INITIATIVES FOR RESOLVING SOCIAL ISSUES

The following is an introduction to the initiatives for the seven social issues up through fiscal year 2022 and the results of initiatives conducted from fiscal year 2020. OKI is using the strengths of "customer base," "installed base," and "technological capabilities" which it has cultivated up until now to achieve tangible ("mono") and intangible ("koto") results that resolve the social issues set forth in its materiality details, making progress to realize social implementation by co-creation with many partners.

OKI Group Initiatives in Response to Seven Social Issues Set Forth Under Materiality

Social Issues	Initiatives up Through FY2022	Results of FY2020 and Initiatives for FY2021	SDGs
Aging Infrastructure ▶ For details, see the next page.	● In response to social infrastructure for which there are safety concerns due to aging, we will provide new solutions that utilize sensor technologies and AI to contribute to the maintenance of infrastructure.	● Realized an infrastructure monitoring system utilizing zero-energy IoT technology that does not require power sources or lines ● Registered with NETIS* optical fiber sensor system that can measure wide distortions and temperature in real-time	
Natural Disasters ▶ For details, see the next page.	● We will aim to prevent and reduce disasters by realizing comprehensive disaster prevention solutions geared toward self-help, mutual assistance, and public assistance. ● By providing and sharing real-time information through water level and video monitoring, we will contribute to the achievement of "sustainable cities that are resilient to disasters."	● Supported public assistance management centered around disaster prevention information system "DPS Core®" ● Realized disaster prevention and reduction solutions utilizing sensing devices ● Secured daily life infrastructure during disasters by providing compact ATMs loaded on vehicles	
Transportation Issues	● By achieving the evolution of ITS systems—for which we have a proven track record—and a V2X network, we will aim to reduce traffic accidents, mitigate traffic congestion, and achieve similar goals through infrastructure-cooperative ITS services. ● By using OKI's transportation platform "LocoMobi®2.0" as a core, we will achieve new services utilizing ETC2.0 and resolve social issues related to transportation. ● In fields combining 5G and automated driving, we will participate in experimental trials related to automated driving support from the infrastructure side.	● Supported pleasant automobile driving environments and new business creation utilizing road infrastructure through solutions that utilize DSRC, 5G networks, ETC2.0, and various edge sensors ● Participated in experimental trials for automated driving merging support services through cooperative intelligent transport systems, in joint research with the National Institute for Land and Infrastructure Management, Ministry of Land, Infrastructure, Transport and Tourism ● Received request from the Ministry of Internal Affairs and Communications for technological study related to 5.9GHz band V2X communications systems for automated driving	
Environmental Issues	● To achieve decarbonization, we will promote our own environmental-impact reduction by contributing to a circular economy as well as solutions through zero-energy gateways and the like. We will also aim to increase business efficiency via telework utilizing area sound enhancement and similar technologies, and labor saving via AI robots.	● Promoted reduction of environmental impact through zero-energy IoT technology that grasps and analyzes the status of infrastructure and environment across a wide range while saving power and not requiring lines ● Realized edge power-saving inference through compact AI technology and contributed to power cost reduction for servers ● Currently conducting experimental trials on highly efficient wide-range sensing of infrastructure through optical fiber sensors and multi-point laser vibrometers	
Labor Shortages ▶ For details, see the next page.	● In response to sites struggling with labor shortages including security/facility management, medical care, nursing, construction sites, and the distribution field, we will provide products and solutions that utilize our sensing technologies, AI, mechatronic technologies, and 24-hour online maintenance results to ensure the safety and security of work environments while improving work efficiency.	● Tested value proposition through advanced remote operation of robots and IoT sensors while focusing on security/facility management fields, where labor issues are significant ● Efficiently automatized in-person services at stores through emotion detection AI technology; began testing smart recommendation solutions for AI to propose options with a high level of interest	
Labor Productivity	● Utilizing know-how from our factories, we will support the digital transformation of the manufacturing industry and the creation of smart factories. ● We will carry out "Manufacturing DX" in industries other than manufacturing (construction, etc.), support the digital transformation of customers, and contribute to the increase in labor productivity.	● Promoted "Manufacturing DX" based on established DX solutions and know-how from own factories; supported realization of smart factories through co-creation with customers	
Infectious Diseases	● We will achieve on-site non-contact/non-face-to-face solutions for financial institutions and the distribution field by utilizing non-contact terminals, automatic ETC (electronic toll collection) payment, and remotely operated robots.	● Promoted "Enterprise DX" solutions, namely, remote helpdesk (customer service AI, self-payment, remote guidance services); mitigated crowding and avoided the "3Cs" through crowding/human traffic analysis ● Provided coin and bank note change machines for indirect/distanced services for the medical (pharmacy) market	

*NETIS: New Technology Information System

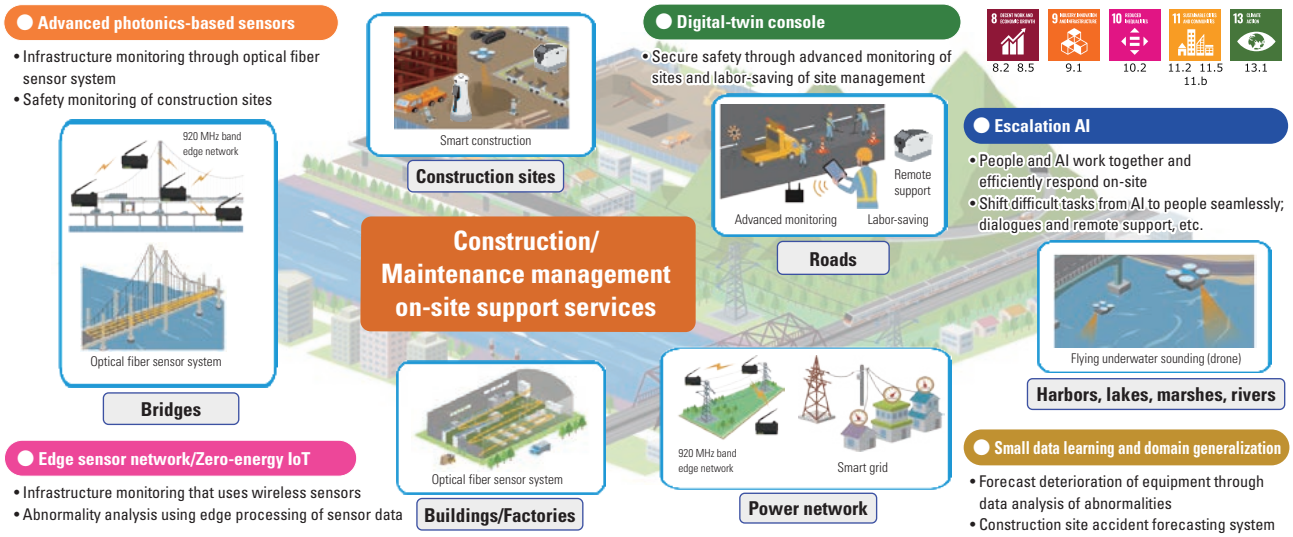
Initiative Case Examples for Resolving Social Issues

The impact of changes in the social environment due to the spread of COVID-19 has been large enough to lead to changes not only in lifestyles but also in the form of business in many industries and necessitate business policy reviews. In Medium-Term Business Plan 2022, OKI has declared the intention to resolve social issues—primarily via AI Edge solutions that promptly and suitably resolve on-site issues—and achieve its goal of "Delivering OK! to your life." Below, of the seven social issues set forth previously, initiative case examples pertaining to three issues (aging infrastructure, natural disasters, and labor shortages) are introduced.

●Addressing Aging Infrastructure

Repairing and reforming social infrastructure (tunnels, roads, sewage systems) created during the period of high economic growth has become an urgent issue in Japan. There is an urgent need for solutions that can reduce the maintenance and management costs of these systems. For example, of the 720,000 bridges in Japan, over half were constructed at least 50 years ago. In addition, the shortage of civil engineers involved in bridge maintenance work has also become a major social issue.

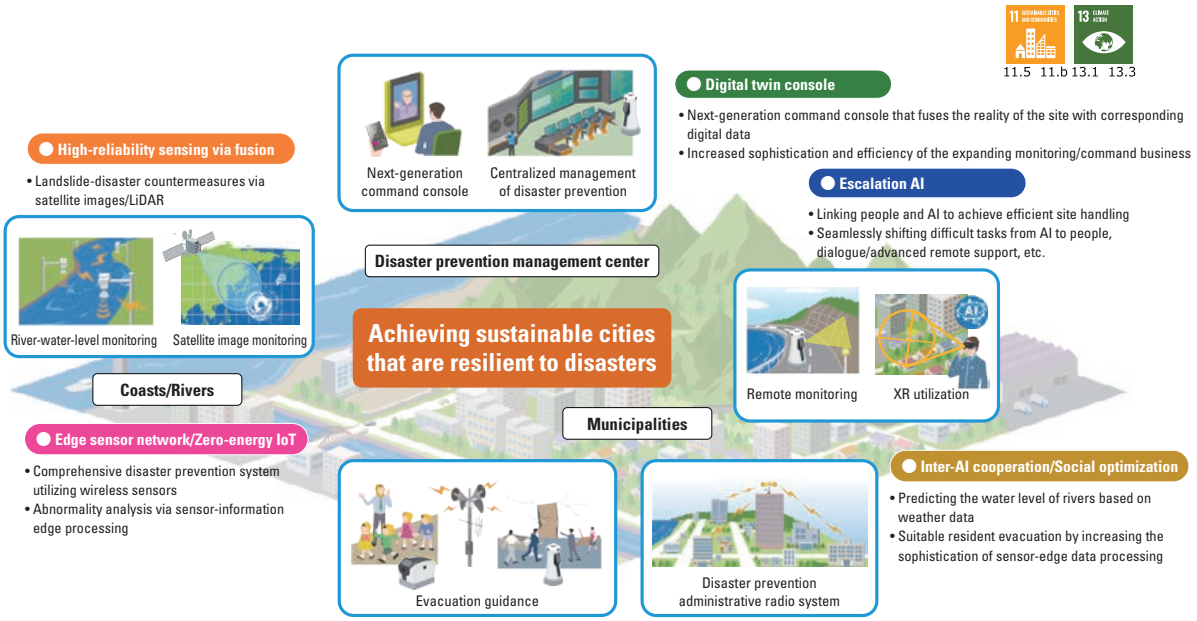
In order to reduce maintenance and management costs and solve these social issues, OKI is using optical fiber sensor technology that can perform high speed wide distortion and temperature measurements as well as power-reducing IoT technology that does not require laying down communications/power lines, through a combination of natural energy power supply and close distance wireless technology. OKI is providing the most appropriate solutions by processing data that meets objectives, such as status diagnosis and deterioration forecasting. In the experimental trials so far, OKI measured the unique vibrations and degree of distortion of bridges using high-speed wireless sensors installed on the backside of bridge decks and is conducting remote monitoring for bridge strength decline over the long-term. OKI is also engaged in experimental trials to monitor whether the components of bridges are operating properly, using wireless distortion gauges that monitor the shift in the base supports and wireless salt-air damage sensors that measure the status of corrosion in steel components of bridges.



●Handling Natural Disasters

Ever since fiscal year 2018—in response to frequent typhoons considered as serious disasters and landslide and other damages from torrential rain, etc.—municipalities throughout the country have been obtaining information from national and prefectural disaster-prevention-information systems to make decisions and provide instructions on how to respond. To provide evacuation instructions to local residents, it is most important to give instructions promptly and accurately and it is essential to provide real-time, precise information from the site and promptly share them.

To cope with this issue, OKI is supporting fire fighting and disaster prevention activities that support the safety and security of citizens through solutions that utilize AI Edge sensors, wireless solutions, and the development of management functions. In the future, we will provide systems that collect sensing information combining river-water-level and video monitoring and utilize AI Edge computers set up on-site to promptly notify sites and municipalities of the results of primary treatment/analysis. In addition, by linking this data with weather and other data, we will ensure the security and safety of local residents and visitors, thereby contributing to achieving disaster-resilient cities.



●Handling Labor Shortages

Due to Japan's declining birthrate as well as the aging and decreasing population at the same time, serious labor shortages have become chronic in multiple industrial fields starting around 2014. Under these circumstances, coupled with societal needs during and after the COVID-19 pandemic, there is an increasing demand for "unmanned operation/non-contact/non-face-to-face" solutions, and there are growing expectations for service robots that can take over on-site work and for managing the operation of such robots. Most service robots perform tasks on-site automatically using AI; however, it is difficult to wholly continue services without people. If the robot malfunctions or the AI cannot respond, the robot will halt and the operating rate of the robot system will decline.

OKI is utilizing the video processing, AI Edge network technologies, and robotics technologies the Company has cultivated as well as results in the field of 24-hour online/remote maintenance to promote the realization of advanced remotely operated systems. By achieving 1: N handling enabling one person to monitor multiple robots through advanced remote operations, we are simultaneously resolving labor shortages and achieving unmanned/non-contact/non-face-to-face on-site operations. In particular, this technology is expected to be useful in security/facility management and logistics fields that respond intermittently across multiple areas with a large number of people. OKI is focusing on on-site issues facing each field, looking closely at the safety/security of work environments and the cost-effectiveness of work efficiency, and continuing to conduct experimental trials with co-creation partners. Looking toward forming a business around advanced remote operations in fiscal year 2022, OKI is accelerating new technology development as well as site testing and evaluation in order to realize and deploy value propositions that match customer issues.