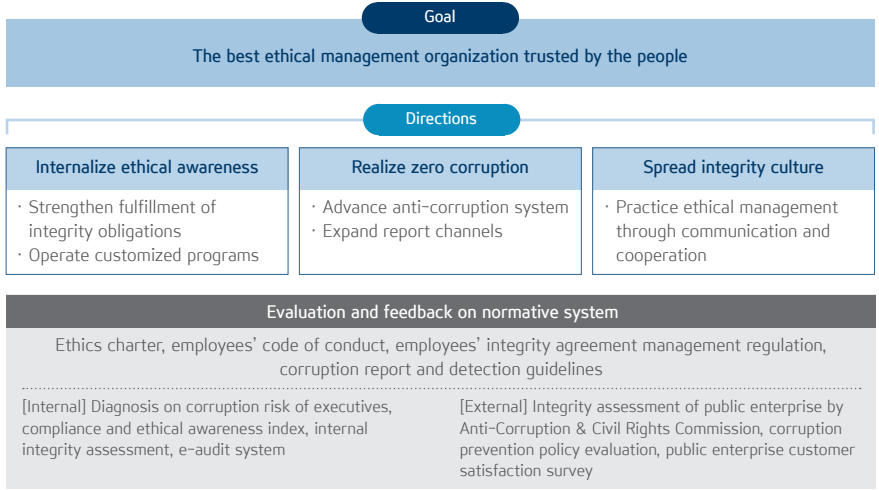


Spreading Anti-corruption Culture

Inspection on Vulnerable Elements

LX establishes systematic ethical management strategies by diagnosing and inspecting vulnerable elements in its ethical management. Through internal and external environmental analysis, LX has understood that public expectations for integrity of public officials are increasing and that public trust can be lowered by the executives’ power overuse and unfairness. Accordingly, LX established the innovation TF and anti-corruption TF as teams in exclusive charge of the relevant issues. The innovation TF discovered innovation tasks, such as strengthening ethical and human rights management and transparent HR management, while anti-corruption TF inspected risk elements that may cause corruption in HR management, contract operations, etc. Moreover, LX is recovering customers’ trust by establishing a preventative ethical management system and is striving to fulfill its social responsibility for sustainable management.

Human Rights Management Promotion Strategies and Tasks in 2020



Improvement of the Anticorruption System to recover Reliability

LX promoted employees’ ethical awareness by operating customized programs focusing on education and engagement. In addition to spreading online untact integrity education content, LX provided customized education centering on case studies by duty and position of employees. In the process, the number of education targets increased to 70 and integrity experts developed by regional headquarters have been used 208 times. LX also held integrity content and idea contest as a participatory program. It also shared integrity success cases by regional headquarters and organized integrity policy talks. LX is striving to internalize ethical awareness at citizens’ eye level.

Ethics Charter of LX

LX protects the property rights of the people and contribute to the development of cadastral system and spatial information by efficiently promoting projects in accordance with the Framework Act on National Spatial Data Infrastructure. With this dignity and pride, we intend to become a global public enterprise that is trusted and loved by the people through the development of cadastral surveying and spatial information technology with transparent and rational management. Therefore, we always try to achieve our mission as an organization that harmonizes with creative thinking, handling our work in an honest and fair manner based on high ethical values, and strive to prevent corruption for a clean public office culture. We also make effort to receive trust and love from our customers and respect the market order of free competition. We respect the personality of each employee without discrimination and try to improve the health and quality of life of executives and employees while ensuring that they get fair opportunities and fair evaluation. We actively participate in public interest activities and constantly create new values to contribute to the development of the country and society.

LX Employees' Determination for Integrity



Internalizing Ethics Through Leading Ethical Management

LX is spreading the culture of integrity organization from above by the initiative from the executives and practicing the integrity obligation. LX has introduced a three-step management system consisting of “improving integrity awareness – practicing integrity obligations – establishing responsible management” to reinforce compliance with the integrity obligations of executives. In the first step, passing the integrity education program and completion of the pledge of integrity that includes job-related integrity rules in order to improve the sense of integrity of the executives. In the second step, LX newly established regulations that stipulate the eradication of unfair acts and fulfillment of responsibilities by executives in order to make the responsibility for violations of integrity obligations clear. In the third step, LX diagnoses the risk of corruption of executives and operate a daily audit team to conduct monitoring at all times to establish responsible management.

LX operates a variety of customized training and participation programs to internalize the ethics of all employees. A total of 23,409 employees have taken 24 courses by providing customized training for each job and position, focusing on corruption-related cases and education in personnel who are vulnerable to corruption such as personnel and contracts. In addition, educational contents are provided online so that employees can take integrity training even in the COVID-19 situation. Furthermore, LX encourages all employees to participate and enhance ethics by holding integrity content and idea contests and sharing excellent cases of integrity activities by regional headquarters.

Spreading Integrity Culture through Communication and Cooperation

LX is spreading integrity culture by performing ethical management activities through communication and cooperation with various stakeholders, such as employees and partners. From the participation to filming, LX produced “Integrity Content” made by the employees and used it as training materials. In addition, about 40,000 promotional materials for corruption reporting channels were distributed through a campaign to promote the culture of integrity in the local community. LX is periodically conducting “Integrity Happy Call” for the companies that participate in the bidding of LX's major business and contractors to listen to their opinions. Additionally LX constantly carries out anti-corruption activities with co-executors of cadastral surveying such as integrity policy and sharing of corruption reporting centers.

Strengthening Corruption Prevention Activities

LX is building a framework for fair job performance by strengthening the ethical management regulations. We try to lead the gender equality by establishing the zero tolerance principle and by taking measures for sex-related victims. We are also doing our best to eradicate recruitment corruption strengthening the disciplinary actions for the ones with recruitment corruption record. By making Integrity Happy Calls to companies participating in contract and bidding to a scale of KRW 1 million or larger, LX collected opinions about corruption prevention, and thus accomplished zero unfair trade. By delegating the Red Whistle Mobile to an external agency, its operation is very transparent and this allows to increase the effectiveness of corruption report as well as the protection for the reporter.

Internal integrity assessed by
Anti-Corruption & Civil Rights Commission

“Corruption Awareness”
9.27 points

(public enterprise average 8.92 points)

Integrity Happy Call
Zero unfair trade

“Satisfaction after contract termination”
with Integrity Happy Call

increased by 0.6%

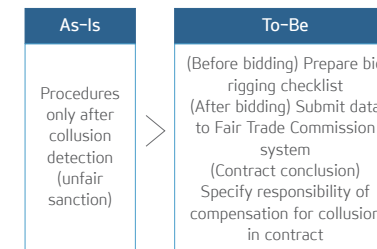
(87.0% in 2019 → 87.6% in 2020)

Public enterprise external integrity

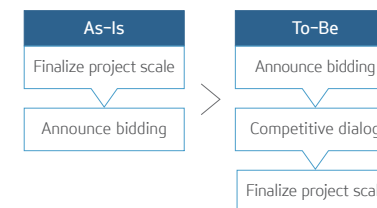
9.80 points
in “Contract and
Management” category

(increased by 0.17 point from 2019)

Collusion Prevention System



Contract System based on Competitive Dialog Introduction Process



Fair Trade

Establishing Fair Economic Order

LX strives to resolve public concern for unfair contract and fulfill its social responsibility as a public enterprise. LX is dedicating efforts to establish a fair competition order by actively supporting spatial information market entry for innovative businesses and startups and making preferential procurement contract conclusion mandatory through funding support for successful project completion by its partner SMEs.

Directions		
Basis for Shared Growth	Fair Competition	Fair Funding
Promotion Tasks		
<ul style="list-style-type: none"> Support innovative businesses and startups Improve system for protection of startups 	<ul style="list-style-type: none"> Improve system to increase transparency Improve system for unfair trade prevention 	<ul style="list-style-type: none"> Introduce preferential criteria for local businesses

Introducing LX-type Best Transaction Model

LX introduced the LX-type best model for fair economy settlement. The “LX-type best transaction model” was introduced through four steps such as “collecting prior opinions – analyzing demand – reviewing characteristics of each organization – developing applicable best transaction model.” First of all, the “transaction model with partner companies” includes the “introduction of the comprehensive screening and bidding system” for “prevention of low-cost contracts,” and the “introduction of the fair trade pledge system” for “fair terms and conditions.” In addition, the “transaction model with private companies” includes “active use of joint contracts” for “suppression of unfair behaviors,” and a direct payment system for subcontractors such as “subcontract keeper” has been established for “direct payment for subcontractors.”

Operating Contract System based on Competitive Dialog

To secure a foundation for sustainable and fair competition by innovative businesses and startups, LX is operating a contract system based on competitive dialog. The contract system based on competitive dialog ensures finalization of project details through consultation and competition between the bidding company and ordering institution in case it is difficult to determine contract details for an innovative service or product that does not exist in the market. LX has realized innovation-oriented public procurement by promoting contracts through competitive dialog when implementing the “vacant house platform function improvement service (project cost: KRW 210 million),” and plans to expand it in the future.

Preferential Criteria for Local Businesses

Having established the criteria for preferential treatment of local businesses in Jeollabuk-do Innovative City, LX is making efforts to promote shared growth with local businesses. For a construction or service project that meet the prescribed requirements, local businesses are given additional points in bidding. In addition, for a private contract to an amount of KRW 20 million or less, LX preferentially concludes the contract with a local company located in Innovative City. As such, LX, as a public enterprise, implements a system to realize social values together with the local community.



Picturing Sustainable Future

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Governance

Board of Directors

Holding a BOD meeting



Under the principle of autonomous and responsible management, LX has formed and operated the board of directors with five executive directors including the CEO who also serves as the chairperson (female members by 20%) and six non-executive directors (female members by 33%) according to the Act on the Management of Public Institutions. With the position of executive director for spatial information newly installed, the three subcommittees were further segmented into policy, cadastral, spatial information, and management committees in order to strengthen the specialty of each subcommittee.

BOD Status

(As of April 2, 2021)

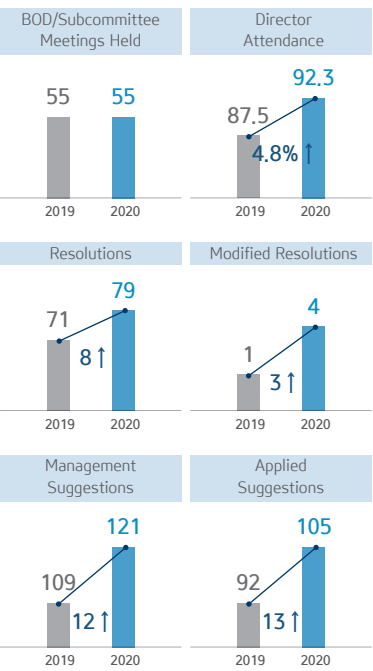
Name	Gender	Position and Division	Term of Service	Category
Kim Jeong-ryeol	Male	Head of Organization (CEO)	Sep. 8, 2020~Sep. 7, 2023	Executive Director
Kim Gi-seung	Male	Vice President and Head of Planning & Innovation HQ	Nov. 26, 2018~Nov. 25, 2021	
Choi Seung-uk	Male	Head of Spatial Data Infrastructure Division	Mar. 2, 2021~Mar. 1, 2023	
Kim Yong-ha	Male	Head of Cadastral Business HQ	Nov. 26, 2020~Nov. 25, 2022	
Oh E-ri	Female	Head of Management Support HQ	Nov. 26, 2020~Nov. 25, 2022	
Kim Jeong-beom	Male	Current lawyer at Minwoo Law Firm	Oct. 11, 2018~Oct. 10, 2021	
Cho Jae-won	Male	Current CEO of O_1 Studio Architecture Urban Study & Design	Oct. 11, 2018~Oct. 10, 2021	Non-executive Director
Nam Yeong-wu	Male	Current Director General for Territorial Information Policy at the Ministry of Land, Infrastructure and Transport*	Jun. 2, 2020 until the specified term of office	
Park Yong-hun	Male	Current CEO of Infra Service Research Center	Feb. 1, 2021 ~ Jan. 31, 2023	
Song Yeong-seo	Female	Current professor at Ajou University Graduate School of Scientific and Technological Policies	Feb. 1, 2021 ~ Jan. 31, 2023	
Je Ah-reum	Female	Current representative lawyer at Cheongryul Law Firm	Feb. 1, 2021 ~ Jan. 31, 2023	

* According to Article 18 (4) of the LX Articles of Association, the Director General for Territorial Information Policy of the competent ministry (MoLIT) shall be an ex-officio non-executive director.

Composition and Performance of Subcommittees

Category	Composition	Role	Performance
Sub committee	Policy	Deliberation on planning, management strategies, budget, and performance management, etc.	Investment of KRW 500 million to win-win cooperation and shared growth expansion fund
	Cadastre	Strengthening BOD Supporting System cadastral system, cadastral survey technologies, and project development	Suggestion of prospective business items through collaboration of cadastral business (LANDY-i), cadastral resurvey business, and spatial information business
	Spatial information	Deliberation on spatial information and new businesses abroad	Establishment of committee for "LX digital twin standard model development"
	Management	Deliberation for management and HR system establishment	Deliberation on the composition and scale of LX National Land Information Integrated Operation Center for establishing a foundation for data industry support
Expert Committee	Management Policy Committee	Chairperson: Vice President Members: Non-executive directors (6), etc.	Overseas market development through resolution on feasibility of integrated real estate registration system establishment project in Uzbekistan
	Executive Recommendation Committee	Non-executive (6) Private members (5)	First meeting held when appointing executive directors

BOD Performance



Autonomous and Responsible Management Centering on the BOD

LX operates its BOD with a goal of responsible decision making by strengthening the BOD's role and activating the BOD operation. As face-to-face meetings have become impossible due to the outbreak of COVID-19, LX established the scheduled and unscheduled report system, and by doing so, LX is strengthening the BOD support system to ensure responsible management. In addition, by operating subcommittees for each field, LX preemptively responds to its management issues based on consultation and management suggestions from non-executive directors.

Strengthen the board support system

Providing Information	Manual	System	Method of Meeting
Establish regular and irregular report system · Pre-reporting of items presented to the BOD by 100% · Promotion status of three key projects reported at each BOD	Reorganize non-executive directors' operation manual · Key status and six additional projects reflected · Detailed explanation on related law (Act on the Management of Public Institutions)	Link website to mobile page · Fast information sharing through re-al-tie link of website and mobile channel · Blocking information leakage by strengthening network security system	Video conference · Ministry of Land, Infrastructure and Transport administration network added to the existing video conference system for institutions in order to ensure safety of employees from COVID-19

Strengthening Policy Consultation and Communication Using Expertise of Non-executive Directors

LX appoints experts in the field of business management, law, architecture, urban engineering, etc. as non-executive directors in order to secure expertise and diversity of the BOD. Prior to holding a BOD meeting, consulting sessions are held in various areas including safety, human rights management, intellectual property, and real estate based on professional competencies of non-executive directors so as to result to reasonable BOD decisions, and finally, successful management performance.

Activating Communication

LX supports active communication by promoting field-oriented management. By providing free legal counseling service to the socially vulnerable, holding donation events, and participating in local festivals, LX listens to the citizens' voice. In addition, the employees and executives communicate directly with the cadastral survey sites. Internally, LX supports successful communication by operating full-time support system, such as BOD website and mobile system, to share safety data, etc.

Director Assessment and Compensation

LX assesses the BOD activities and provides compensation in order to prevent corruption and strengthen responsibility of directors. The assessment and compensation are executed fairly and transparently according to the related law and the prescribed procedures. The head of organization receives performance evaluation according to the fulfillment of management goals and key tasks specified in management contracts that have been concluded with the Minister of Land, Infrastructure and Transport.

On-site BOD to strengthen communication

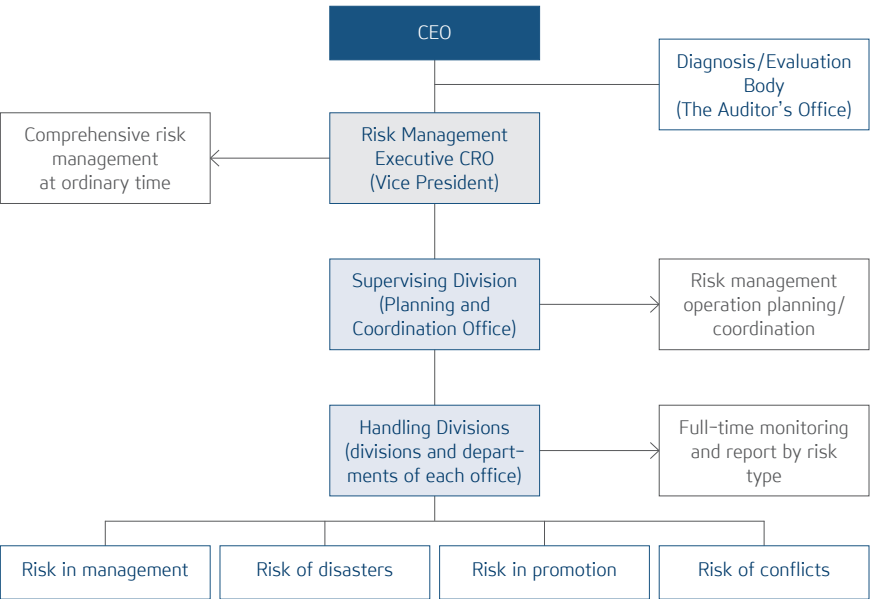


Risk Management

Risk Management System

To manage proactively the key risks that can exert significant impact on its mid to long-term strategies, LX established risk management manual in detail according to the risk management regulations, and thus managing risks by stage. LX has established detailed operation processing procedures for risk management at ordinary time and emergency risk response activities and is systematically managing various risk management activities in terms of basic elements of organization, documents, and resources.

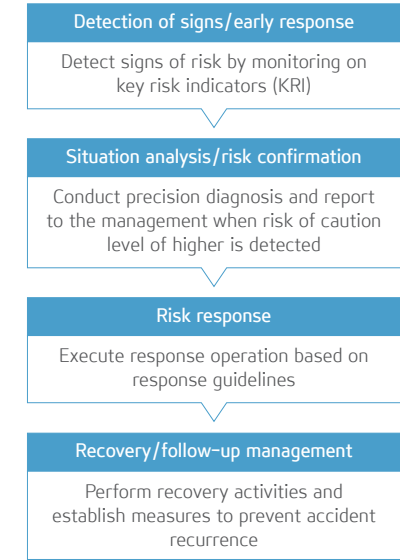
Risk Management Organization



Strengthening Employees' Risk Reaction Capacity

In order to improve the employees' risk management awareness and capacity, LX provides full-time education and examines its risk management activities. The head of division in charge of education establishes internal and external educational curricula for risk management, and thus provides education to employees to help them develop risk management and reaction capacity. LX also provides e-Learning in order to improve employees' risk management awareness. Following the education, employees' risk management competency level is assessed so as to improve the educational program based on the assessment result. In addition, LX holds simulation training to develop employees' risk reaction capacity. When the risk factors for simulation training are selected, a serious risk alert is issued, and then the status of response activity performance according to the risk management manual is monitored.

Critical Risk Response Process

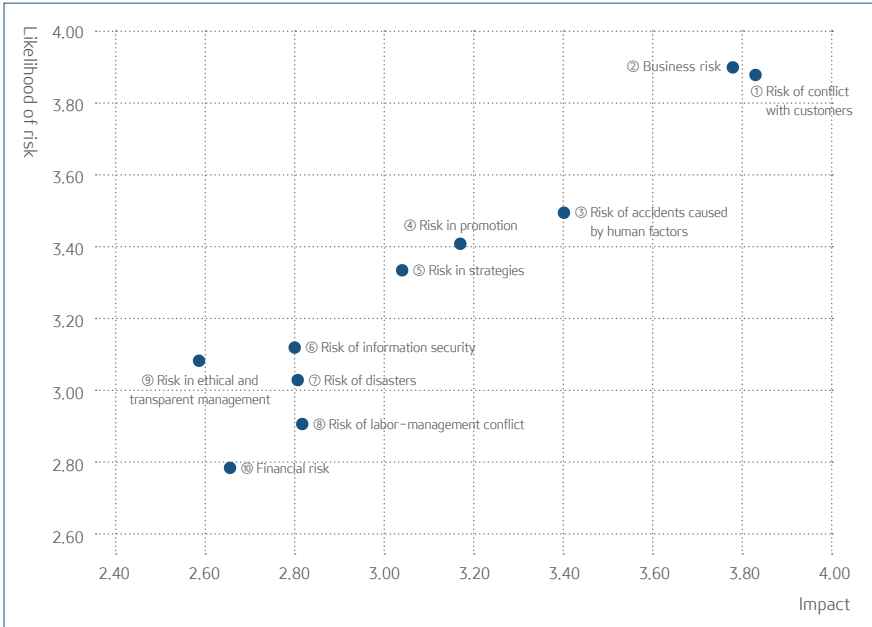


Proactive Management of Risk Factors

LX selected 24 risk factors based on their likelihood and impact and conducted a questionnaire survey targeting internal and external stakeholders. The departments in charge of each type of risk digitizes and manages the possible risks. LX makes prompt decisions on serious risks by reporting the status and response plans to the CRO and CEO.

Questionnaire Survey on Risk Elements

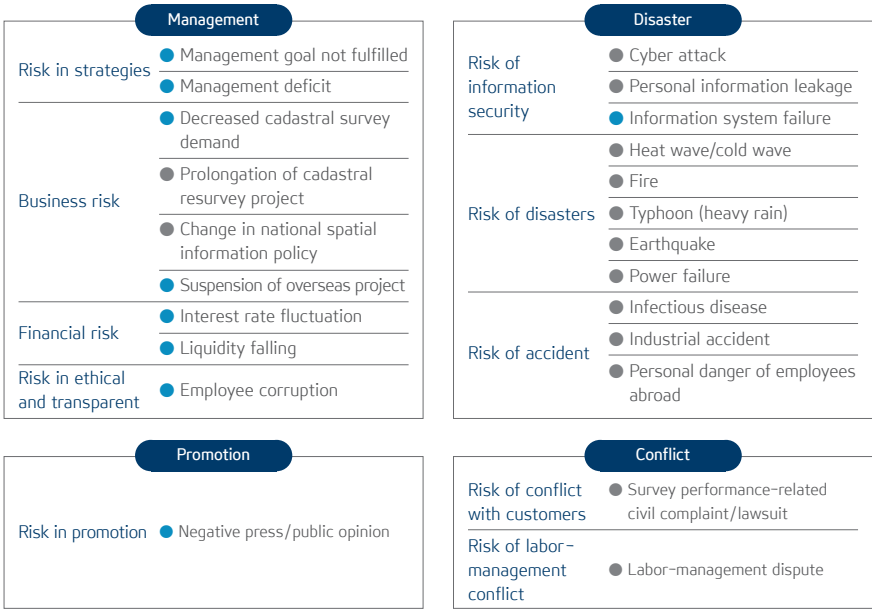
Matrix of Risk Elements



Order of Priority for LX Risk Factors

Risk Factors	
① Risk of conflict with customers	Survey performance-related civil complaint/lawsuit
② Business risk	Decrease in cadastral survey demand, increased demand for expanded opening of cadastral survey market, prolongation of cadastral resurvey business, change in national spatial information policy, suspension of overseas project
③ Risk of accidents caused by human factors	Infectious disease, industrial accident, personal danger of employees abroad
④ Risk in promotion	Negative press/public opinion
⑤ Risk in strategies	Drop in management goal fulfillment level, management deficit
⑥ Risk of information security	Cyber attack, personal information leakage, information system failure
⑦ Risk of disasters	Heat wave/cold wave, fire, typhoon/heavy rain, earthquake, power failure
⑧ Risk of labor-management conflict	Labor-management dispute
⑨ Risk in ethical and transparent management	Employee corruption
⑩ Financial risk	Interest rate fluctuation, liquidity falling

Status of Management on 24 Risk Factors



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Response to Key Risks

Reduced Civil Complaints about Cadastral Service

The increased land value has caused a variety of sensitive civil complaints about land performance. Accordingly, to remove errors in cadastral records, which are the fundamental cause of conflicts with customers, LX expanded the scope of its business to correct errors in cadastral records. LX preferentially targeted local governments with a large workload by introducing an independent system using both its internal human resources and those of the respective local government. At the same time, LX strives to minimize conflicts with customers by holding Creative Interviews, providing field consulting service, preventing complaints through collection of customers' opinions on mobile channels, and setting complaint handling process by follow-up management. LX will strictly control and handle civil complaints by more actively providing services that are required by the people, such as through improvement of its customer service capacity, establishment of electronic document distribution system, development and distribution of field consulting service app and the related devices, and expansion of mobile on-site services.

Risk Management Committee for Overseas Businesses

LX is holding the Risk Management Committee meetings for overseas businesses in order to examine risk factors that are associated with the promotion of businesses abroad and to systematically manage its human and physical resources. Based on the detailed advices for risk management according to the stages of project promotion in each country, LX will transparently share the handling results, secure the necessary personnel and export models to ensure stable overseas business promotion, and thus strengthen its overseas project management capacity.

Consultations and Performance Management of Risk Management Committee for Overseas Businesses

Recommendation	Actions Taken
Establish a systematic foundation for application of outputs of master plan project promoted abroad to the respective recipient country	Scheduled to reflect the discovered master plan projects to proposal
In case of the F/S project in Sri Lanka, it was prescribed as a system project according to NIPA* filtering, and thus participation by large enterprises is restricted	NIPA sends official letter, NIPA's decision criteria and systematic participation method are reviewed
Tracking management in relation to Risk Management Committee advancement, issues and required improvements	Scheduled to share Risk Management Committee consultation details
Suggest projects customized to recipient country in order to reduce risk in discovering follow-up projects	Scheduled to examine standard of recipient country and customized project promotion by country using LX's land informatization capacity diagnosis model
Secure human resources to implement the scheduled overseas projects	Review internal human resources management status and secure sufficient human resources
Secure checklist in relation to issues and potential risks associated with the government-ordered project in Turkmenistan	Scheduled to prepare plans to minimize risks and review potential risks in the next Risk Management Committee meeting

*NIPA: National IT Industry Promotion Agency

Management of Legal Communicable (Infectious) Diseases

LX is striving to preemptively block the proliferation of infectious diseases (hepatitis A) and communicable diseases (African swine fever, ASF). Upon outbreak of acute hepatitis A (legal communicable disease group 2) at each of the nation's regional offices , LX immediately takes quarantine measures, notifies the treatment guideline, and prevents the disease from spreading by disinfecting the offices. LX establishes a communicable disease response plan by fully supplementing the details and holds simulation training. In case of ASF, LX made use of drones to block the spread of the disease and also provided aerial images of inaccessible areas to each local government so as to identify the habitats of wild boars and areas particularly vulnerable in quarantine.

Risk Management Committee for Overseas Businesses



Scope of Infectious Disease Application

- A. Novel infectious disease that broke out abroad spreading in Korea through airports and ports
- B. Infectious disease of unknown cause/re-emerging infectious disease occurring and spreading in Korea for which Korea Disease Control and Prevention Agency (KDCA) decides the necessity of national risk management through risk assessment conference
- C. Infectious disease occurring frequently in Korea of which risk of development into pandemic, and thus causing social confusion has been decided by KDCA

Sustainability Performance

Economy

Summary Statement of Financial Position

Category		Unit	2018	2019	2020
Assets	Current Assets	KRW 1 million	233,818	167,458	176,650
	Non-current assets		457,318	558,641	627,660
	Total Assets		691,136	726,099	804,310
Liabilities	Current Liabilities		98,682	90,396	121,843
	Non-Current Liabilities		126,897	150,831	174,147
	Total Liabilities		225,579	241,227	295,990
Capital	Capital		10,000	10,000	10,000
	Retained Earnings		455,557	474,872	498,320
	Total Shareholder's Equity		465,557	484,872	508,320

* Includes the subsidiary company (LX Partners).

Summary Statement of Comprehensive Income

Category		Unit	2018	2019	2020
Operating Revenue		KRW 1 million	563,284	547,670	591,783
Business Expenses	Operational		406,843	420,862	439,386
	Administrative expenses		84,445	109,786	112,885
Operating Profit			71,996	17,022	39,512
Other Revenues			3,652	2,959	2,727
Other Expenses			13,944	1,924	2,334
Other Profit			1,583	1,173	1,430
Financial Profit			4,113	3,819	2,197
Financial Costs			0	-232	780
Net Income Before Income Tax			67,400	22,660	42,752
Income Tax Expenses			16,955	4,854	10,427
Net Income for the Year			50,445	17,806	32,325
Other Comprehensive Income			-22,450	1,509	-8,877
Total Comprehensive Income			27,995	19,315	23,448

Economy

Financial Status

Classification		Unit	2018	2019	2020
Stability	Current Ratio		236.94	185.25	144.98
	Debt Ratio		48.45	49.75	58.23
	Loans Payable		N/A	N/A	N/A
Profitability	Ratio of Operating Profit to Net Sales		12.78	3.11	6.68
	Ratio of Net Income to Net Sales		8.96	3.25	5.46
	Return on Assets		7.60	2.51	4.22
	Operating Cash Flow to Total Assets		8.81	5.58	7.71
Growth Potentials and Activity	Net Sales Growth Rate		2.59	-3	8.05
	Operating Profit Growth Rate		-5.14	-72.06	132.12
	Net Profit Growth Rate		-6.28	-64.7	81.53
	Total Assets Growth Rate		8.69	5.06	10.77
	Asset Turnover Ratio		0.85	0.77	0.77
Productivity	Total Asset Investment Ratio		77.54	67.39	67.59
	Property, Plant, and Equipment Investment Efficiency Ratio		147.04	132.44	120.45
	Unit Labor Cost Increase		0.58	2.34	1.19
	Value-Added Productivity Per Employee		-0.32	-6.55	6.2

R&D Investments

Classification		Unit	2018	2019	2020
R&D Expenses		KRW 1 million	12,426	13,412	18,926
Number of Researchers and Developers		Persons	29	31	34

Registration of Intellectual Property Rights

Category	Unit	2018	2019	2020
Patents (Utility Models)	Cases	26	34	35
Trademark Rights		57	57	63
Copyrights (program Registration)		399	400	404
Total		482	491	502

Environment

Energy Consumption and Energy Intensity

Category	Unit	2018	2019	2020
Diesel	TJ	49.29	40.807	38,252
Gas (LNG)		8.10	8.466	8,456
Gas (LPG)		2.43	0.012	2,016
White Kerosene		5.20	3,701	1,408
Gasoline		1.66	1,783	2,655
Electrical Power		118.11	117,868	127,098
Other		2.21	2,060	2,223
Total		187.00	174.697	182,108
Energy Consumption Intensity	TJ/KRW 100 million	0.03	0.03	0.03

Water Usage by Source

Category	Unit	2018	2019	2020
Tap Water	ton	85,944	83,913	85,025

* Tap Water: Company-wide (HQ, regional HQs and offices)

Greenhouse Gas Emission and Greenhouse Gas Intensity

Category	Unit	2018	2019	2020
Direct Greenhouse Gas Emissions	tCO2e	4,414	3,616	3,485
Indirect Greenhouse Gas Emissions		5,729	5,713	6,160
Total		10,143	9,329	9,645
Direct Greenhouse Gas Emission Intensity	tCO2e/	0.82	0.66	0.59
Indirect Greenhouse Gas Emission Intensity	KRW 100 million	1.04	1.04	1.04

* Total: Company-wide (HQ, regional HQs, branches)

* Direct Greenhouse Gas Emission Intensity: Based on sales

* Indirect Greenhouse Gas Emission Intensity: Based on sales

Waste Generation by Type

Category	Unit	2018	2019	2020
General Waste	ton	76	403	460
Specified Waste		-	-	-
Total		76	403	460

* Total: HQ and regional HQs

Society_Employees

Employees

Category		Unit	2018	2019	2020
Total Number of Employees			4,225	4,402	4,365
Employment Type	Executives	Persons	5	5	5
	Permanent Employees		3,856	4,067	3,965
	Unlimited Contract Workers		352	327	386
	Temporary Employees		12	8	9
Region	Headquarters		328	342	366
	Education Institute		31	33	32
	Research Institute		48	58	61
	Regional HQ		384	470	600
	Regional Offices		3,434	3,499	3,306
Gender	Female employees		509	587	591
	Female Managers		71	86	97
Minorities	Persons with Disabilities		113	108	119
	Veterans		235	249	245

* Female Employees: Permanent employees

* Female Managers: Level 4 or above of permanent employees

Ratio of Average Annual Salary to the Highest Annual Salary

Category	Unit	2018	2019	2020
Total Annual Salary of the Highest Salary Recipient (A)	KRW 1 million	109.4	110.9	112.9
Average Salary Based on Total Employees (B)		71.7	74.9	76.8
Ratio (A/B)	%	153	148	147

Ratio of Average Annual Salary Increase Rate to the Highest Annual Salary Increase Rate

Category	Unit	2018	2019	2020
Salary Increase Rate of the Highest Salary Recipient (A)	%	3.11	2.70	1.20
Average Salary Increase Rate (B)		2.58	1.80	2.70
Ratio (A/B)		121	150	44

Society_Employees

Retirement Pension System

Category	Unit	2018	2019	2020
Retirement Pension operation Amount(DB)		158,417	182,685	194,616
Retirement Pension operation Amount(DC)	KRW 1 million	44,233	30,570	20,510
Total Retirement Pension operation Amount		202,650	213,255	215,126
Number of Subscribers (DB)		4,237	4,225	4,362
Number of Subscribers (DC)	Persons	277	288	174
Total Number of Subscribers		4,514	4,513	4,536

Wage of New Employees Compared to Minimum Wage (Hourly)

Category	Unit	2018	2019	2020
Statutory minimum wage		7,530	8,350	8,720
Wage of New Employees (Male)	KRW	15,689	16,023	16,301
Wage of New Employees (Female)		15,689	16,023	16,301
Ratio (Male)	%	208.3	191.8	186.9
Ratio (Female)		208.3	191.8	186.9

Number of New Hires and Displaced Workers (Retirees)

Category			Unit	2018	2019	2020
Total Number of Employees (Permanent)				3,856	4,067	3,965
Number of New Hires (Permanent)	Gender	Male	Persons	282	263	145
		Female		79	57	34
	Age	Under 30		258	248	150
		From 30 to 50		103	72	29
		Over 50		0	1	0
	Local Employees	Non-metropolitan		220	212	115
		Transferred region		60	58	32
	Total				361	320
Ratio of Newly Employed Workers			%	9.4	7.9	4.5
Number of Displaced Workers (Retirees)			Persons	9	16	14
Ratio of Displaced Workers (Retirees)			%	0.2	0.4	0.32

Society_Employees

Use of Parental Leave

Category	Unit	2018	2019	2020
Parental Leave Users	Male	15	30	29
	Female	37	53	61
	Total	52	83	90
Return after Parental Leave	After parental leave	41	41	44
	Employed for 12 months or longer after return from parental leave	39	40	42

Status of Flexible Work Arrangements

Category	Unit	2018	2019	2020
Part-time Work		10	18	28
Flexible work arrangements	Staggered hours	2,505	3,821	3,919
	Selective working hours	2,087	2,730	2,550
Remote Work Arrangements	Smart work	16	6	0
	Work from home	0	6	1,099

Safety and Health Committee

Category	Unit	2018	2019	2020
Number of Participants	Persons	12	12	12

Ratio of Work-related Disasters

Category	Unit	2018	2019	2020
Injury Incidence Rate	%	0.25	0.24	0.2
Number of Fatalities	Persons	0	0	1

Rate of Employee Performance Evaluation

Classification	Unit	2018	2019	2020
Total Number of Employees		4,225	4,402	4,365
Number of Employees Subject to Evaluation	Persons	4,225	4,402	4,365
Ratio of Performance Evaluation	%	100	100	100

Society_Employees

Safety Guard Human Rights Education

Category		Unit	2018	2019	2020
Security Guard Human Rights Education	Total Number of Security Guards	Persons	5	6	6
	Number of Security Guards Who Received Human Rights Education		5	6	6
	Ratio of Security Guards Who Received Human Rights Education	%	100	100	100

Employee Human Rights Education

Category		Unit	2018	2019	2020
Employee Human Rights Education	Employee human rights education	Distance education through the Internet	4,010	4,038	4,107
		Group training	805	1,032	0*
	Education on Sexual Harassment (4 Types)	Distance education through the Internet	4,158	4,018	4,177
	Education on Workplace Bullying	Distance education through the Internet	0	0	3,500
		Group training	0	3,568	3,838

* Due to efforts to prevent the spread of COVID-19, non-face-to-face education was conducted.

Average Education Hours per Employee

Classification	Unit	2018	2019	2020
Total Number of Employees (Permanent)	Persons	3,856	4,067	3,965
Total Education Hours	Hour	519,278	639,067	504,684
Education Hours per Person		135	157	127

Ratio of Employee Diversity (by Category)

Category		Unit	2018	2019	2020
Gender	Male		86.8	84.8	84.3
	Female		13.2	15.2	15.7
Age	Under 30	%	15.1	18.9	18.1
	From 30 to 50		57.3	55.0	54.8
	Over 50		27.6	26.0	27.1

Ratio of Basic Salary and Remuneration of Female Workers to Those of Male Workers (by Type of Worker)

Category		Unit	2018	2019	2020
Executives	Ratio of basic salary of females to that of males		100	100	100
	Ratio of total remuneration of females to that of males		100	100	100
Employees	Ratio of basic salary of females to that of males	%	91	91	91
	Ratio of total remuneration of females to that of males		91	91	91

Society_Local Community

Amount of Expenditure to Local Suppliers

Classification		Unit	2018	2019	2020
Amount of Expenditure to Local Suppliers	Total purchase amount	KRW 1 million	49,012	54,231	54,616
	SMEs		44,797	50,010	51,139
	Technology development		2,822	2,204	2,627
	Businesses run by females		7,821	10,345	9,523
	Social enterprises		915	1,439	1,579
	Persons with severe disabilities		302	472	333
	Self-support village for disabled veterans		86	139	365


* Total purchase amount: Individual expenses overlapped








* LX partners: companies for joint cadastral resurveys, SMEs involved in spatial information, regional SMEs, social economic enterprises, companies supplying survey equipment and goods, consigned companies, etc.

Social Contribution Expenses



Category		Unit	2018	2019	2020
Disbursement method	Social contribution operating expenses, etc. (indirect cost)	KRW 1 million	-	-	-
	Donation, etc. (direct cost)		973	1,004	1,502
Disbursement type	Cash		907	937	1,434
	In-kind		66	67	68
Total			973	1,004	1,502

GRI Standards Content Index




Universal Standards					
GRI 102: General Disclosures					
Topic	Disclosure	Page	Verification	ISO 26000	UN SDGs
Organizational Profile	102-1 Name of the organization	4			
	102-2 Activities, brands, products, and services	4-9			
	102-3 Location of headquarters	4			
	102-4 Location of operations	5			
	102-5 Ownership and legal form	4		6.3.10/	
	102-6 Markets served	6-9		6.4.1- 6.4.2/	
	102-7 Scale of the organization	4		6.4.3/	
	102-8 Information on employees and other workers	75		6.4.4/	
	102-9 Supply chain	79		6.4.5/ 6.8.5/7.8	
	102-10 Significant changes to the organization and its supply chain	-			
	102-11 Precautionary Principle or approach	68-69			
	102-12 External initiatives	86			
	102-13 Membership of associations	87			
Strategy	102-14 Statement from senior decision-maker	2-3		4.7/6.2/ 7.4.2	
	102-15 Key impacts, risks, and opportunities	68-70			
Ethics and Integrity	102-16 Values, principles, standards, and norms of behavior	61-62		4.4/ 6.6.3	
	102-17 Mechanisms for advice and concerns about ethics	61-62			
Governance	102-18 Governance structure	66		6.2/ 7.4.3/ 7.7.5	
	102-22 Composition of the highest governance body and its committees	66-67			
	102-23 Chair of the highest governance body	66			
	102-33 Communicating critical concerns	67			
	102-34 Nature and total number of critical concerns	67			
Stakeholder Engagement	102-40 List of stakeholder groups	14, 35			
	102-41 Collective bargaining agreements	76			
	102-42 Identifying and selecting stakeholders	14		5.3	
	102-43 Approach to stakeholder engagement	14, 35			
	102-44 Key topics and concerns raised	12-13, 15, 35			
Reporting Practice	102-45 Entities included in the consolidated financial statements	72			
	102-46 Defining report content and topic Boundaries	15		5.2/7.3.2/ 7.3.3/ 7.3.4	
	102-47 List of material topics	15			
	102-48 Restatements of information	-			
	102-49 Changes in reporting	15			
	102-50 Reporting period	About this Report			
	102-51 Date of most recent report	About this Report			
	102-52 Reporting cycle	About this Report			
	102-53 Contact point for questions regarding the report	About this Report		7.5.3/7.6.2	
	102-54 Claims of reporting in accordance with the GRI Standards	About this Report			
	102-55 GRI content index	80-83			
	102-56 External assurance	84-85			

Topic-specific Standards					
Topic	Disclosure	Page	Verification	ISO 26000	UN SDGs
Topic 1: Creating safe work environment					
Management Approach	103-1 Explanation of the material topic and its Boundary	44			
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				
Occupational Health and Safety	403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	49, 77		6.4.6/6.8.8	
Topic 2: Strengthening shared growth and cooperation with local communities					
Management Approach	103-1 Explanation of the material topic and its Boundary	38			
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				
Local Communities	413-1 Operations with local community engagement, impact assessment, and development programs	79			 
Topic 3: Embedding culture to respect human rights					
Management Approach	103-1 Explanation of the material topic and its Boundary	52			 
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				
Human Rights Assessment	412-2 Employee training on human rights policies or procedures	58-59			
Topic 4: Improving employees' quality of life					
Management Approach	103-1 Explanation of the material topic and its Boundary	52			
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				
Employment	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	76-77			
Diversity and Equal Opportunity	405-1 Diversity of governance bodies and employees	66, 75, 78			
Topic 5: Implementing accurate cadastral survey service					
Management Approach	103-1 Explanation of the material topic and its Boundary	24			
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				
Economic Performance	201-1 Direct economic value generated and distributed	72-73, 75-76, 79		6.8.1-6.8.2/ 6.8.3/6.8.7/ 6.8.9	
Topic 6: Strengthening R&D of future innovative technologies					
Management Approach	103-1 Explanation of the material topic and its Boundary	28-29			
	103-2 The management approach and its components				
	103-3 Evaluation of the management approach				

Topic-specific Standards

Topic	Disclosure		Page	Verification	ISO 26000	UN SDGs
Topic 7: Establishing compliance and ethical management system						
Management Approach	103-1	Explanation of the material topic and its Boundary	60			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
Anti-corruption	205-2	Communication and training about anti-corruption policies and procedures	61-62		6.6.1–6.6.2/ 6.6.3	
Topic 8: Creating sustainable jobs						
Management Approach	103-1	Explanation of the material topic and its Boundary	20–21			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
Employment	401-1	New employee hires	11			
Topic 9: Implementing reliable labor – management culture						
Management Approach	103-1	Explanation of the material topic and its Boundary	56			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
Topic 10: Reinforcing privacy and information security management						
Management Approach	103-1	Explanation of the material topic and its Boundary	49			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	49			
Topic 11: Strengthening disaster safety management						
Management Approach	103-1	Explanation of the material topic and its Boundary	44–45			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
Topic 12: Operating fair employment and rational remuneration system						
Management Approach	103-1	Explanation of the material topic and its Boundary	52–53			
	103-2	The management approach and its components				
	103-3	Evaluation of the management approach				
–	–	Zero employment corruption/error case	53			

Topic-specific Standards

Topic	Disclosure	Page	Verification	ISO 26000	UN SDGs	
Topic 13: Supporting employees' competency development						
Management Approach	103-1 Explanation of the material topic and its Boundary	52, 54				
	103-2 The management approach and its components					
	103-3 Evaluation of the management approach					
Training and Education	404-1 Average hours of training per year per employee	78		6.4.7		
	404-2 Programs for upgrading employee skills and transition assistance programs	54		6.4.7/6.8.5		
	404-3 Percentage of employees receiving regular performance and career development reviews					
Topic 14: Supporting efficient national spatial information system establishment						
Management Approach	103-1 Explanation of the material topic and its Boundary	24				
	103-2 The management approach and its components					
	103-3 Evaluation of the management approach					
Economic Performance	201-1 Direct economic value generated and distributed	72-73		6.8.1-6.8.2/ 6.8.3/6.8.7/ 6.8.9		
Eco-friendly Value Generation						
Energy	302-1 Energy consumption within the organization	74		6.5.4		
	302-3 Energy intensity					
Emissions	305-1 Direct (Scope 1) GHG emissions	74		6.5.5		
	305-2 Energy indirect (Scope 2) GHG emissions					
	305-5 Reduction of GHG emissions	51, 74				

* Imposition of fines or punitive measures for violating laws and regulations related to the environment resulted “zero.”

Third-party Assurance Statement

To: The Stakeholders of LX

Introduction

BSI Group Korea (hereinafter "the Assurer") was asked to verify the 2020 LX Sustainability Report (hereinafter "the Report"). This assurance statement applies only to the relevant information contained in the scope of the assurance. LX is solely responsible for all information and assertion contained in the report. The responsibility of the assurer is to provide independent assurance statement with expert opinions to LX executives by applying the verification methodology and to provide this information to all stakeholders of LX.

Assurance Standard

AA1000AS v3 standard was applied to this verification, and in relation to the verification level, [Establishing compliance and ethical management system / Creating sustainable jobs / Strengthening disaster safety management / Improving employees' quality of life] the Moderate Level of the Type 1 verification type, which confirms the conformity of the AA1000AP principle was applied. [Implementing accurate cadastral survey service/ Supporting efficient national spatial information system establishment / Embedding culture to respect human rights / Strengthening R&D of future innovative technologies / Implementing reliable labor – management culture / Reinforcing privacy and information security management / Creating safe work environment / Strengthening shared growth and cooperation with local communities / Operating fair employment and rational remuneration system / Supporting employees' competency development / Eco-friendly Value Generation] the verification was performed in accordance with the Moderate Level of the Type 2. In addition, it was confirmed that the topics complied with the Core Option of the GRI standards standard.

Scope of work

The scope of assurance applied to this report is as follows:

- ⦿ The data from 1st January 2020 to 31st December 2020 in the report
- ⦿ Major assertion included in sustainability management policies and objectives, business, performance and contents included in economic and social performance, and materiality evaluation results included in material issues;
- ⦿ The following items were not included in the verification:
 - Financial performance
 - Additional information included in other websites, not reports.

Methodology

As part of its independent assurance, the assurer has used the methodology developed to collect relevant evidence to comply with the verification criteria and to reduce errors in the reporting, and has performed the following activities:

- ⦿ To determine verification priorities, review of materiality issue analysis process and verification of the results;
- ⦿ System review for sustainability strategy process and implementation;
- ⦿ Review the evidence to support the material issues through interviews with senior managers with responsibility for them;
- ⦿ Verification of data generation, collection and reporting for each performance index

Our findings

As a result of verification, the assurer could not find any matters that would judge that the information and data contained in the report of the LX were inappropriately described in terms of materiality. The report is judged to have been prepared in accordance with the core option of the GRI Standards, and additional opinions on the principles proposed by AA1000AP (2018) are as follows.

Alignment with the principles of AA1000AS (2018)

<u>Inclusivity</u> Stakeholder participation	The LX has a stakeholder engagement process in which key stakeholders such as employees, partner organizations, local communities, corporate customers, and government agencies participate, and has undertaken a stakeholder engagement program. Also, the report has communication channels for each stakeholder group and collecting various opinions.
<u>Materiality</u> Identification and reporting of material issues	The report addresses economic, environmental, and social issues identified by LX as high material. LX identified impact issues and trend issues through evaluations consistent with the GRI materiality evaluation process and identified business impacts and stakeholder interests through stakeholder surveys to identify material issues and selected reporting criteria for prioritization.
<u>Responsiveness</u> Response to stakeholder in material issues	LX has been responding to those issues it has identified as material and demonstrates this in its policies, objectives, indicators, and performance targets. The reported information can be used by the organisation and its stakeholders as a reasonable basis for their opinions and decision-making.
<u>Impact</u> Stakeholder impact on material issues	LX identifies, measures, and expresses the impact on stakeholders related to important topics in an effective way. LX is establishing a process for monitoring, measuring, evaluating, and managing the impact of organizational activities for more effective decision making and management within the organization.

Key areas for ongoing development

To the extent that the results of the verification are not affected, the following comments were made.

- ⦿ It is recommended to establish a system to collect and manage performance data for each area of economy, society, and environment on a regular basis to manage performance against targets on a regular basis, and to integrate it with the internal audit process for data reliability management.
- ⦿ In order to identify material issues, it is necessary to include a wider range of sustainability themes in the pool, and when selecting material topics, it is necessary to increase the proportion of external stakeholders so that issues with high social interest can be selected.

Statement of independence and competence

The assurer is an independent professional services company that specializes in Quality, Health, Safety, Social and Environmental management with almost 120 years history in providing independent assurance services. No member of the assurance team has a business relationship with LG International Corp. We have conducted this verification independently, and there has been no conflict of interest. The assurer has a long experience in the fields of environment, society, business ethics, health and safety management systems, and is made up of excellent team members who understand the BSI Group's assurance standard methodology.

Review of application level of GRI Standards

The assurer confirmed that this report was prepared in accordance with the GRI Standards Core Option and the disclosures related to the following Topic-specific Standards Indicators based on the data provided by LX.

[Universal Standards]	[Topic-specific Standards]
102-1~13(Organizational profile), 102-14~15(Strategy), 102-16~17(Ethic and integrity), 102-18/22/23/33/34 (Governance), 102-40~44(Stakeholder engagement), 102-45~56(Reporting practice), 103(Management approach)	· Economic: 201-1, 205-2 · Environmental: 302-1, 302-3, 305-1/2/3 · Social: 401-1/2, 403-2, 404-1/2/3, 405-1, 412-2, 413-1, 418-1

Apr 09 2021
Managing Director BSI NE ASIA, Peter Pu 



UN Global Compact Advanced Level

COMMUNICATION
ON PROGRESS



UN GLOBAL COMPACT

This is our **Communication on Progress** in implementing the Ten Principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

Topic	Principle	Page	GRI Disclosure
1 Strategy, governance, and engagement	The COP describes mainstreaming into corporate functions and business units.	4-5, 8-9	GRI 102-2
	The COP describes value chain implementation.		GRI 102-2
3	The COP describes robust commitments, strategies or policies in the area of human rights.	52-59	GRI 103-1
4 Human Rights	The COP describes effective management systems to integrate the human rights principles.		GRI 103-2
5	The COP describes effective monitoring and evaluation mechanisms of human rights integration.		GRI 103-3
6	The COP describes robust commitments, strategies or policies in the area of labor.	50-51	GRI 103-1
7 Labor	The COP describes effective management systems to integrate the labor principles.		GRI 103-2
8	The COP describes effective monitoring and evaluation mechanisms of labor principles integration.		GRI 103-3
9	The COP describes robust commitments, strategies or policies in the area of environmental stewardship.	60-63	GRI 103-1
10 Environment	The COP describes effective management systems to integrate the environmental principles.		GRI 103-2
11	The COP describes effective monitoring and evaluation mechanisms for environmental stewardship.		GRI 103-3
12	The COP describes robust commitments, strategies or policies in the area of anti-corruption.	6	GRI 103-1
13 Anti-corruption	The COP describes effective management systems to integrate the anti-corruption principle.		GRI 103-2
14	The COP describes effective management systems to integrate the anti-corruption.		GRI 103-3
15	The COP describes core business contributions to UN goals and issues.	41-43	GRI 102-12~13
16 UN SDGs and issues	The COP describes strategic social investments and philanthropy.		GRI 413-1
17	The COP describes advocacy and public policy engagement.		GRI 203-1~2
18	The COP describes partnerships and collective action.	88	GRI 102-13
19	The COP describes CEO commitment and leadership.	2-3	GRI 102-14
20 Governance	The COP describes Board adoption and oversight.	66-67	GRI 102-18
21	The COP describes stakeholder engagement.	12-15	GRI 102-40, 42, 43, 44

* UN Global Compact (UNGC) Advanced Level: These are the social responsibility fulfillment disclosure criteria of the UNGC, a voluntary initiative to encourage corporate social responsibilities. The UNGC comprises of 21 criteria in seven categories, which are: strategy and operation, human rights, labor, environment, anti-corruption, UN SDGs and issues, and sustainable governance and leadership.

Awards

No.	Award	Awarded by
1	Web Accessibility Quality Certification	WebWatch Co., Ltd.
2	Data Quality and Management Certification	Korea Data Agency
3	Selected as Best Organization in 2019 National Human Resources Development Consortium Project Performance Evaluation	Minister of Employment and Labor
4	National Communication Brand, the National Trusted Brand Award (Public Administration Category)	Dong-a Ilbo
5	2020 Address-based Industry Creation Idea Contest (Grand Prize)	Minister of the Interior and Safety
6	11th Best of CHAMP Day Best Responsible Operator Category (Grand Prize)	Minister of Employment and Labor
7	Certificate for KOSHA-MS (Occupational Safety and Health Management System)	ICR
8	App of the Year, Web Award Korea 2020	Digital Chosun Ilbo
9	2nd Drone Mission Competition Natural Environment Management Category (Excellence Prize)	Korea Transportation Safety Authority
10	2020 Korea Communication Awards	Korea Business Communications Association
11	2020 Win-win Growth Awards	Korea Commission for Corporate Partnership
12	2020 Korea SMEs Innovation Awards Commission for Corporate Partnership President Prize	Korea Commission for Corporate Partnership
13	Anti-Bribery Management Systems Certification (ISO 37001)	Korea Productivity Center Quality Assurance
14	Certification of Best organization in Donation for Education	Minister of Education
15	Appreciation Plaque for Contribution to Job Creation for Senior Citizens	Korea Labor Force Development Institute for the Aged
16	2020 Public institution Win-win Growth Evaluation (Best institution)	Ministry of SMEs and Startups

Associations and Groups

Korea Quality Management Association	Korean Association for Public Administration	International Federation of Surveyors	UN Global Compact
Korea Disaster Prevention Association	Smart City Association	Intelligent Transport Society of Korea	UN-Global Geospatial Information Management Association (UN-GGIM)
Korea Audit Association	Korean Association for Public Organization Auditing	Telecommunications Technology Association	Open Geospatial Consortium



2020 LX Sustainability Report

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