

ID&E Group's Smart City-Related Services

Smart Enfrastructure for Unlimited Future



In July 2023, **the Nippon Koei Group** adopted a holding company structure with the creation of 'ID&E Holdings, Inc'.

**With you, we will build and nurture more than just cities,
to preserve our beautiful planet for future generations.
For you, we will provide optimized solutions with the planet's
limited resources.**

Business Areas

Consulting Business

- ▶ River, water resources, and hydropower development
- ▶ Dams and power generation
- ▶ Water, sewerage, and urban drainage
- ▶ Agriculture and rural development
- ▶ Disaster prevention and mitigation
- ▶ Defense
- ▶ Urban planning and development
- ▶ Traffic planning
- ▶ Ports and airports
- ▶ Roads, bridges, and tunnels
- ▶ Railways
- ▶ Infrastructure/asset management
- ▶ Public-private partnerships
- ▶ Environment
- ▶ Geology and soil
- ▶ Information
- ▶ Disaster management
- ▶ Satellite information services

Urban & Spatial Development Business

- ▶ Urban renewal
- ▶ Urban development
- ▶ Spatial design
- ▶ Architecture
- ▶ Overseas development
- ▶ Roads and bridges
- ▶ Watershed water works
- ▶ Water and sewerage
- ▶ Global environment
- ▶ Geospatial Information
- ▶ Infrastructure information
- ▶ Site compensation

Energy Business

- ▶ Battery ancillary services
- ▶ Domestic hydro development, O&M
- ▶ Aggregation business
- ▶ Energy-saving services
- ▶ Civil engineering systems, disaster prevention
- ▶ Substation system
- ▶ Substation equipment
- ▶ Energy management
- ▶ Hydroelectric power station
- ▶ Electrical equipment installation work
- ▶ Electric power civil engineering
- ▶ Domestic electromechanical consulting
- ▶ Overseas electromechanical consulting
- ▶ Engineering

Environment

Ecology

Education

Energy

Economy

Equality

Smart **En**frastructure for Unlimited Future

Earth

Evolution

Entertainment

Enfrastructure

Enhance the Infrastructure represented by 'Enfrastructure' to Better Serve Your Community; 'En' in 'Enfrastructure' derives from the Japanese word for human connection. ID&E Group's smart city vision integrates infrastructure expertise into solutions for societal challenges.

Smart City-Related Services

Urban & Area Management

- ▶ Support with Developing Smart City Strategies
- ▶ Support of Transforming to Eco-Industrial Park

Area & Real Estate Development

- ▶ Coordinator for Smart Town Development

Tourism

- ▶ Tourism Town Development with Digital Technologies

Investment

- ▶ New Business Development & Incubation in ASEAN

Infrastructure Development

- ▶ Smart City Infrastructure Development Support

Environment / Decarbonization

- ▶ Safeguarding Nature with Nature based Solutions (NbS)
- ▶ Support for Application to Joint Crediting Mechanism (JCM) / Carbon Credit Issuance
- ▶ Decarbonization Support to Regional Government / Private Company

Agriculture

- ▶ Distribution System for Safe Vegetables "Nong San 4.0"

Energy

- ▶ Mini-Hydropower Generation Using Unexploited Heads
- ▶ Grid Storage Battery Business
- ▶ Micro Grid Business

Disaster Prevention & Reduction

- ▶ Disaster Prevention Platform (Bosuke)
- ▶ Satellite Disaster Management Information Service

Data Platform

- ▶ SMART VISION360 (Urban Development 3D Data Platform)
- ▶ Integrated Data Platform Building and Operations Support
- ▶ Prediction Database of Climate Trends and Weather Extremes

Infrastructure Maintenance & Management

- ▶ Bridge Inspection and Diagnosis by AI and RPA
- ▶ Infrastructure Maintenance & Management System (Manesus)

Public Private Partnership

- ▶ PPP/PFI Commercialization Support Consulting

Mobility

- ▶ Support with Implementing Self-driving Vehicles into Society
- ▶ Data Optimization for MaaS Achievement

Human Rights

- ▶ Advisory Services for 'Human Rights and Environmental Impact Management'

Sustainability

- ▶ Diagnostic and Visualization Tools for City SDGs (TSUMUGI@)
- ▶ SDGs Assessment System for SMEs (KIBOH2030)

ID&E Group's Smart Solutions

Note: "Enfrastructure", "Manesus", "KIBOH2030", "Bosuke", "TSUMUGI@", and " " are trademarks of Nippon Koei Co., Ltd.
※PPP: Public Private Partnership ※PFI: Private Finance Initiative

Support with Developing Smart City Strategies

Challenge

- ▶ Urban challenges vary across different regions
- ▶ Difficult to achieve overall optimization by solely focusing on individual advanced technologies

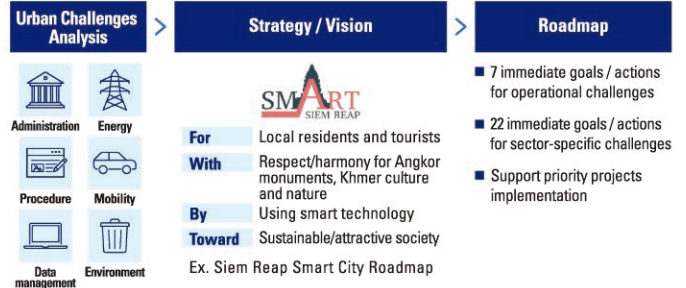
Solution

Support in developing and implementing cross-sectoral smart city (SC) strategies by analyzing urban challenges

Situation Assessment	1 Priority/related plans
	2 Legal framework (laws, regulations and procedures)
	3 Related organizations
	4 Situation and challenges in the target sector
	5 Situation of SC related initiatives
Vision/Strategy Proposal	6 Vision and strategy proposal
Plan Proposal	7 Roadmap
	8 Priority projects
	9 Actions for implementation (including pilot projects)
Project Launch Support	10 Pilot project implementation (demonstration projects)

Impact

- ▶ Arrange optimal solutions based on identifying urban challenges
- ▶ Assist stakeholders reach agreements collaboratively
- ▶ Set up SC promotion operation and ensure policy implementation



Track Record

- Project for Implementation for Smart City Approach to solve Urban Issues in Siem Reap, Cambodia (JICA)
- SC Master Plan in Yangon, Myanmar (MLIT)
- Assistance for SC development abroad in Yokohama

*MLIT: Ministry of Land, Infrastructure, Transport and Tourism

Support of Transforming to Eco-Industrial Park

Challenge

- ▶ Demand for promoting eco-friendly industrial park (IP) standards in emerging/developing countries, in line with new global regulations
- ▶ Demand from stakeholders for decarbonization, increased resource efficiency, and biodiversity conservation in enterprises

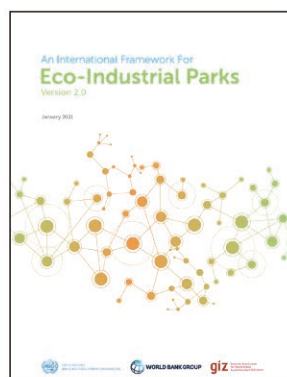
Solution

- ▶ **Support the eco-transformation of parks and enterprises to meet global standards in target countries**

Package Solution

- Eco-enterprise diagnosis
- Resource efficiency
- Reducing environmental load
- Energy conservation
- Nature positive
- Decarbonization
- Social environment

- ▶ **Optimization of IP operating by utilizing SMART VISION 360 for enabling data integration and analysis**



"An international framework for Eco-Industrial Parks" Ver 2.0 (UNIDO, WB, GIZ, 2021)

Impact

Enhance the value of IPs and companies by certifying them as eco-IP and eco-friendly companies, along with providing various services

- ▶ Promoting eco-friendliness through pilot initiatives/resource matching
- ▶ Setting original KPIs linked with TCFD*/TNFD* indicators

< Examples of supporting environmental activities promotion >



*TCFD: Task Force on Climate-related Financial Disclosures
*TNFD: Task Force on Nature-related Financial Disclosures

Track Record

- Project for Development of Guidelines for Eco-friendly Smart IP with IT Integration in Ba Ria Vung Tau Province, Vietnam (JICA)
- Project on Promotion Zero Emission IP in ASEAN (AOTS/ Agency for Natural Resources and Energy, Japan)
- Green - Smart IP Development Project by City-to-City Collaboration between Kobe City and Dong Nai Province, Vietnam (MOEJ)

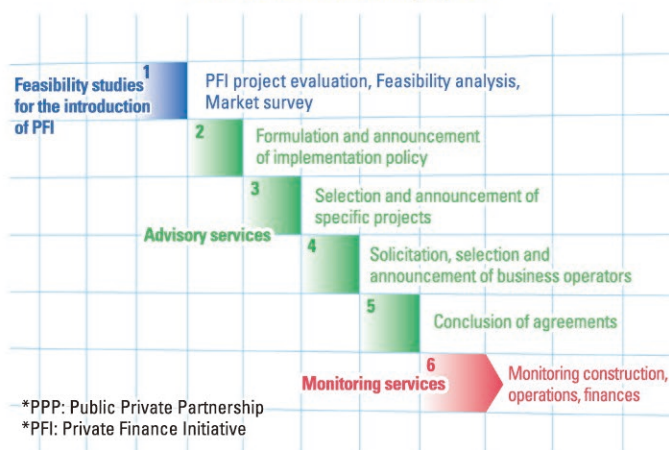
Challenge

Challenging to achieve appropriate risk sharing between municipalities and business operators in PPP* smart city projects

Solution

Consulting services for various PPP schemes based on technical expertise in each sector

< Our services in case of PFI* projects >



Impact

Ensure highly effective project implementation with comprehensive support from project conception to contract monitoring

- ▶ Plan optimal solutions with staff versed in Japan's and other countries' policies
- ▶ Offer efficient asset management methods from our infrastructure experience
- ▶ Cut costs via private-sector know-how and performance regulations
- ▶ Reduce business risk using private financing expertise
- ▶ Ensure service quality with long-term contracts based on performance indicators
- ▶ Optimize asset ownership & finance with diverse private methods

< PPP scheme examples >

Private Sector Engagement in New Development Initiatives	Streamlined Outsourcing: Maintenance & Management	Asset transfer & securitization
■ PFI (BOT/BOT) ■ Design-build (DB) ■ Design-build & operate (DBO)	Cost efficiency and service quality via performance contracting with private sector innovation	Improving financial performance through debt off-balancing

Track Record

Feasibility study and advisory services for PPP/PFI/Park-PFI introduction and business recruitment in the following fields;

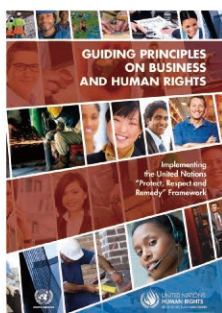
- National parks and other parks
- Regional revitalization facilities such as roadside stations and cultural facilities
- Funeral halls and school lunch service centers

Advisory Services for 'Human Rights and Environmental Impact Management'

Challenge

Various needs for human rights are reported as follows:

- ▶ Identify human rights and environmental impacts by business and supply chain
- ▶ Improve communication with stakeholders
- ▶ Identify parties impacted positively and negatively
- ▶ Mitigate human rights risks in decisions and procurement
- ▶ Establish effective problem-solving procedure (grievance mechanism) per international standards



Impact

- ▶ Identify human rights risks and opportunities
- ▶ Mitigate human rights and environmental risks in your business operation as well as the supply chain
- ▶ Identify and mitigate concerns and complaints of stakeholders
- ▶ Avoidance and remediation of reputational risks



How do you manage human rights impact in your business?

Solution

- ▶ Conduct human rights and environmental due diligence
- ▶ Elaborate procurement checklist for risks
- ▶ Identify impacts of business and supply chain
- ▶ Mitigate risks and promote opportunities
- ▶ Establish grievance mechanisms and stakeholder engagement plan



Track Record

- Conduct environmental and human rights impact assessments for waste/glossily/real estate/construction/industrial park related projects
- Support for developing procurement check sheets, etc

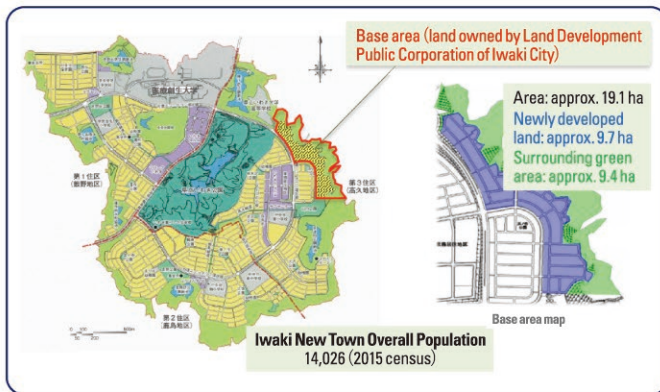
Coordinator for Smart Town Development

Challenge

In the development of residential land, it's important to focus on enhancing the overall value of the area rather than just dividing lots, while utilizing the smart technology.

Solution

Worked as a coordinator for establishing a smart town model district in a greenfield development (Iwaki City, Fukushima Prefecture)



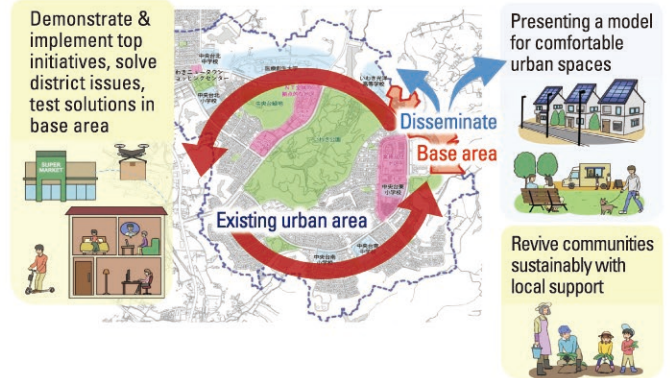
< Overall map of the Iwaki New Town area (area: approx. 530 ha) >

Impact

Integration of land use with cutting-edge smart services will contribute to the sustainable development of urban areas.

Basic Policy

1. Sustainable urban development that ensures prosperity and safety
2. Urban development that facilitates universal access to essential services
3. Urban development that promotes intergenerational continuity, allowing residents to sustain their lives over time



Track Record

- We are assisting to create a concept for community development, including the project's basic strategy.
- This involves studying and setting up a plan for collaboration among developers, smart service providers, other private businesses, and the local government.
- We're also working to build understanding and consensus among the citizens.

Support with Implementing Self-driving Vehicles into Society

Challenge

- ▶ Various challenges in technology, regulations, and operations to implement self-driving in the region
- ▶ Difficult to optimize introduction/implementation without considering regional characteristics such as urban or rural areas

Solution

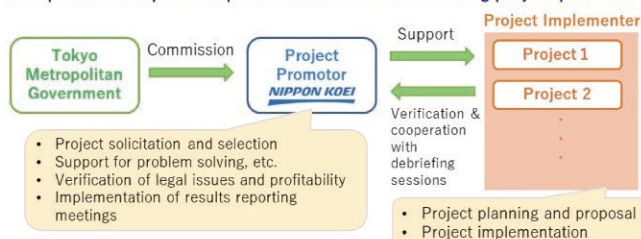
Continuous support for research, planning, demonstration, implementation, and measuring effectiveness in social initiatives



- ▶ Arrange demonstration test with multiple businesses



- ▶ Implement Tokyo Metropolitan Government self-driving project promoter



Impact

Solve local challenges by self-driving vehicles



New Town Revitalization
Assisting mobility and reducing accidents for the seniors



Demonstration in mountain areas
Support for Mobility/Logistics



Demonstration on current routes
Considerations of services



Self-driving taxi
Demonstration of services



Self-driving mini-bus
Demonstration of mobility support in residential areas



Demonstration in seaside area
Assessing needs and social acceptability

Track Record

- Study on environmental enhancement for implementing self-driving mobility services in new urban areas (NEDO)
- Study commissioned to explore the implementation of self-driving tech (Nishi-Shinjuku, Tokyo Metropolitan Government, in 2022)
- Assistance services for preparing demonstration evaluations with medium-sized self-driving bus (AIST)
- Regional demonstration project for new mobility services utilizing self-driving vehicles (AIST)

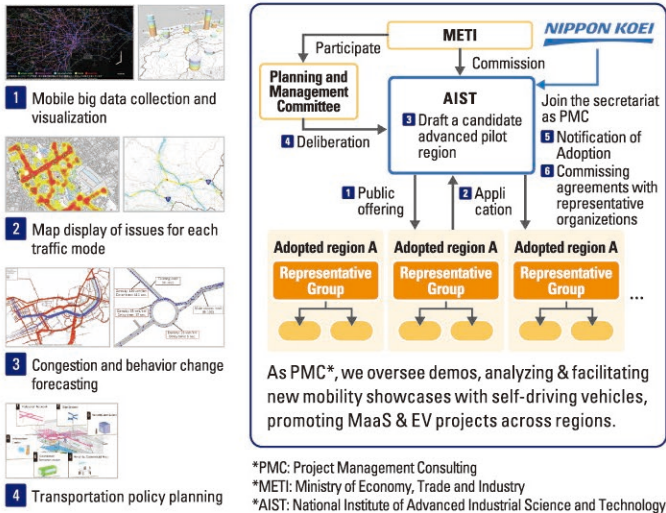
Data Optimization for MaaS Achievement

Challenge

- ▶ Various challenges in technology, regulations, and operations to achieve MaaS that integrates multiple modes of transportation
- ▶ Data-driven MaaS implementation is necessary for local policies

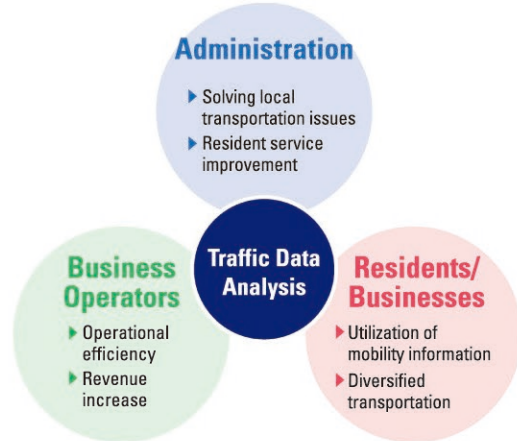
Solution

Support for Enhancing Data-Driven MaaS



Impact

Facilitate the development of various services based on MaaS transportation data



Track Record

- MaaS demonstration in large-scale area development by private sectors, Vietnam
- Demonstration of MaaS payment information, Indonesia
- Tourism-oriented MaaS demonstration in Siem Reap, Cambodia

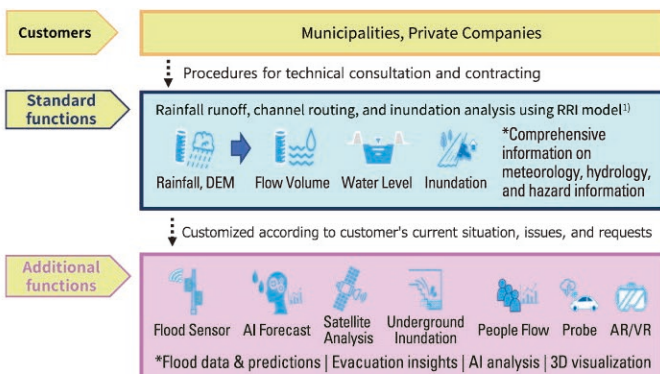
Disaster Prevention Platform (Bosuke)

Challenge

- ▶ Challenging to strengthen local resilience
- ▶ Difficult to process and promptly respond to centralized information
- ▶ Lack of information on local flooding conditions and risks

Product

- ▶ Real-time disaster evacuation planning in the cloud
- ▶ Ensuring community safety: aid for disaster response & evacuation
- ▶ Visualizing disaster risks: predicting and analyzing damage

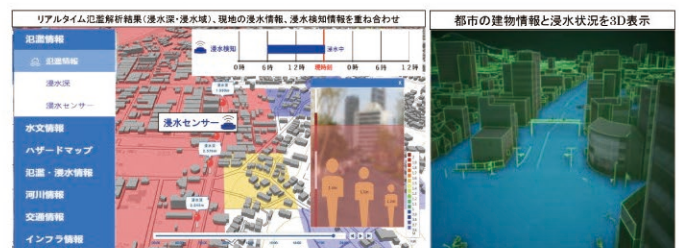


1) Developed by Public Works Research Institute, Japan 2) Data provided by JWA and MLIT

< Service image of disaster prevention platform >

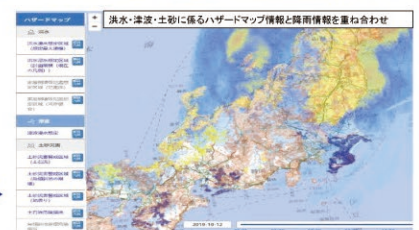
Impact

Offering services by storing, processing, analyzing, visualizing, and evaluating information on the platform



- ▶ Displaying real-time analysis results and sensor data to visualize urban 3D flood conditions

Integration national hazard maps with weather data



Track Record

Adopted in Iwaki (Fukushima)



Disaster Prevention & Reduction

Satellite Disaster Management Information Service

Challenge

Difficult to conduct long-term monitoring of large areas with consistent accuracy

Solution

Utilizing optical and SAR satellites enables accurate, periodic, and long-term data analysis

Optical satellite



- ▶ Detect sunlight reflection for object observation
- ▶ Recognize the color, size, shape intuitively
- ▶ Clouds hinder penetration, night photography not feasible

SAR satellite



- ▶ Detect microwave reflections for monitoring object presence, material, structure, and changes
- ▶ Reflection intensity lacks color, complicating interpretation
- ▶ Capture images regardless of clouds or nighttime darkness
- ▶ Ideal for monitoring object state changes

Impact

Analyze and evaluate information based on your needs

In case of disaster



Locating flooded area

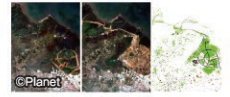
Immediate auto-detection by optical satellite

In case of disaster



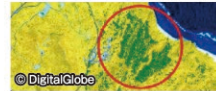
Locating landslide areas

Immediate auto-detection by optical / SAR satellite



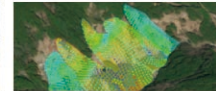
Urban development monitoring

Analyzing regular optical satellite images



Vegetation monitoring

Decayed tree detection via optical satellite



Slope change monitoring

Analysis with SAR satellite data for risk assessment



Infrastructure facilities monitoring

Risk assessment with SAR satellite data

Track Record

- SAR Satellite Infrastructure Monitoring Won 3rd Maintenance Award
- Satellite-based Inundation Area Analysis (MLIT)
- Advanced Satellite Remote Sensing Demonstration for Problem-Solving (Cabinet Office, Japan)
- and many more projects



Tourism

Tourism Town Development with Digital Technologies

Challenge

- ▶ Significant damage from the impact of COVID-19 in recent years to tourism-dependent areas
- ▶ Essential to enhance popularity, improve services and attractions, and stimulate tourists interest for the revival of Post COVID-19 tourist towns

Solution

- ▶ **Assisting in tourism town planning for government-funded and publicly solicited projects**
- ▶ **Applying customized solutions by introducing cutting-edge tourism products using digital technology and big data**
- ▶ **Energizing communities by enhancing the travel experience, covering "pre-travel", "during-travel", "post-travel"**
 - ✓ Amplify attraction with VR/AR technologies
 - ✓ Connect local communities and tourists with social media services
 - ✓ Develop systems to promote sales of local specialties and enhance customer satisfaction
 - ✓ Leverage data strategically to visualize people mobility and interests

Track Record

Project for Integrating Future Technologies in Regional Areas (Ureshino, 2022)

Impact

Virtual and real-life interactions foster "human connections"

Enjoy **Ureshino Metaverse** on Website



Ureshino Onsen Station in the Metaverse:
Fusion of Real and Virtual !
Live events, Market, Games, Quiz, VR Sightseeing

Travel in **Virtual Ureshino** with VR goggles



Experience 360° Panoramic Views of Ureshino's Landmarks with VR !

Look inside **Ureshino walk & Onsen**

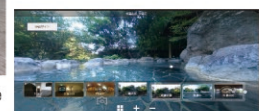


Online Service for Pre-Travelers: Explore store atmosphere & product selections. Ureshino is Active 24/7.

LINE official account



Get hot event updates, stamp rally, and more!
Chatbot support available for tourists.



Ureshino Onsen Virtual Tour





Data Platform

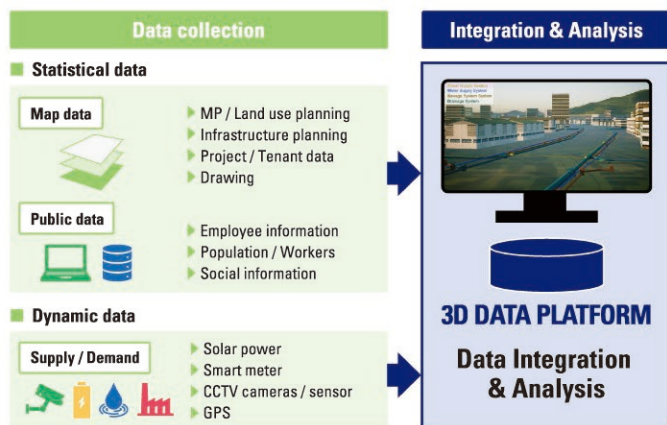
SMART VISION360 (Urban Development 3D Data Platform)

Challenge

- ▶ Lack of integrated management for industrial parks, urban development, and parks
- ▶ Challenges including adding value and reducing management costs for developed sites

Solution / Product

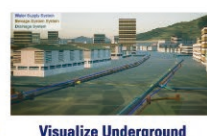
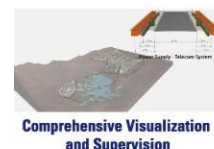
SMART VISION 360: Enabling continuous, comprehensive infrastructure management and smart multisectoral support



Impact

- ▶ Affordable implementation of various services on 3D Data Platform
- ▶ User-friendly web format for facility managers

Support from planning to operations



Track Record

Implemented and demonstrated in industrial park projects in Japan, Vietnam, Malaysia, Myanmar, etc.



Data Platform

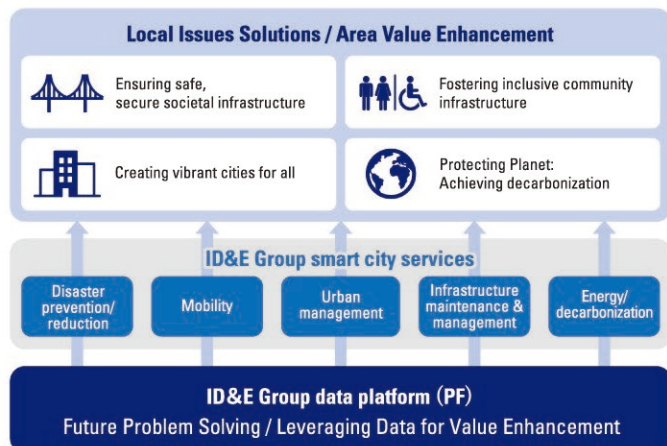
Integrated Data Platform Building and Operations Support

Challenge

- ▶ Difficult to optimize entire project with single-sector insight
- ▶ Growing need for solving urban challenges through multi-field data analysis and simulation

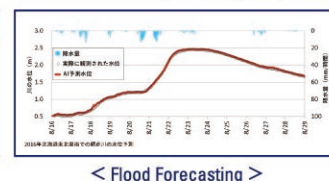
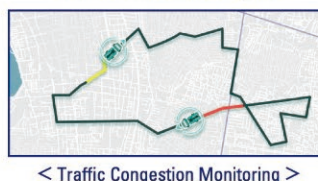
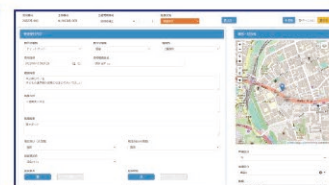
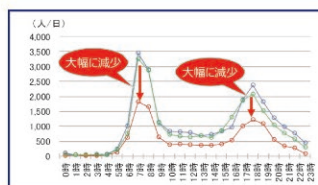
Solution / Product

Comprehensive support for building and operating a unified data platform across various fields



Impact

Facilitating services on data platform by storing, processing, analyzing, visualizing, and evaluating information



Track Record

- Demonstrating data platform for industrial park infrastructure management (water/electricity) in Long Duc, Vietnam



Data Platform

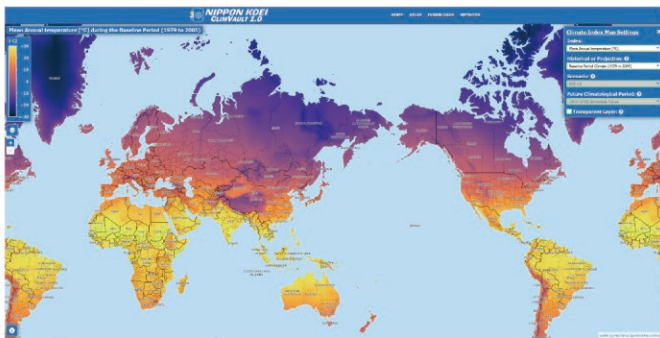
Prediction Database of Climate Trends and Weather Extremes

Challenge

Understanding changes in rainfall and temperature due to climate change is essential for all countries and people to take adaptive measures. However, climate prediction data often contain biases where observational values differ from statistical measures.

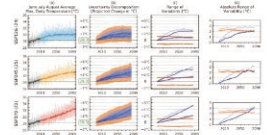
Product

NK-ClimVault is a website where all data from all climate scenario of CMIP6* and all available GCMs** can be explored using an interactive atlas, employing bias correction methods developed independently by Nippon Koei.



Impact

- ▶ Since the NK-ClimVault data is already bias corrected, it can be used as foundational data for immediate user review and consideration
- ▶ The website also includes indicators of extreme weather phenomena such as the number of consecutive days of rainfall and the number of extremely hot days.
- ▶ Users can understand the impacts of future climate change without needing to conduct advanced analyses themselves.



Track Record

- You can access NK-ClimVault at the following URL: <https://nk-climvault.com>
- We offer a paid service for downloading index data for extreme weather displayed on the maps, as well as daily data for all scenarios and all GCMs



* CMIP6 stands for Coupled Model Intercomparison Project Phase 6. It is a global effort involving climate modeling centers around the world to improve understanding and predictions of climate change by comparing and analyzing various climate models.

** GCM stands for General Circulation Model. It is a computer-based mathematical model used to simulate and predict the Earth's climate system by representing the interactions between the atmosphere, oceans, land surface, and ice.



Infrastructure Development

Smart City Infrastructure Development Support

Challenge

Difficult to develop smart city-related infrastructure due to the need for phased planning

Solution / Product

Provide complete engineering services, encompassing planning, design, construction, and operation, including comprehensive smart technology integration

1 Concept plan



Shanghai Future City (China)
(by BDP, an NK group company)

2 Master plan



Bang Sue Area Smart City
(Thailand)

3 Feasibility study



Hoa Lac Hi-Tech Park (Viet Nam)

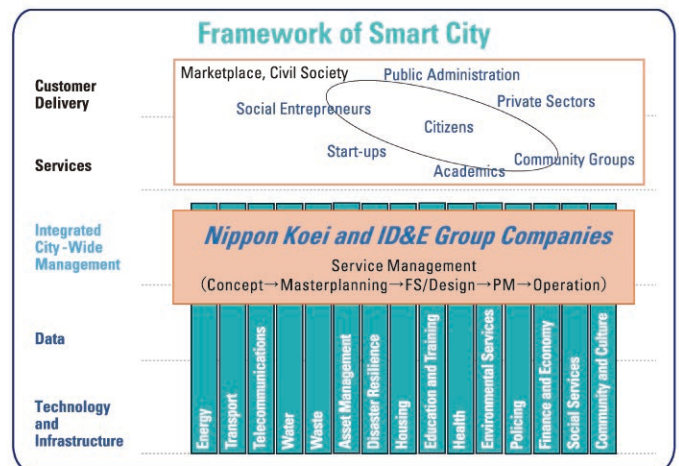
4 Design, construction management



Thilawa SEZ (Myanmar)

Impact

- ▶ Easily gather consensus from stakeholders by creating concept plans and master plans
- ▶ Enable the appropriate estimation and management of project costs through phased development plans



Track Record

- Comprehensive development plan in Shanghai Future City (China), Bang Sue Area Smart City (Thailand), Hoa Lac Hi-Tech Park (Vietnam), Thilawa SEZ (Myanmar)

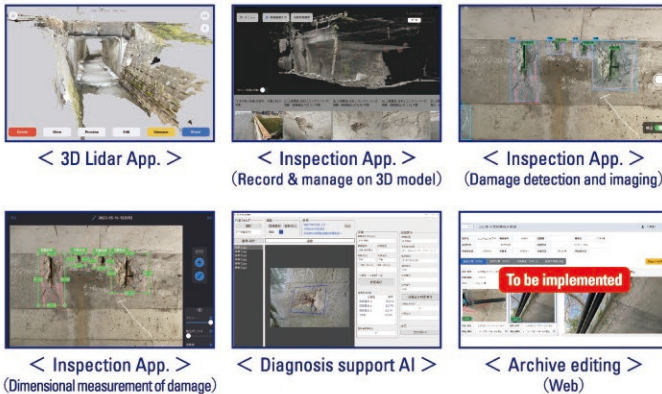
Bridge Inspection and Diagnosis by AI and RPA

Challenge

- ▶ Growing challenges for municipalities as aging infrastructure
- ▶ Demand for more efficient and labor-saving inspection methods
- ▶ Differences in damage diagnosis among engineers complicate countermeasure decisions

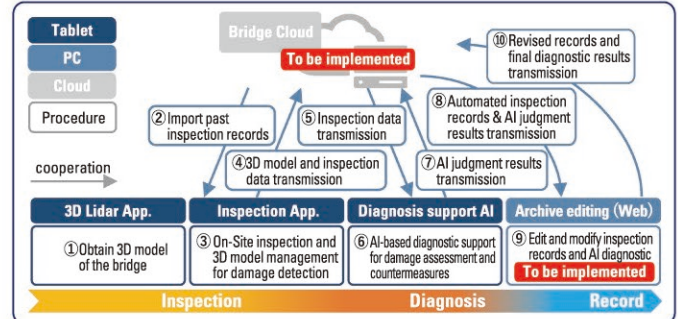
Solution / Product

- ▶ Consulting services utilizing AI and RPA
- ▶ Achieving digital transformation in automated inspection & diagnosis



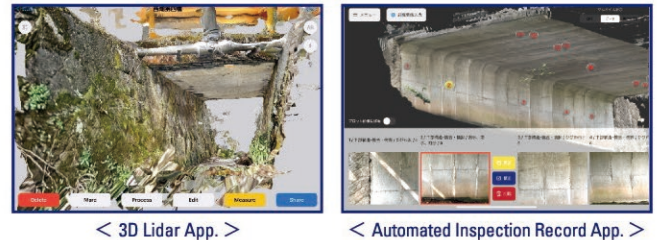
Impact

Support for infrastructure maintenance and management through consulting services utilizing AI and RPA



Track Record

- Introduce 3D Lidar app, automated inspection record app, evaluation AI, bridge cloud (Yamaguchi Pref, in 2022)



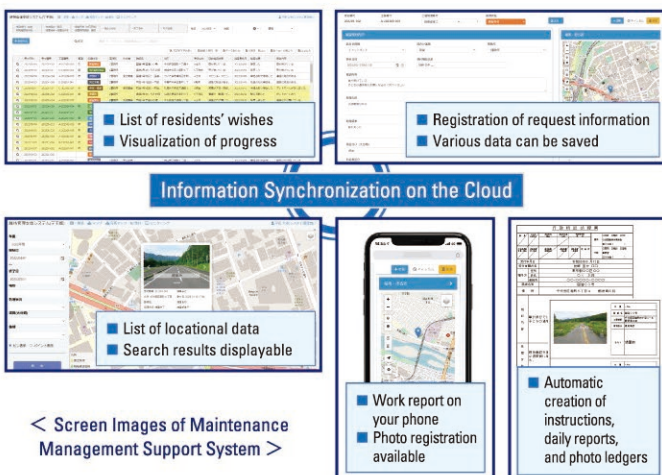
Infrastructure Maintenance & Management System (Manesus)

Challenge

- ▶ Burden on management entities (municipalities, etc.) due to aging infrastructure
- ▶ Increased workload from staff shortages affecting daily operations

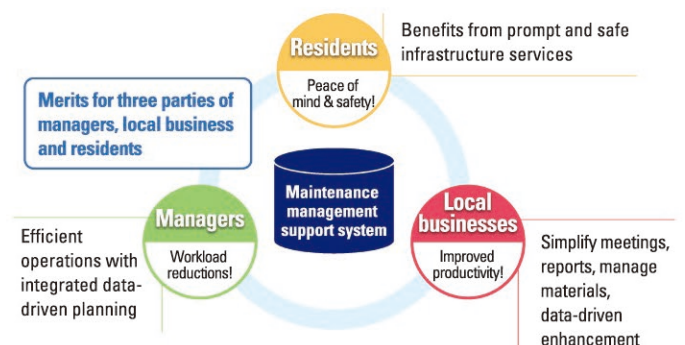
Solution / Product

An infrastructure maintenance and management support system that visualizes management processes and centrally manages them in real time



Impact

Enable quicker decision-making through real-time information sharing with a digital management system



Track Record

- The Comprehensive Road Management Project (Fuchu, Tokyo)
- Ibaraki, Shinagawa (Tokyo), Higashimurayama (Tokyo), Saitama/Shiki (Saitama), Sumoto (Hyogo) etc.
- Published in "New Technology and Good Practices in Road Management" (Japan Road Association)
- About 30% improvement in operational efficiency achieved



Sustainability

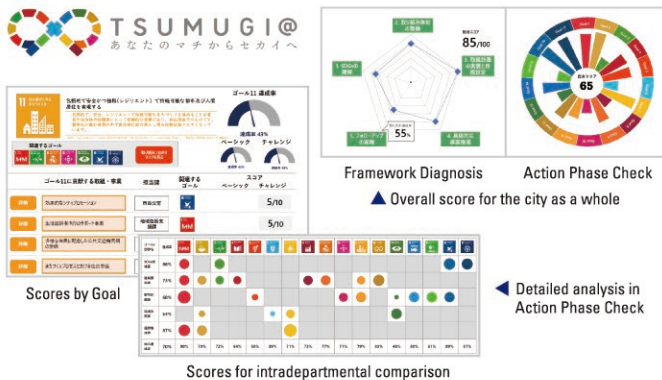
Diagnostic and Visualization Tools for City SDGs (TSUMUGI@)

Challenge

- ▶ Increased expectations from government and stakeholders to promote and accelerate the achievement of the SDGs
- ▶ Difficult to comprehensively assess and manage the current status of the SDGs in the local government, and lack of manpower

Solution

Online tool (TSUMUGI@) for diagnosing, visualizing, and monitoring the status of projects included in overall or various individual plans from the perspective of the SDGs potential



Impact

- ▶ **Simple operation and quick diagnosis (Reduction of manpower and time costs)**
 - Simply select the answers to the questions on the website to assess the status
- ▶ **Centralized management of each department's efforts/ Possible to monitor status changes**
 - In addition to the overall diagnosis, the status of efforts toward achieving the SDGs can be centrally managed by goal or by department, and status changes can also be monitored
 - Available to review business directions and plan new projects
- ▶ **Visualize the status of initiatives with easy-to-understand charts**
 - Available as explanatory materials for the government (executives, council, other departments, etc.) and as information transmission and PR materials for the local community

Track Record

- Hiroyo (Nara) ■ Ebina (Kanagawa) ■ Toshima (Tokyo)
- Tokushima (Tokushima) ■ Hirauchi (Aomori)
- Matsue (Shimane) ■ Minami-Alps (Yamanashi)



Sustainability

SDGs Assessment System for SMEs (KIBOH2030)

Challenge

- ▶ The efforts of SMEs, which account for 99% of the total number of businesses in Japan, are essential to achieving the SDGs in Japan
- ▶ However, it is difficult for SMEs to independently assess their achievement level of the SDGs

Solution

Provide a diagnostic tool (KIBOH2030) to visualize the achievement level of the SDGs and business potential

< SDG Action Check Assessment Results >



Impact

- ▶ **Visualize the achievement level of the SDGs in 30 minutes**
- ▶ The SDGs include 17 goals and 169 targets, and KIBOH 2030 categorizes corporate environmental, social, and governance efforts into 4 categories:
 - Business management
 - Environmental management
 - Labor/human rights
 - Climate action
- ▶ The questions are narrowed down to **50 multiple-choice questions** and can be answered **within 30 minutes**. Once all the questions are answered, the status of SDGs efforts is visualized in terms of scores (scoring) and achievement rates (graphs)
- ▶ Consideration of management with SDGs in mind and the shift to ESG management are supported

Track Record

- Kitakyushu (Fukuoka)
- Sapporo Chamber of Commerce and Industry



Environment /
Decarbonization

Safeguarding Nature with Nature based Solutions (NbS)

Challenge

Our planet's ecosystems are declining, and immediate efforts to restore them are essential. Even in cities, we need effective solutions for conserving the environment through Nature-Based Solutions (NbS).

Solution

- ▶ NbS: Using the function of nature to solve social issues
- ▶ Projects for conserving diverse ecosystems from mountains to coastlines



Impact

- ▶ Addressing local needs to achieve SDGs with effective solutions
- ▶ Managing of suburban hillsides: controlling runoff, conserving forests for CO₂ absorption, and mitigating climate change
- ▶ Conserving coastal ecosystems: preventing disasters (e.g. storm surges/tsunamis, controlling erosion, enhancing water quality)



Track Record

- The Project for Community-Based Sustainable Natural Resource Management (CBNRM) Phase II, Timor-Leste (JICA, 2016-2022)
- The Project for Biodiversity Conservation through Implementation of the PNG Policy on Protected Areas, Papua New Guinea (JICA, 2015-2021)



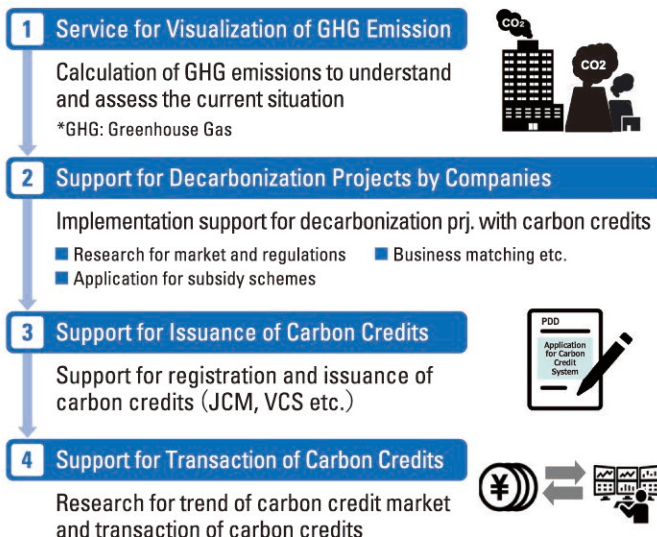
Environment /
Decarbonization

Support for Application to Joint Crediting Mechanism (JCM) / Carbon Credit Issuance

Challenge

Demand from investors to private companies to adopt decarbonization measures, making carbon credits and decarbonization activities urgent priorities

Solution



Impact

Currently private company has been facing climate change challenges, such as

A Defensive measures that companies should take

- A-1) Understanding the current status of GHG emissions
- A-2) Implementing decarbonization measures based on a) above
- A-3) Managing cost related to decarbonization measures

B Aggressive response that companies should take

- B-1) Strengthening market competitiveness in a decarbonized society
- B-2) Developing new markets in a decarbonized society

JCM and carbon credit-related services by Nippon Koei provides seamless one-stop support customized to customer needs, from feasibility study, design to credit issuance.

Track Record

- Supporting services of JCM model project (subsidy scheme) application
- Preparation service of Project Design Document (PDD)
- Development of GHG calculation methodology under JCM scheme
- Implementation of feasibility study on JCM project
- Networking of JCM project development

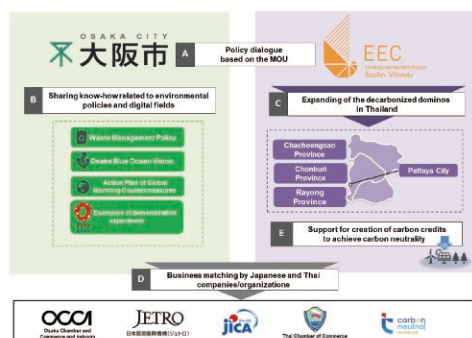
Decarbonization Support to Regional Government/Private Company

Challenge

Recently, the wave of demand for a decarbonized society has spread from the central government to local governments and private companies, and countermeasures have become an urgent challenge.

Solution

By providing this support, it will be possible to build a system for implementing decarbonization solutions in both soft and hard aspects in the region

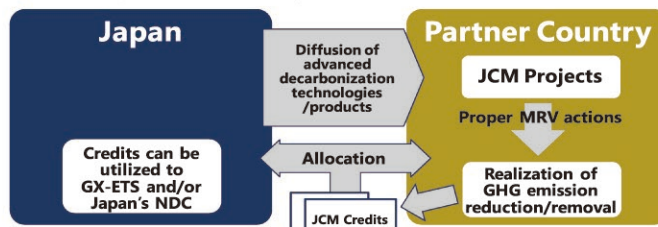


[Example] Collaboration menu in Osaka-Thai EEC



Impact

- ▶ Empowering decarbonization solutions: Local governments & private companies unite via JCM mechanism (See following figure)
- ▶ Building decarbonization platform/network



< Figure : JCM scheme between Japan and host country >

*GX-ETS: Green Transformation - Emission Trading Scheme
*GHG: Greenhouse Gas *NDC: Nationally Determined Contribution
*MRV: Monitoring, Reporting, Verification

Track Record

Since 2013, Nippon Koei's International Environment Dept. has initiated city-to-city collaborations with Japanese/foreign cities and private companies including the following.

- Osaka – Ho Chi Minh
- Osaka – Thai EEC
- Kawasaki – Pekanbaru
- Fukuoka pref – Hanoi
- Sakai – Ba Ria Vung Tau
- Toyama – Renca, Santiago
- Yokohama – Batam, Indonesia
- Kawasaki – Yangon, Myanmar
- Kawasaki – Jakarta, Indonesia
- Fukuoka pref – Yangon, Myanmar
- Toyama – Bali, Indonesia
- Toyama – Semarang, Indonesia

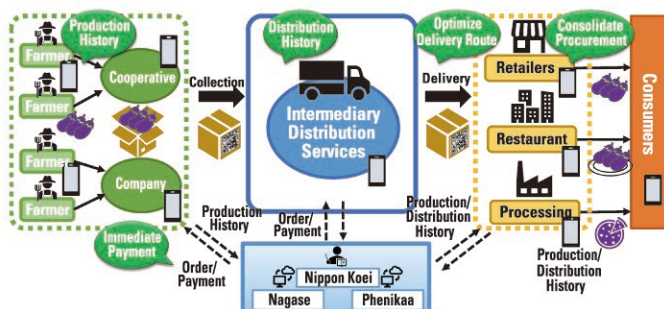
Distribution System for Safe Vegetables "Nong San 4.0"

Challenge

- ▶ High consumer concern about food safety due to agricultural product safety issues
- ▶ Food loss and increased procurement costs for distributors due to multi-step distribution structure
- ▶ Complicated payment procedures in cash between distributors and farmers

Solution

- ▶ Traceability from production and distribution history
- ▶ Consolidation of procurement from intermediary distribution
- ▶ Optimization of transportation routes
- ▶ Online ordering and electronic payment system



Impact

- ▶ Ensure traceability of safe agricultural products through production and distribution management systems
- ▶ Reduce procurement costs by consolidate procurement and optimal transportation routes
- ▶ Improve convenience by online payment systems
- ▶ As the result of PoC, 83% of participants were satisfied with the system and willing to continue using the system



Track Record

- Developed the applications and conducted the PoC in Ha Noi, Viet Nam in the "Project for Establishment of a Distribution System for Safe Vegetables in Viet Nam" as JETRO Asia DX
- Currently building a business model to expand the system in Vietnam and neighboring countries



Investment

New Business Development & Incubation in ASEAN

Purpose of Investment

NK is embarking on a co-creation strategy to incubate new businesses by acquiring technology and networks from external resources through investment to solving social challenges.

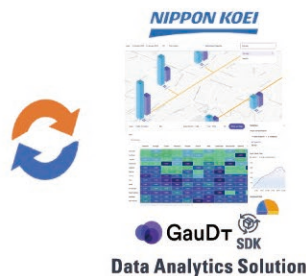
Case in Thailand : Smart Parking Platform Business

▶ WHY:

- Growing demand & market size for parking lots in Bangkok
- The Thai government's strong commitment to promoting the use of park-and-ride facilities

▶ HOW:

- Invest in JOWIT Global (JWG), a Smart Parking operator in Bangkok
- Develop a Smart Parking Platform to complement the Thai government's smart city policy and integrate smart parking solutions into Transit Oriented Development (TOD)



▶ WHAT:

- The Smart Parking Platform has integrated both JWG's software and hardware technologies along with NK's data insights, to enable efficient management and profit optimization of future-generation parking business.
- Utilizing NK's data insights, the concept of Parking Oriented Development (POD) aims to transform parking facilities into community hubs, thereby enhancing their values as urban facilities.



< Image of POD >

Other cases of business creation through investment

- Indonesia : Transportation optimization in the growing Jakarta via data insight through incubation investment in a MaaS platformer
- Cambodia : Sustainable and smart tourism promotion via tourism MaaS platform development in line with smart city roadmap in Siem Reap (PoC Phase)



Energy

Mini-Hydropower Generation Using Unexploited Heads

Challenge

- ▶ Renewable energy is essential for decarbonization.
- ▶ Mini-hydropower is more stable than solar and wind, and supports "local production for local consumption," but site availability limits development.
- ▶ Formulating a feasible introduction plan for mini-hydropower is challenging.

Solution

- ▶ Provide integrated engineering services from planning to installation and operation of equipment for optimal mini- hydropower generation by utilizing local unused energy
- ▶ Propose PPP/PFI project schemes



< Mini-hydropower generation using erosion control dams >



< Mini-hydropower generation using water treatment plant facilities >

Impact

- ▶ Introduce mini-hydropower generation through public-private partnerships
- ▶ Promote decarbonization by securing locally produced and locally consumed power sources
- ▶ Combine with microgrids to secure power sources in times of disaster

Track Record

- Many mini-hydropower installations in Japan in cooperation with local governments
- The ID & E group has operated nine power plants with a total capacity of 3.1 MW.

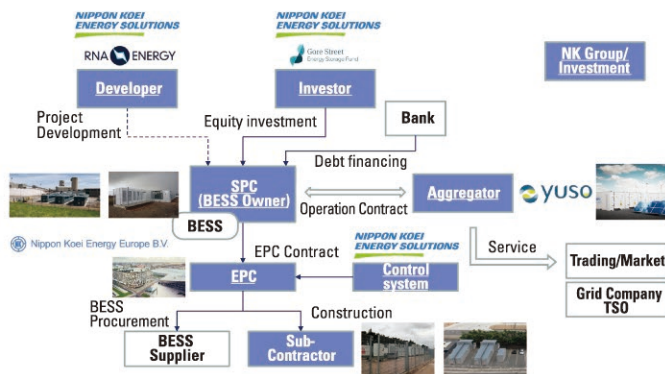
Grid Storage Battery Business

Challenge

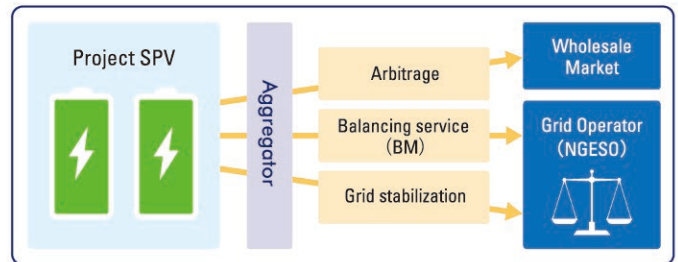
As the introduction of renewable energy sources such as solar power and wind power accelerates, the challenge is to secure the regulating power for stable operation of the grid.

Solution

Development, construction, investment, operation, and related businesses related to ancillary service business using grid storage batteries



< Business scheme and scope of grid energy storage battery business being developed in Europe >



< Diagram of the grid energy storage battery business >

Impact

- ▶ Grid storage batteries will ensure power regulation, thereby contributing to grid stabilization and accelerating the introduction of renewable energies
- ▶ Secure business feasibility of grid storage business in cooperation with local power sources by utilizing the domestic supply and demand adjustment market, wholesale market, etc.

Track Record

Operation, development and EPC experience of grid storage batteries in Europe

*EPC: Engineering, Procurement, Construction

- Potash Project 6MW/6Wh (UK)
- Cenin Project 4MW/4.8MWh (UK)
- Ruien Project 25MW/100MWh (Belgium)
- Lion Project 50MW/50MWh×2 (UK)

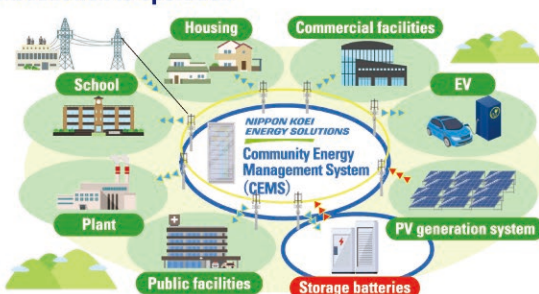
Micro Grid Business

Challenge

- ▶ Dependence on grid feed-in from large power plants poses challenges to decarbonization and disaster resilience.
- ▶ Dependence on external sources for energy supply increases the cost of electricity and poses challenges to the local economic cycle.

Solution / Product

- ▶ Actualize stable supply and demand of electric power by utilizing unused local energy
- ▶ Provide consistent engineering services from equipment introduction to operation



Services we can provide

- ▶ Consulting related to survey, planning, design, construction supervision, and operation and maintenance management support for the introduction of microgrids
- ▶ Self-developed storage batteries, Community Energy Management System (CEMS)

Impact

- ▶ **Reduced electricity cost**
 - Maximize the use of renewable energy and reduce the cost of electricity purchases for customers in the region by using our CEMS
- ▶ **Improved disaster resilience through stable power supply**
 - Actualize stable supply by controlling solar power, storage facilities, etc. according to local demand and combine them with grid power supply



< CEMS management screen image >



< Storage battery >

Track Record

Participated in multiple microgrid projects in Japan

- Smart Community Development Project in Katsurao Village (Fukushima) (operation to start in December 2020)
- Akan Micro Grid Project (Hokkaido)
- Botandai Amenity Zone Micro Grid in Sukagawa (Fukushima)
- Energy Supply Platform at Former Refinery Site in Shizuoka

Established

1946*



The company was established in 1946* by founder Yutaka Kubota, aiming for postwar reconstruction. More than 75 years later, the founding spirit continues on through our Management Philosophy, still flowing through our hearts.

* Nippon Koei's founding year

Staff numbers



Approx. 6,500

Aiming to solve social issues, every one of our staff in Japan and abroad continues to take up the challenge and play an active role. We are continually striving to discover and develop professional talent.

Sales in Japan



Nippon Koei has established itself as Japan's No.1 civil engineering consultant regarding sales*.

* Source: "Sales ranking of engineering consulting firms in Japan," Nikkei Construction, April 17, 2023

Operations

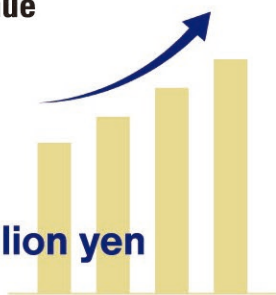


Since foundation, we have developed social capital overseas, providing various Japanese technologies abroad.

Revenue

Approx.

140 billion yen



Each of the three segments of Consulting, Urban & Spatial Development, and Energy continues to grow, and their sales volume is increasing yearly.

Overseas sales ratio



We aim to increase our overseas sales ratio by meeting the needs of those living in each region with world-class technology.

Project numbers per year



Approx. 9,000

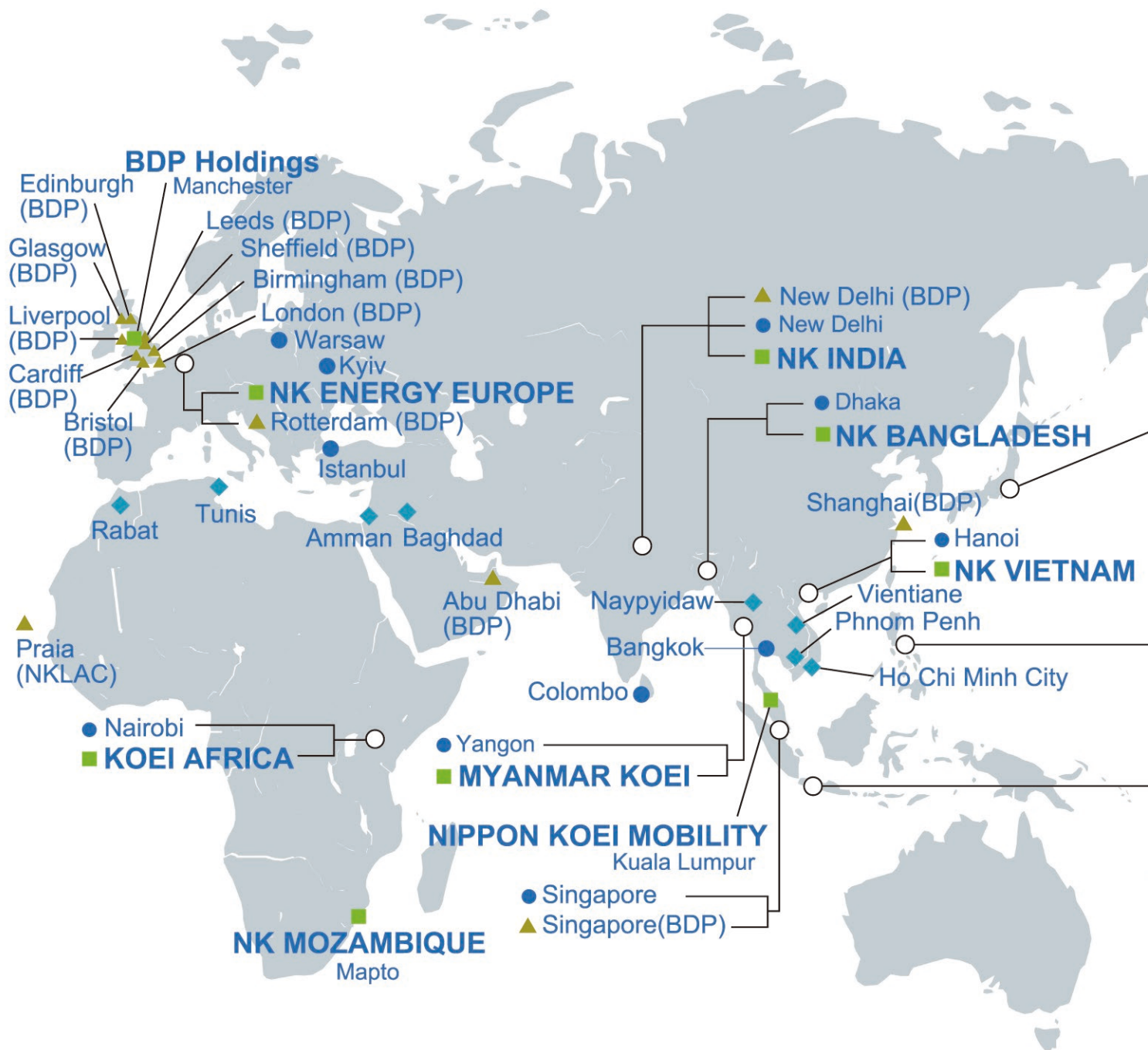
We continue to take on the challenge of solving various national, regional, and everyday problems through various projects.

Subsidiary numbers

84 companies



Group companies work together to solve problems and create value. We will continue to expand our network and achieve further growth.







*Act with integrity and contribute to society
through technology and engineering.*

Contact us :

smartcity_inquiry@n-koei.co.jp

NIPPON KOEI

**NIPPON KOEI
URBAN SPACE**

**NIPPON KOEI
ENERGY SOLUTIONS**

**ID&E Group's smart city-related technologies are
also featured on the following websites.**

<https://www.id-and-e-hd.co.jp/english/performance/>

