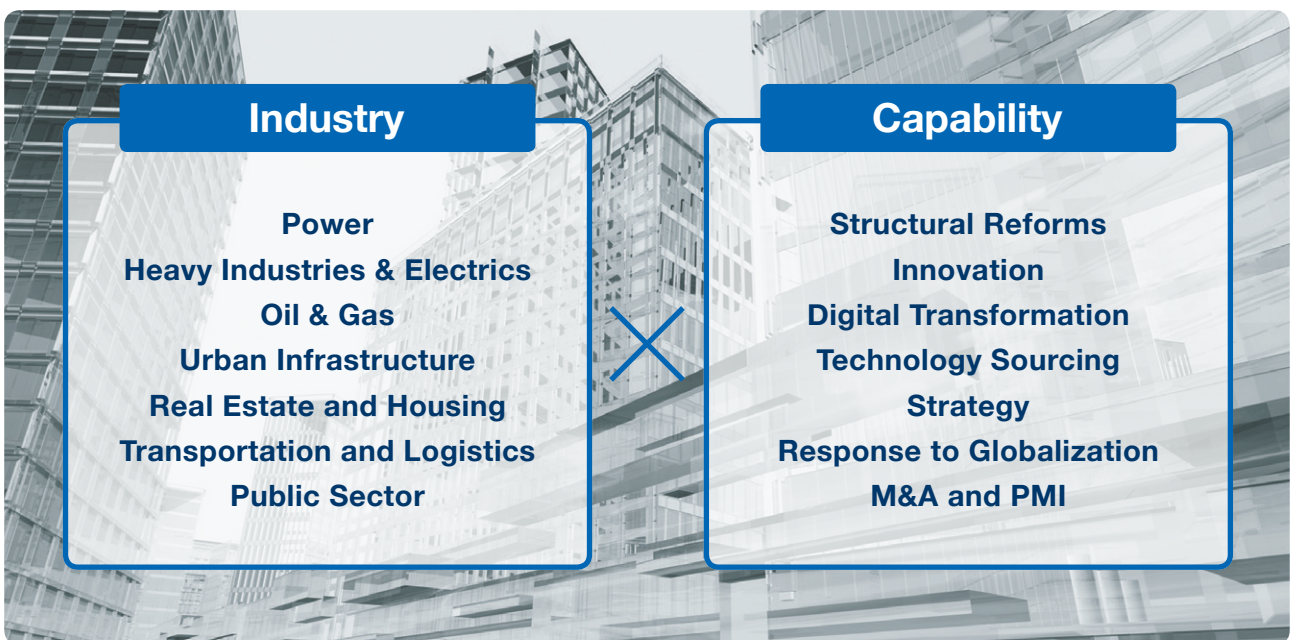


What is GPG-Infra?

At NRI, consultants from various NRI offices work together to conduct consulting projects and independent research activities for major industries. These working teams are called “GPG = Global Practice Group”.

Among GPGs, infrastructure has been a key focus sector for NRI. GPG-Infra consists of a group of consultants specializing in the infrastructure domain of NRI in each country, including energy, power, urban policy & issues, real estate, housing, transportation and logistics and public policy. The activities are carried out by the consultants of infrastructure domain in Japan, as well as from our global offices in USA, Asia and Europe.



GPG-Infra Consulting Structure and Achievements

<div style="background-color: #0056b3; color: white; padding: 10px; margin-bottom: 10px;"> Real Estate, Housing and Urban Infrastructure </div> <ul style="list-style-type: none"> • Growth strategy for a population declining era • Digitalization of real estate industry • Advancement of overseas real estate market • Social problem-solving business 	<div style="background-color: #0056b3; color: white; padding: 10px; margin-bottom: 10px;"> Infrastructure and Innovation </div> <ul style="list-style-type: none"> • Management reforms in infrastructure companies (For e.g. Airport management company) • Asset management • Improvement of customer experience (Introduced NPS⁽²⁾)
<div style="background-color: #0056b3; color: white; padding: 10px; margin-bottom: 10px;"> Transportation, Logistics, Digital Mobility </div> <ul style="list-style-type: none"> • Reforms in business structure • PoC⁽¹⁾ support for digital mobility • Supply chain reforms • Open innovation 	<div style="background-color: #0056b3; color: white; padding: 10px; margin-bottom: 10px;"> Overseas Infrastructure Development </div> <ul style="list-style-type: none"> • Strategic planning using data analytics • Development reforms using ESO⁽³⁾ • Collaboration with third-country companies • DD⁽⁴⁾ of foreign companies
<div style="background-color: #0056b3; color: white; padding: 10px; margin-bottom: 10px;"> Energy and Environment </div> <ul style="list-style-type: none"> • Digital transformation in energy industry • Introduction of distributed power generation system • Support for introducing renewable energy • Portfolio management 	<div style="background-color: #0056b3; color: white; padding: 10px;"> Public Sector </div> <ul style="list-style-type: none"> • Regional revitalization • Disaster prevention measures • Environmental measures • Promotion of public services • Public-Private Partnership

(1) Proof of Concept, (2) Net Promoter Score, (3) Engineering Service Outsourcer, (4) Due Diligence

GPG-Infrastructure International Presentations

The GPG carries out proprietary research about urbanization and urban issues based on the environmental changes in developed and emerging countries. Especially, under our fixed-point observation activities, we report the trends of real estate investment market of 9 countries and long-term forecast on Japan's housing market under declining population every year. Moreover, in recent years, there has been a progress in the digitalization of technologies related to power supply, electricity storage and energy utilization control. We also published a book that discusses the "Way Ahead for Power and Energy Industry".



NRI "Knowledge Creation and Integration" - Infrastructure Edition



June 2018 Edition

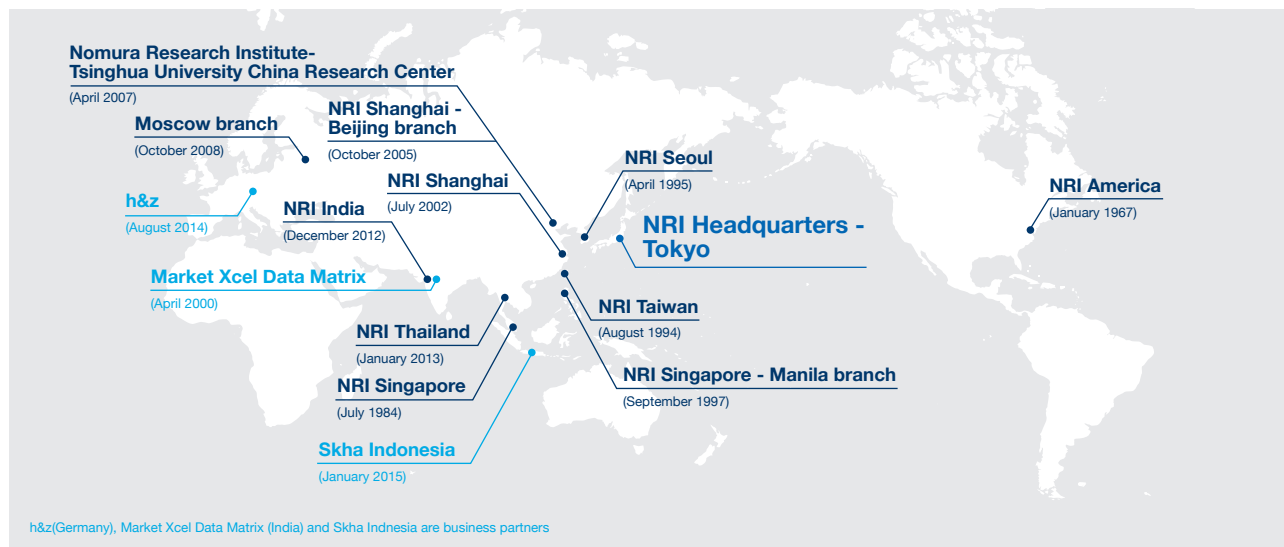


Meeting with a local real estate company "insight Town" in Shenzhen

Global Network of Infrastructure Domain

In order to provide consulting services to clients that are considering to expand or invest (including M&A) to western countries or emerging countries, we collaborate with our overseas branches to offer consulting from a Japanese and local perspective.

In GPG, we also assign experts from East Asia, South-East Asia, South Asia and 9 other overseas subsidiaries and branches in western countries depending on client's subject of concern, and form teams to provide our services. Further, if required, we also involve experts from accounting and law firms of the relevant country to provide services depending on the project requirements.



Support for Long-term Scenario Planning and Strategy Execution



With drastic changes in the business environment of the transportation and logistics industry, it is required to implement long-term scenario planning and form relevant strategies.

Need to quickly predict the transportation and logistics business environment that is undergoing transition

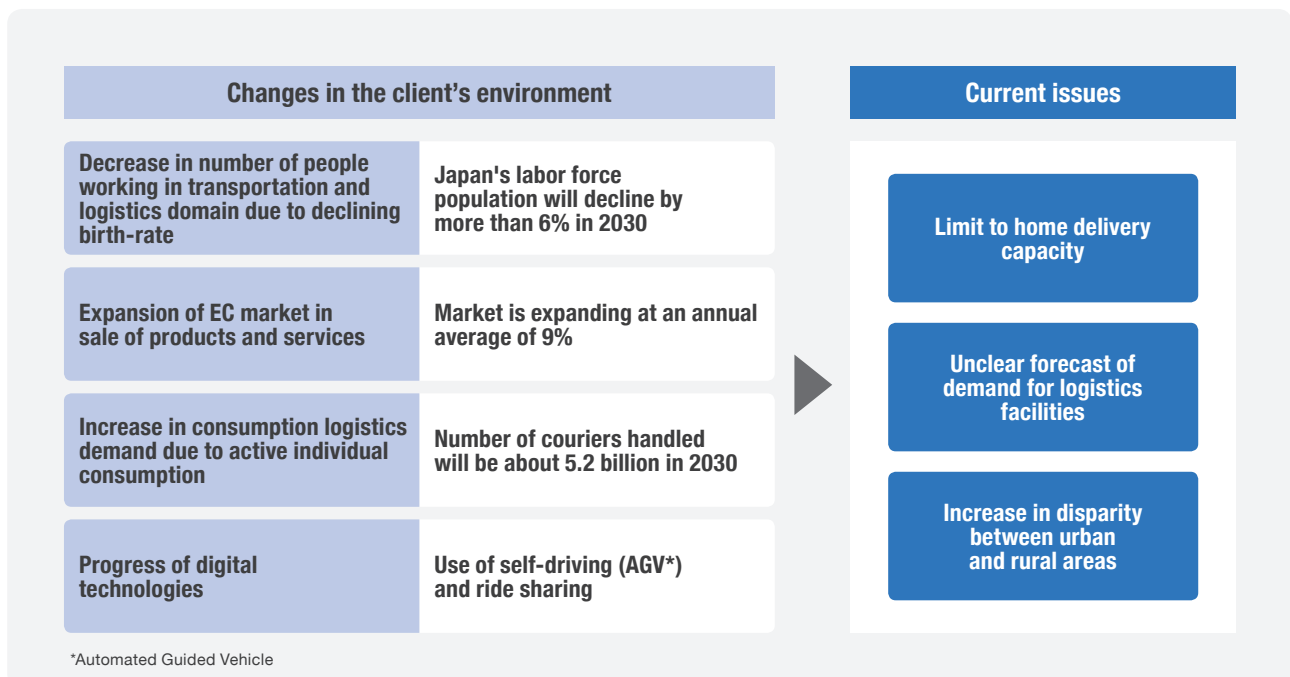
The business environment of Japan's transportation and logistics industry, mainly urban logistics is amidst a major transition with strengthening of e-commerce channels of retail and services industry, the demand for retail logistics is increasing. However, on the other hand, the number of people working in the transportation and logistics industry is decreasing steadily due to economic stagnation, low birth rate and aging population. Due to this, the supply of logistics infrastructure that supports the demand is likely to become severely constrained making the limits of delivery capacity apparent in the logistics industry. Also, in the transportation industry, "MaaS"* will prevail because of innovation in digital technologies. Hence, it is necessary to form strategies to find business opportunities in the urban and rural areas by using digital technologies. Moreover, it is required to foresee the likely future changes and incorporate this in long-term scenarios and strategies for the client depending on the business environment.

*Mobility-as-a-Service

It is effective to create scenarios focussing on "driving force of changes" before the advent of the uncertain future

In a continuously changing business environment, it has become increasingly difficult to predict the future by using the past accumulated data. Hence, many transportation and logistics operators find challenges in creating a suitable strategy. It is important to shift the focus to the future changes in the social environment, to envisage several possible future states through scenario planning and create a strategy for each possible future state. The development of several scenarios will help in gaining a comprehensive view of the possible future states, which can help in linking them to a suitable strategy. Furthermore, the risk of not being able to predict the future and delay in taking measures by considering only one scenario can be reduced.

■ Environmental Changes and Issues in the Transportation and Logistics Industry



*Automated Guided Vehicle

NRI draws multiple future states and provides support for deriving a strategy corresponding to each state based on discussions with our client.

Support for identifying suitable factors and deriving strategies based on in-depth understanding about the clients

As a think tank, NRI has a wealth of detailed insights of the trends in social environment and predicting the future. Moreover, we have many specialized consultants who have rich experience in the transportation and logistics industry. By accumulating such knowledge, we implement scenario planning in 4 steps, (1) Identify the driving force of changes, (2) Establish the basis of evaluation, (3) Select critical factors and (4) Create scenarios.

We form a team of consultants who possess knowledge of conducting social surveys, quantify the market scale and demand, and identify the competitive advantage of our clients to get a comprehensive view of the multiple scenarios and create and examine strategies. We have used this approach in many cases where we discuss with the clients and develop a suitable strategy for each of them.

We seek to obtain an understanding from our clients that scenario planning is not a single assumed state of what will happen, and we seek to tailor the optimal strategy for each of the scenario that can be envisaged.

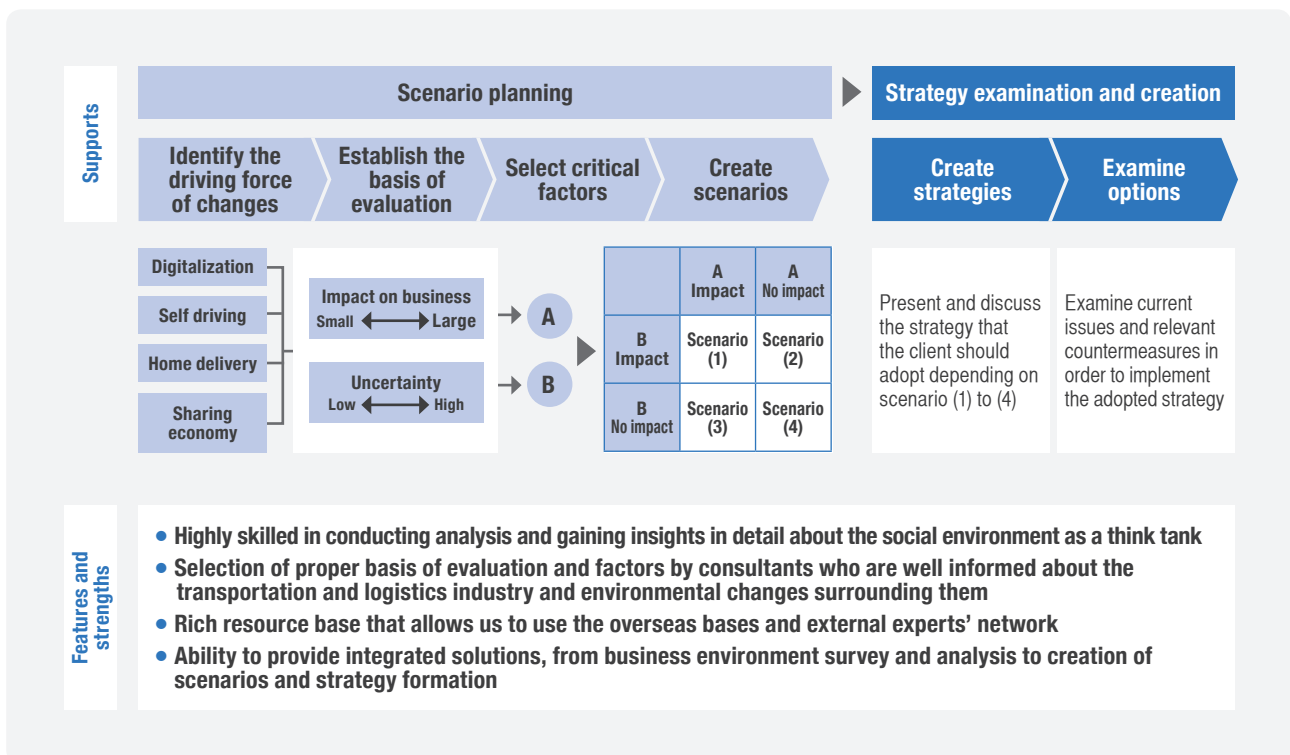
Case: Scenario building and strategies on urban logistics of Japan, US and China in 2030

NRI provided support for a project for a component manufacturer A by implementing scenario planning on state of urban logistics of Japan, US and China in 2030 and derive strategic hints against each scenario drawn.

Company A was looking for a strategy which could respond to the changes in business environment surrounding the future urban logistics. However, amid significant changes in the environment due to innovation of digital technologies, etc., the company was facing a challenge in implementing long-term forecast based on the past trends and creating and examining strategies.

NRI implemented scenario planning based on the possible factors of change and had a thorough discussion regarding the future strategy. As a result, we noticed a gap between the company's original business scope and the strategy formulated based on the scenario planning, which required a revision of the company's position within the industry and their target customers.

■ Scenario Planning by NRI



Support for Formulating and Implementing SCM* Reforms Plan based on the Characteristics of Infrastructure Industry

*Supply Chain Management



It is necessary to create a mechanism that is linked to the entire supply chain so that management and businesses can adapt to the drastic changes in the business environment.

Companies reliant on their employees for all the operations is likely to face challenges

“Now” is the time for supply chain reforms to be implemented at the corporate level

Recently, the environment for infrastructure companies has been changing drastically, including increase in globalization of businesses, rapid development of IT technologies, such as AI, Big Data and IoT, entry of new players due to policy changes such as deregulation, serious resource constraints as Japan faces population decline, etc. and issues that need to be addressed are increasing and becoming more complex.

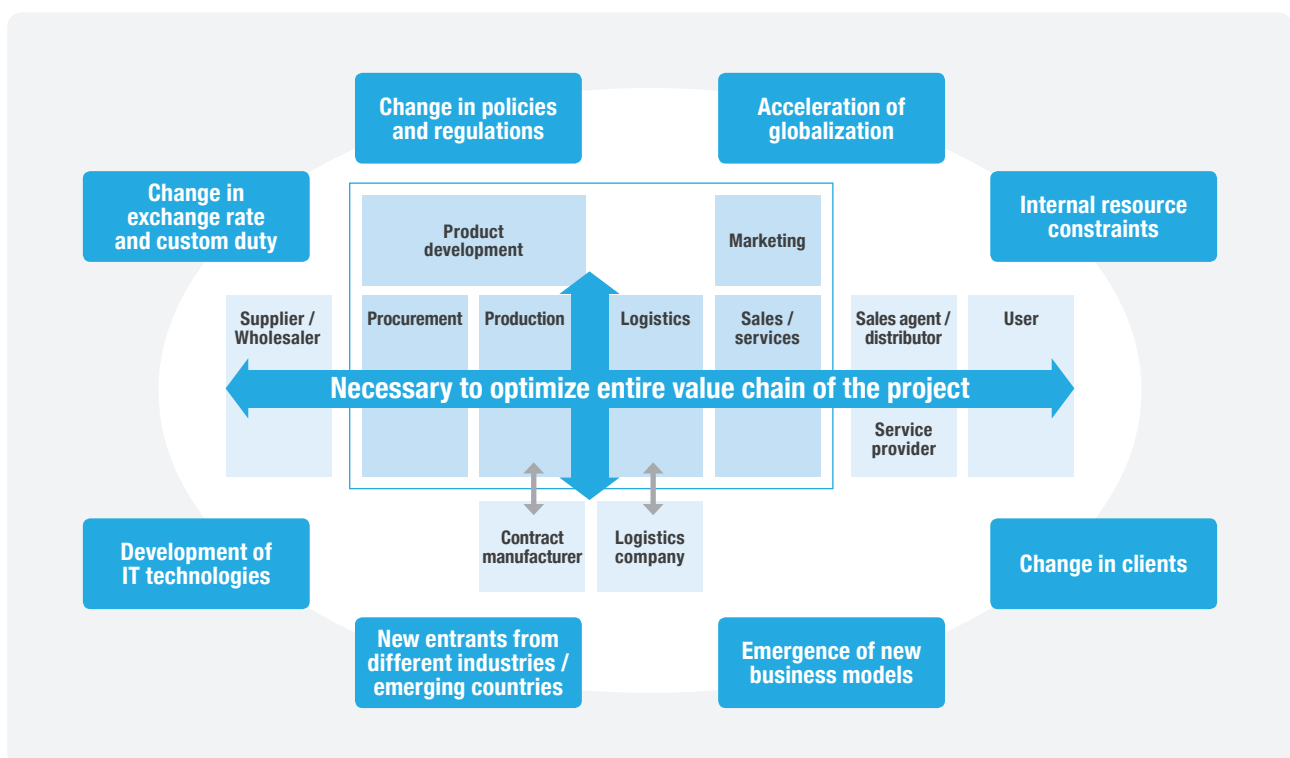
If the business management cannot respond to uncertainty, diversity and complexity, this can lead to a decrease in efficiency, delay in making important decisions from a competitiveness perspective and significant deterioration of management indicators.

In order to maximize the efficiency of management resources (people, things, money and information) and improve sales, profit and cash flow simultaneously, it is necessary to promote reforms at a corporate level under the direction of the management layer.

If the scope of SCM reforms is restricted to extremely narrow domains, such as only in logistics and procurement, the effect of improvement activities will also be limited.

It is the time to optimize the entire supply chain and dynamically evolve it by using more IT technologies, and ensure that SCM reforms are recognized as a top priority management task.

■ Changes in the Environment of the Infrastructure Companies and Issues of Management and Business



NRI provides support for introducing reforms in the overall SCM structure, including changes in the organization, HR system and trade terms with suppliers/customers.

A steady viewpoint can help in implementation of SCM reforms that is considered as a management issue

In order to ensure that SCM reforms generate promising results, it is necessary to carry out examination and promotion in consistency from two perspectives, i.e., from the view of overall optimization and effectiveness of on-site operations. For instance, if we start from Fit/Gap analysis that is restricted to specific businesses, various inefficiencies can be detected, but priorities are not set and resistance from employees towards the changes in business cannot be overcome would not see the maximum benefits.

We have good track record in providing consistent support, including implementation of design by ensuring consistency between management/business strategy and SCM, introduction of business/IT, incorporation of Human Resources (organizational or evaluation scheme) changes at the employee level, as well as data analysis and PDCA at the time of operations. Moreover, we have a team of management consultants who are familiar with the industry, business/IT consultants who are also experts in SCM reforms and engineers from Systems Department for implementing the reforms. We also have a rich network of solution providers that can be used to quickly implement PoC*.

*Proof Of Concept

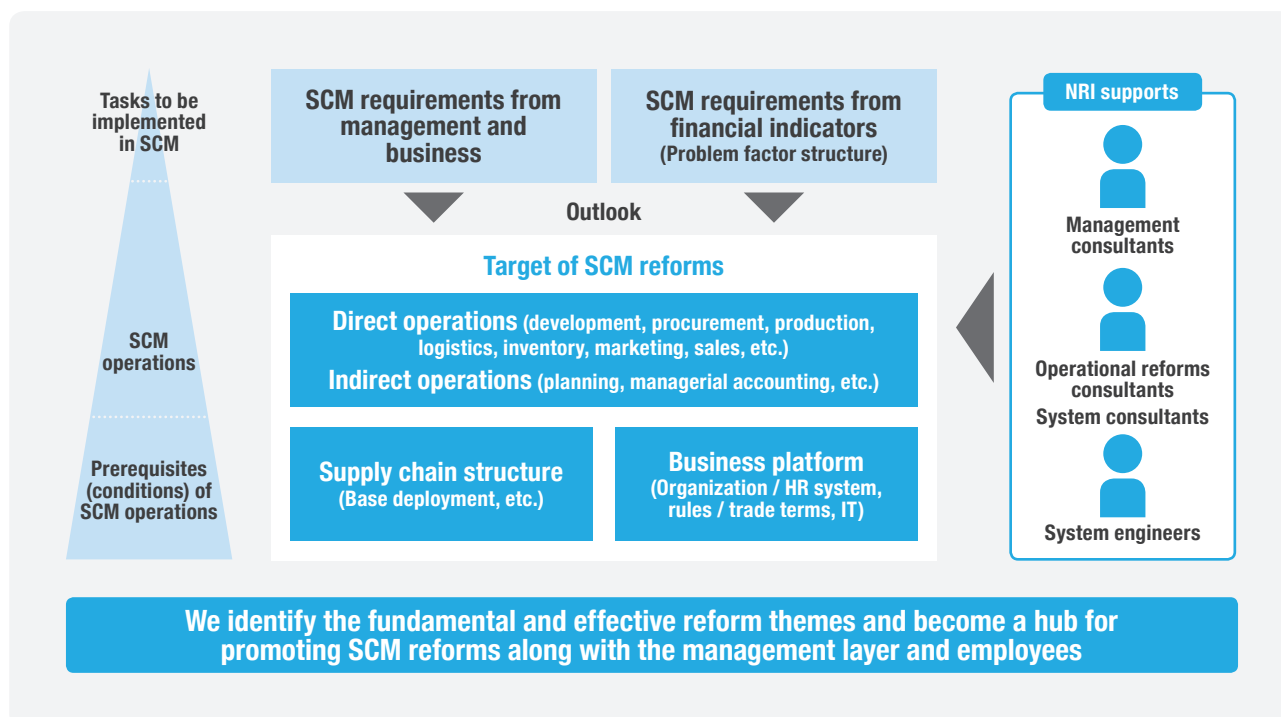
Case: Developed a mechanism of supply chain that can act as a base for business management

NRI provided support to an industrial machinery manufacturer A, from creating a plan for SCM reforms to designing operations and rules. However, even if the mechanism for overall optimization is created, it is ineffective if the organization and employees are not convinced. In order to prevent this, we also engage in consensus building within the company on the objective and target effect of SCM reforms and maintained a balance between the roles and responsibilities of each organization. Moreover, we created an environment where the organization and employees can get a return corresponding to their efforts by ensuring that data accumulated through SCM operations can be used for other operations as well.

With such reforms, unnoticed inefficiencies become apparent, for example, when visualizing the inventory responsibility. Hence, we build consensus by conducting workshops across organizations. In addition, establishment of a steering committee by the management helped in promoting reforms without any setback caused by “NIMBYism”*.

*NIMBY: Not In My Back Yard

■ NRI’s Approach for Implementing SCM Reforms



Support for Digital Transformation in the Energy Industry



High frequency implementation of “Business planning → Partnering → Demonstration → Commercialization Cycle” in response to the rapid changes in industry.

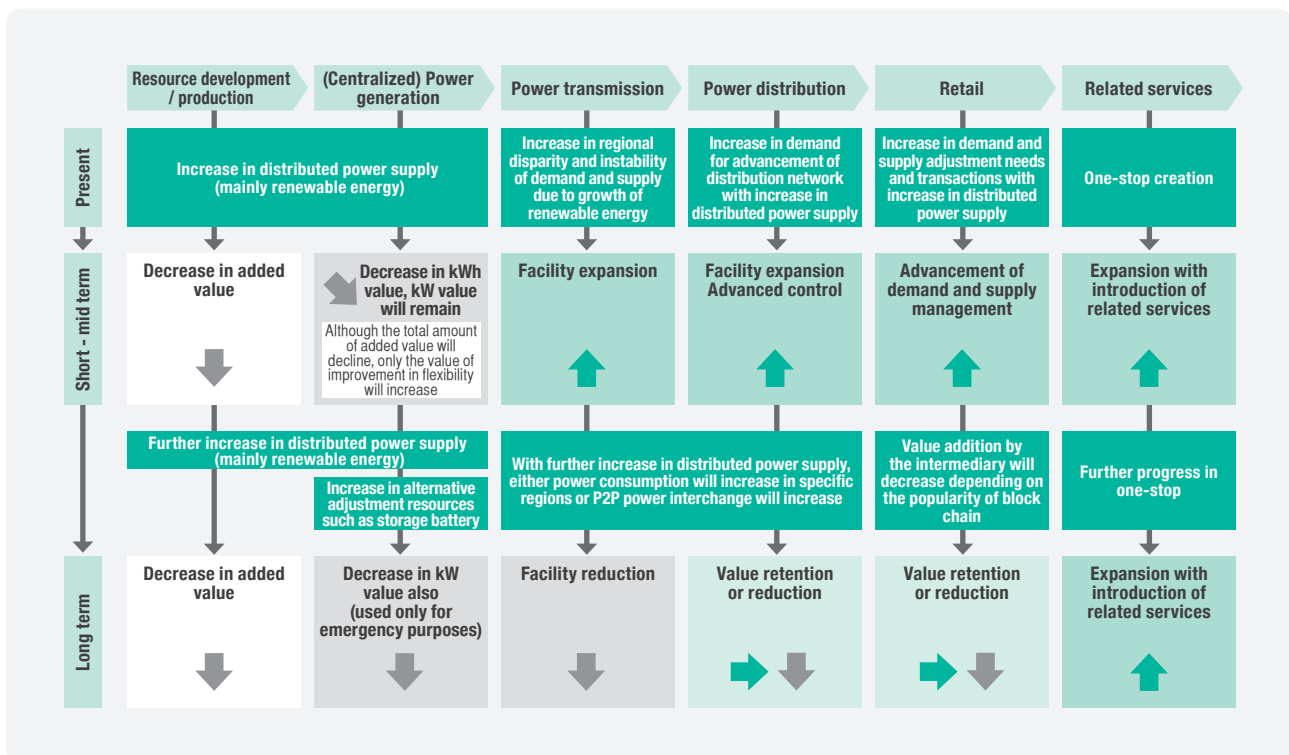
Destructive innovations are observed in the Energy industry

It is necessary to reduce CO₂ emissions to prevent climate change and global warming. In the power generation business domain, all countries are focusing on the use of renewable energy in place of fossil fuels. As a result, operators of various nationalities are entering into the renewable energy power generation market in Japan. Furthermore, government is reviewing the regulations around the electric power and gas industries. For example the retail business has been deregulated and new players are expanding their presence in the market. On the other hand, with an increase in renewable energy especially in the western countries, the supply system of energy, by distributed power sources is becoming more common.

Acquire new business opportunities while the market is undergoing changes

Two trends can be seen in the energy industry. First, “Decentralization of energy system”, in which the customers own their own power generation facility and electricity is traded among customers. This includes transactions leading to the so-called P2P (Peer to Peer) power trading system. Second, “One-stop of energy services”, in which the traditional energy suppliers along with new market entrants can acquire opportunities to provide value along with the development. Thus, new business opportunities have emerged to monetize these trends.

Business Environment Changes in the Energy Industry



NRI provides support for integration of business development processes by focussing on the mid-term changes in the market.

Integrated support from planning to execution through consulting and IT solutions

NRI provides support for creating a business plan based on the market forecast and issues related to commercialization of themes where business opportunities will emerge in the future by using our deep industry knowledge.

Further, NRI has a network with domestic and overseas players that possess relevant technologies required for commercialization. Using this network, we implement business matching to supplement capabilities/functions that our clients do not have and provide support for collaboration related negotiations and investment.

We also provide support for implementing PoC* projects to assess the feasibility of the system, in cases forming a team from NRI's consulting and IT/system solution units. In particular, we have a great record of implementing PMO* operations, such as creating a detailed plan for PoC and acquiring government funds. Moreover, if required, we provide proactive support for building a simple system and analyzing big data.

*PoC: Proof of Concept
*PMO: Project Management Office

Case: Provided support from business plan creation to investment into overseas venture companies in distributed power supply domain

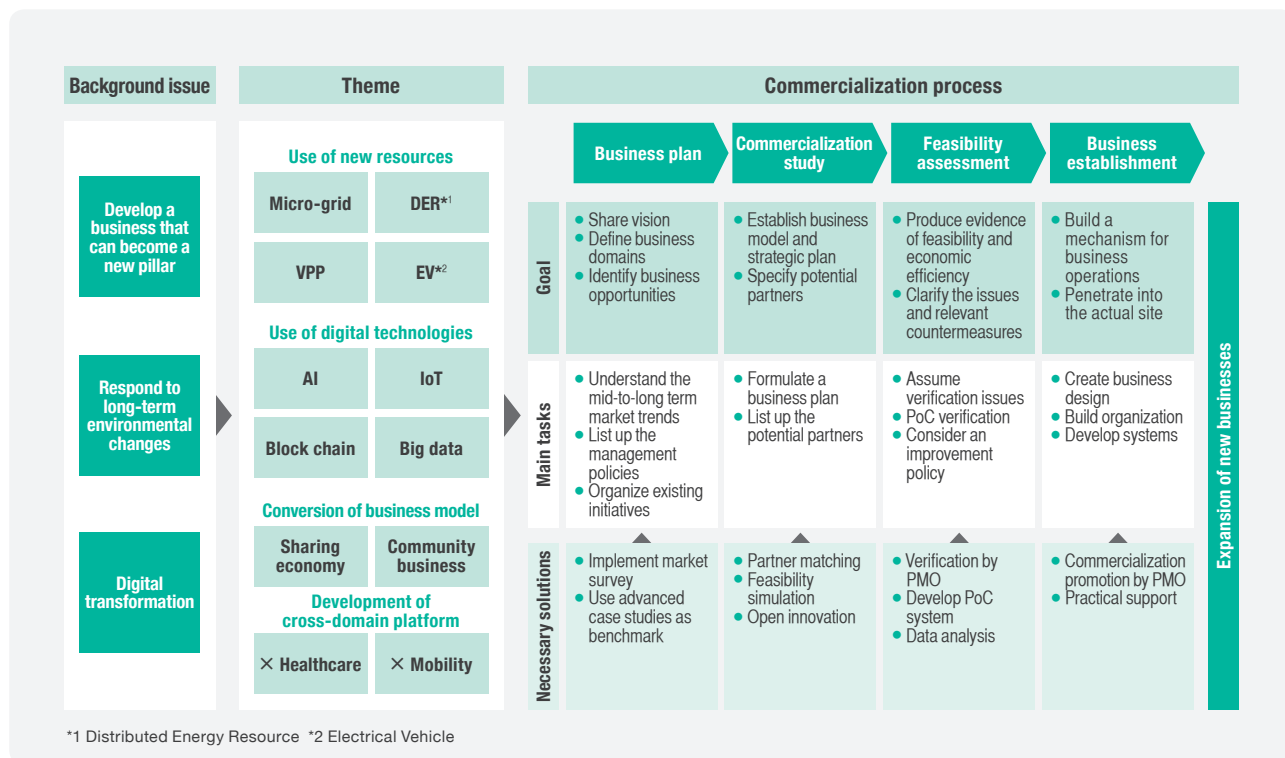
NRI provided seamless support to a leading energy company A, from creating a business plan to making investment into overseas venture companies of the distributed power supply domain that will expand in the future.

We researched the business opportunities for distributed power supply domain in the future through a global market survey and proposed to promote businesses by collaborating with an overseas partner. In order to find the partner with the best strategic fit, we screened the more than 200 energy-related venture companies from our proprietary database, followed by a detailed company evaluation (Due diligence) for the particular company of interest. Company A subsequently, decided to invest in the relevant company.

In addition, we took the responsibility of Project Management Office (PMO), from creating a future business plan to planning and implementing PoC of domestic VPP* businesses for another leading energy company B.

*Virtual Power Plant

Support for Digital Transformation in the Energy industry



*1 Distributed Energy Resource *2 Electrical Vehicle

Support for Regional Revitalization



Regional revitalization aims at realizing overcoming population decline and revitalization of rural areas integrally to maintain vitalized economic society.

The impact of population decline, low birthrate and increasing aging population is problematic in Japan compared to other countries in the world

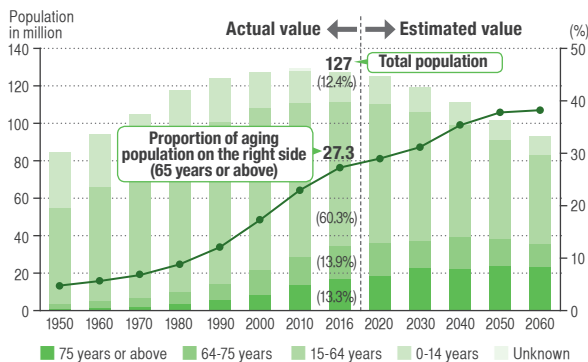
Japan is taking “Regional revitalization” countermeasure to overcome the challenges of population decline and over-concentration of population in Tokyo

Japan’s population has been declining since 2008. The percentage of population aged 65 years or above is as high as 28% of total population, and the low birth rates and aging population is continuing to worsen. The population decline in Japan is especially problematic in rural areas. However, if the population declines in rural areas, there will be a knock-on effect to urban areas, as population from these rural towns will not migrate for employment, thus urban population will also see a decline. Therefore there is a high concern that the economic society of Japan may, as a whole, lose its vitalization. Population decline and population aging is also expected to occur in developed countries like Europe and America as well as in the Asia in the near future.

“Regional revitalization” is the Japan’s first policy that is focused on addressing the overcoming population decline and population concentration in Tokyo. It is an initiative that breaks the vicious circle of “Population decline resulting in contraction of rural economy which also leads to contraction of rural economy that speeds up the population decline”. In order progress with the initiatives further, the government of Japan established a comprehensive strategy of the country at the end of 2016 (as shown in the following figure) that defines policy goals, basic strategy and the countermeasure. The comprehensive strategy of the country shows the methods for promoting regional revitalization. The central government is not enforcing one strategy for all municipalities to implement. Rather, it is a mechanism that allows municipalities to formulate and promote their own regional comprehensive strategy based on their new ideas while referring to the comprehensive strategy of the central government as a guideline.

Population Decline and Aging in Japan and Comprehensive Strategy by the Government of Japan

Declining population, low birth rate and increasing aging population



Source: Created by NRI through “White paper on 2017 The Aging society” by Cabinet of Japan

Basic goals of comprehensive strategy by government of Japan

1) Create “Jobs” in rural areas

Tourism, agriculture, forestry and fisheries promotion

2) Create new “People flow” to the local area

Migration promotion, nurturing resources for regional revitalization etc.

3) Encourage for marriage, childbirth and child raising

Workstyle reforms, youth employment countermeasures, WLB* realization etc.

4) Develop a “City” for the future generation

Compact city, small base, national strategic special zones, etc.

*WLB: Work Life Balance

Japan tries to overcome population decline and contraction of rural economy by the development of city, people and jobs and establishment of virtuous circle

NRI supports the initiative of “regional revitalization” from the viewpoints of creating mechanism, regional strategy and business in regions by the central government and local public entities.

Supporting nation in creating a mechanism of “regional revitalization”

NRI supports the development of a national strategy plan, system and mechanism using the “Regional Revitalization” as reference. NRI takes into account the current situations of our client countries/governments, and assesses the effects that promotes sustainable initiatives based on our experiences of implementing “Regional revitalization” in Japan. Regional revitalization is a political measure that should be implemented mainly in rural areas while sharing the awareness about the challenges that are common throughout the country. Based on the viewpoint of “Supporting innovation in rural areas with motivation and enthusiasm”, the government of Japan supports rural areas by 1) “Information support (providing information based on the analysis of rural economy, etc.)”, 2) Human resources support (dispatching experts according to the requirements of rural areas etc.) and 3) Financial support (according to budget and tax measures).

Example of support for regional revitalization in regions (“Innovation program” supporting the establishment of business)

NRI has provided support for “Innovation program”, supporting establishment of business by cooperating with future entrepreneurs in rural areas, local creators, financial institutions in rural areas, local public entities, think tank, media etc., as one of the menus supporting regional revitalization. We have developed a network with more than 100 innovative leaders across the country who lead social problem-solving approach with their unique ideas. In the innovation program, we connect innovative leaders and local future entrepreneurs in workshops with various ideas (planned and organized by NRI) for the development of business plans. In total 28 business plans were created in 3 years in the “Tokachi Innovation Program” at Tokachi area in Hokkaido prefecture, of which 7 led to the actual founding of the business.

Initiative by Local Government and NRI’s Support

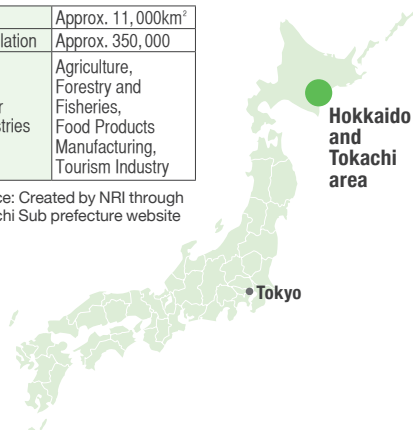
Tokachi Innovation Program

Future entrepreneurs and innovative leaders collaborate in developing and realizing new business plan with social problem-solving approach, with support by NRI
Total 28 business plans were created in 3 years, of which 7 led to the establishment of business (tourism and human resource)

Tokachi area

Area	Approx. 11,000km ²
Population	Approx. 350,000
Major industries	Agriculture, Forestry and Fisheries, Food Products Manufacturing, Tourism Industry

Source: Created by NRI through Tokachi Sub prefecture website



Tokachi Innovation Program



City Management



With the increasing debt of local governments, it is necessary to holistically address problems such as hollowing-out of cities due to depopulation, and aging infrastructure, etc.

Problems such as hollowing-out and aging infrastructure in cities will become more severe in the future

It is necessary to implement objective prediction on the image of the city decades later and create futuristic image

The problems such as hollowing out of local cities and outskirts of metropolitan cities will worsen in the future along with the population decline. Under such circumstances, it is necessary to develop a compact city and maintain density in cities in order to sustain the urban functions and public transportation, and to protect the livelihood.

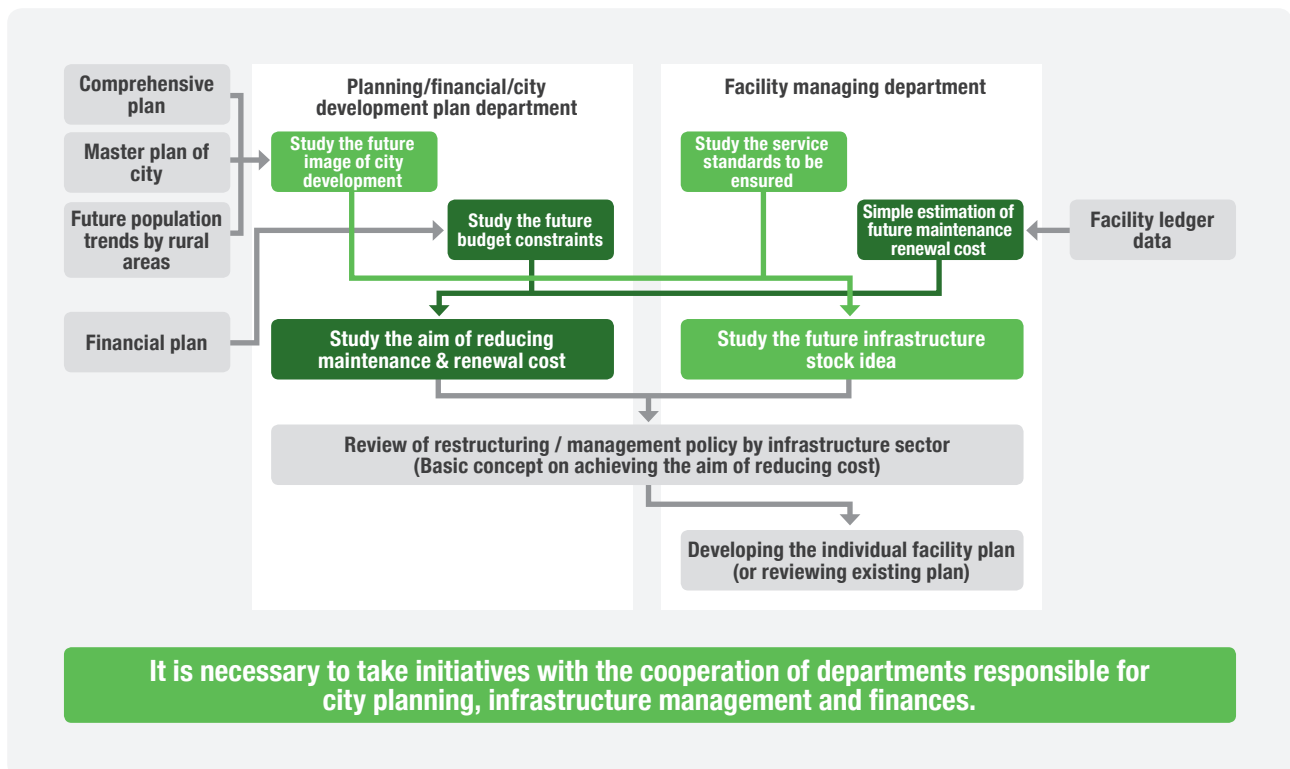
There is high risk of problems such as aging infrastructure that support the framework of the city. For example, concrete surface peeling, damage of underground pipelines, bridge collapse, etc. The infrastructure management that minimizes life cycle costs while ensuring safety is one of the most pressing problems under the worsening financial situation of the local government.

Both city and infrastructure require a long term planning in the scale of decades for its implementation. Therefore, it is necessary to predict the future to create a realistic future image and then, create an action plan for its implementation.

The developing countries such as in Asia are growing rapidly, following similar steps to some cities in Japan and they may also face the problems faced by Japan in near future.

Japan as a country already experiencing challenges, will develop solutions to solve the issues in the city using latest technology and it is expected to be expanded to various countries.

Review Process of City Infrastructure Management Plan



NRI supports the formulation of management plan for government's mid-to-long term vision of city & infrastructure and its implementation.

Extensive support for resolving all management issues in cities

NRI provides extensive support in resolving management issues in cities.

Following process would be proceeded to control unplanned expansion chaos and formulate appropriate management plan.

- 1) Analyze the current situation and future trends of a city from the viewpoint of population, economy, city functions, transportation, disaster prevention, administrative management, etc.
- 2) Materialize the urban structure for mid-to-long term to resolve the issues in cities.
- 3) Identify the areas that is attractive as the location for residency and urban function in order to implement the urban structure.
- 4) Develop policy options that should be implemented by the government to attract urban function and residency in the identified areas. Latest technologies such as IoT, AI, Automated driving, EMS, and etc. could be applied if its appropriate.

The mechanism of city management cannot be sustained only with government initiatives. Therefore, it is necessary to build a scheme in which public and private organizations work together while creating sufficient business opportunities for the private companies involved.

Visualizing potential of business innovation in cities through "Growth potential city ranking"

NRI has identified the following six elements are required for business innovation in the cities, based on the analysis of growth potential of cities globally.

- 1) Cultural receptive to diversity
- 2) Initiatives encouraging innovation
- 3) Platform for diverse industries
- 4) Sufficient and diversified human resources
- 5) Ease of living in cities
- 6) Attractiveness of the city

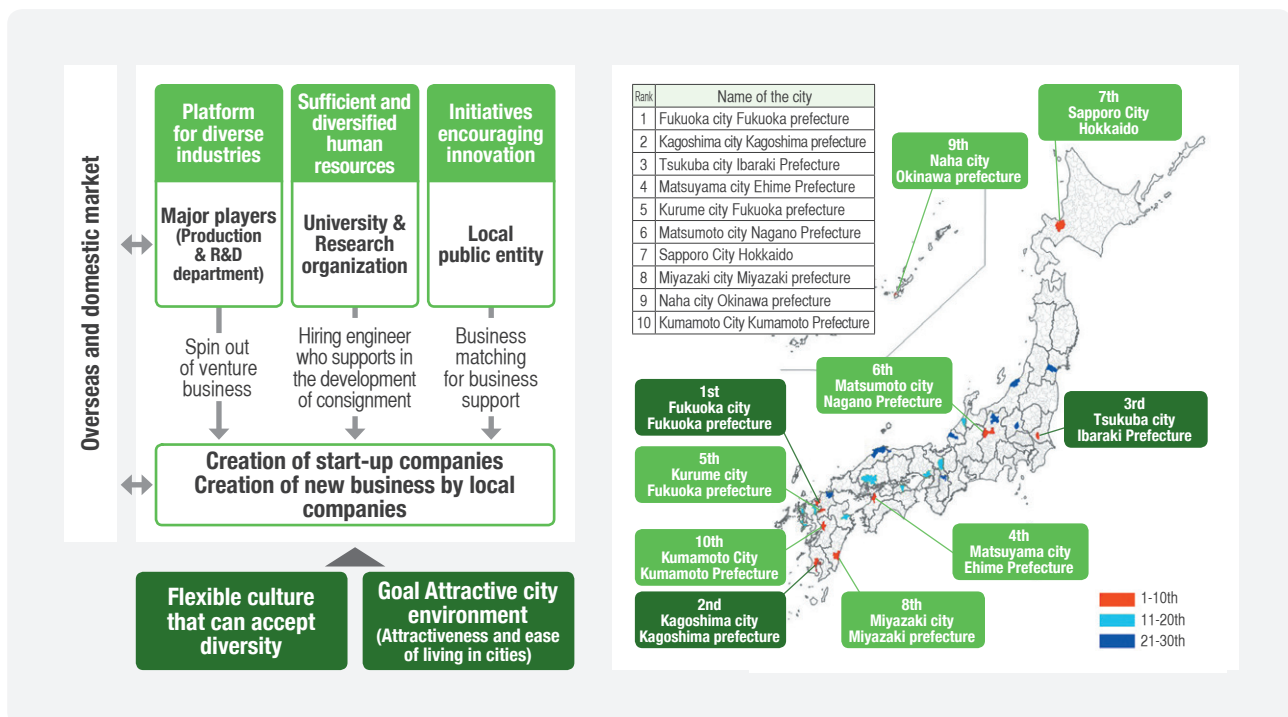
Based on above elements, we conducted a proprietary survey of 100 cities in Japan to evaluate the "Growth potential city ranking". The analysis visualizes the current state and future potential for business innovation in cities.

Based on the ranking, managers in each city can quantitatively understand the strengths and weaknesses of their city, and thus can consider methods of further complementing their strengths, whilst implementing measures to overcome their weaknesses.

NRI uses this ranking to support the policy planning of cities in Japan. This ranking can be used as a KPI* for city management.

*KPI: Key Performance Indicator

"Growth Potential City Ranking by NRI"



Disaster Prevention / BCP Development



Business persistence risk is increasing for the companies which depend on their global supply chain, since natural disasters are expected to become more intense due to global warming.

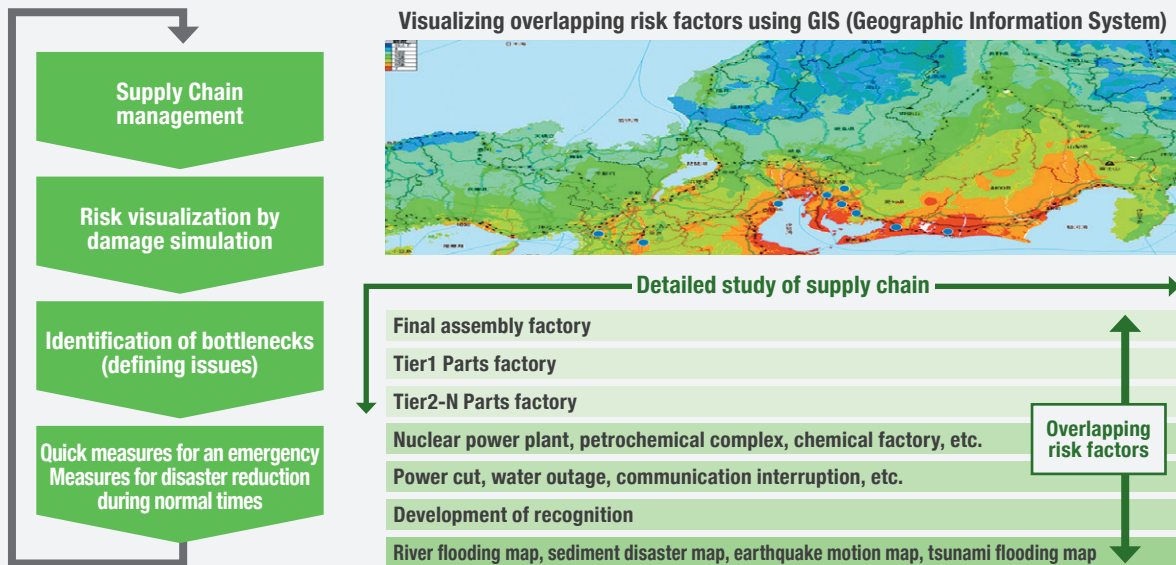
Impacts of disasters will become more severe in a society that is expanding their network globally

Businesses must develop relevant strategies for business continuity by visualizing risks

With the effect of global warming, natural disasters are becoming more frequent and intense. On the other hand, with global supply chain expansion by distribution and manufacturing companies, the impact of disasters are likely to be more severe than previously experienced. Companies with global network experienced the impact of natural disaster during the Tohoku (North-East Japan) Earthquake (2011) and floods in Thailand (2011) that disrupted the automobile production, and the 1999 Jiji Earthquake in Taiwan that led to a rise in the prices of computer parts. There may also be a risk of business discontinuity even if the company's location is not directly affected from the disaster. Therefore, it is necessary to visualize the risks in supply chain during normal operation and develop relevant strategies to minimize the risks during disasters.

Through the lessons learned from the disasters that occurred in the past, we have realized the importance of understanding the supply chain in great depth, and will expand our understanding on the structure of supply chain during normal operation. However, expanding knowledge of supply chain will not be enough to deal with major disasters. Therefore, it is necessary to analyze the potential risk of damage to the company and factories, and impact on the social infrastructure for business such as electricity, water supply and transportation network. It is also necessary to predict supply chain disruption risk and perform a "bottleneck analysis" beforehand based on the disaster and flood hazard mapping. This approach can help in eliminating critical bottlenecks during normal operation and also reduces the impact of disasters by making quick recovery.

Support for Business Continuity Management of Global Supply Chain



It is important to visualize the risk through a detailed study of the supply chain of the company

*Automated Guided Vehicle *Automated Guided Vehicle

NRI provides support from the phase of simulating the disaster risks using GIS, formulating disaster prevention measures and developing BCP for government agencies and companies until its recovery and restoration.

Disaster simulation service that supports the initiatives of “risk visualization”

NRI has extensive experience in disaster risk management consulting and solutions. For example, we were involved in simulating damage estimation during massive disasters and large-scale floods undertaken by the Central Disaster Prevention Council under the government of Japan, and providing consulting support for formulating disaster prevention measures. Further, we developed and introduced the Disaster Information System (DIS) that transmits early estimation results of disaster damage within 15 minutes of its occurrence to the Cabinet Emergency Control Center or Cabinet Intelligent Information Center. With expert knowledge and technology, we have been using our proprietary “Supply chain risk evaluation system” that estimates supply chain disruption risk at the early stage with synchronization of “Damage simulation services” that assess the possible damage which may be caused to our client company’s headquarters, production location and supplier. This system is used as a disaster prevention measure and supply chain risk management tool by large-scale automobile and automotive parts manufacturers.

“Board BCP” supports businesses in determining flexible and compatible trade-offs to face an emergency

NRI has provided support for developing “Board BCP” for a heavy industry company. “Board BCP” is a set of decisions making criteria that is agreed within the whole company, unlike traditional BCP which only focuses only on the early response manual etc. It is based on the idea that it is valuable to have an integrated decision making process, during disasters.

Since critical resources such as facility, personnel and systems are limited during disaster, there is an immediate requirement for tradeoff decisions such as “what to leave and what to protect”. Therefore, it is necessary to analyze the gap between the “to-be” and “as-is” situation and to identify challenges in business continuity with the help of “goal setting” and “risk visualization” of items and level that must be protected during normal operation. Since the management’s values differ during any emergency, there is a risk that ideal actions cannot be taken across the organization. Therefore, it is important to identify the priority in the management’s values in advance. “Board BCP” functions as a tool for supporting business to make flexible trade-off decision when faced by an emergency.

NRI's Disaster Prevention/BCP Development Consulting Solutions menu

Risk visualization (simulation)

Location damage simulating service	Evaluate the damage risk at the factories location etc.
Personnel attendance evaluation system	Evaluate the possibility of employee attendance in an emergency and attendance time
Disaster measures chart creation	Create risk diagnostic documents by area or location
Supply chain risk evaluation system	Evaluate the impact of supply chain disruption

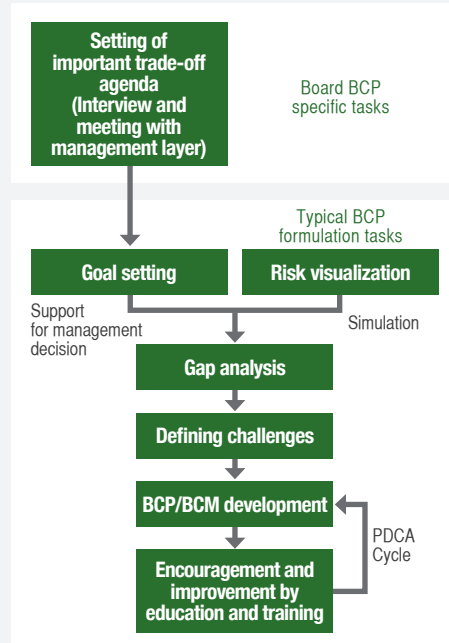
BCP/BCM consulting

Board BCP consulting	Provide support to the management to make decision in trade-off emergency situations
Business Impact Analysis (BIA)	Provide support in setting target recovery time based on evaluation of business impact by business disruption
Redevelopment of risk management regulations	Development of the list of risk related regulations, and provide support in redevelopment and content enhancement
BCP/BCM development	Provide support for the documentation of BCP/manuals and developing business continuity management (BCM)

Support for examining disaster prevention measures

Government Disaster Prevention Policy, Corporate Disaster Prevention Measures	Provide support for disaster prevention measures, recovery and restoration
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Task Flow for Board BCP consulting



Support for Introducing PPP to Government Organizations



Although the need of introducing PPP (Public Private Partnership) is increasing worldwide, the political challenges that need to be addressed by introducing PPP vary in each country.

According to the circumstances of each country, it is necessary to identify the purpose of introducing PPP as a measure

Need to design PPP scheme and select companies according to diversified needs

Since the demand of infrastructure development in the developing and emerging countries can't be supported only by government financial resources, infrastructure investment through private funds is being more widely adopted. PPP is considered as a key mechanism for the development of new infrastructure.

On the other hand, developed countries are facing various challenges such as deterioration of existing infrastructure, management reforms for inefficient infrastructure businesses and off-balance sheet of assets by the government. Therefore, PPP is considered as an effective measure to resolve these challenges.

In the "PPP model for developing countries", infrastructure can be developed promptly as well as high quality services can be provided with the combination of multiple schemes including Official Development Assistance (ODA) and initiatives for resource development through technological cooperation, while prioritizing the fund utilization of private companies and financial institutions.

On the other hand, in the "PPP model for developed countries", it is necessary to shift the risk to private sector and get investors' participation to off-balance public projects from the government. Also, organization building and governance development will be required for the initiatives such as overseas expansion beyond traditional framework.

Purpose of Introducing Different PPP Model for "Developing Countries" and "Developed Countries"

"Model for Developing Countries"

Prompt Infrastructure Development

- Developing flexible infrastructure, independent from the support of international aid agencies and government budget
- Promoting necessary infrastructure development while curbing fiscal expenditure as much as possible
- Promoting foreign investment

Service Level Improvement

- Providing services by capturing customer needs and raising the awareness of employees
- Acquiring and attracting new customers using the know-how and network of private companies
- Advanced maintenance and management solutions using IT offered by private enterprises

"Model for Developed Countries"

Promotion of Financial and Administrative Reforms

- Reducing the involvement of government departments, government employees and reducing running cost
- Off-balancing administrative assets, shifting deterioration risk to private sector and standardizing fiscal expenditure

New Infrastructure Industry Innovation

- Promoting the entry of PPP business with high capability in construction business
- Converting business model aiming at high sales in short-term by construction business to "Earn by operations" business model in the long-term
- Privatizing public projects and expanding overseas

The key to success is to design a PPP scheme and identify the private-entity to involve reflecting the countries' needs.

NRI understands client-specific needs, thus can propose ideal PPP solutions from objective standpoint and supports until its implementation.

Provides support menu required for each phase of entire PPP project development

NRI provides support for all stage of PPP project development for various facility types and infrastructure development, with deep understanding of the economic cooperation system of Japan, and administration and financial system of each country.

In the first phase of our advisory service, we study conditions that define basic performance such as facility concept, necessary functions and scale. We also conduct onsite surveys and estimate development, maintenance and management cost for the formulation of a master plan considering the facility details.

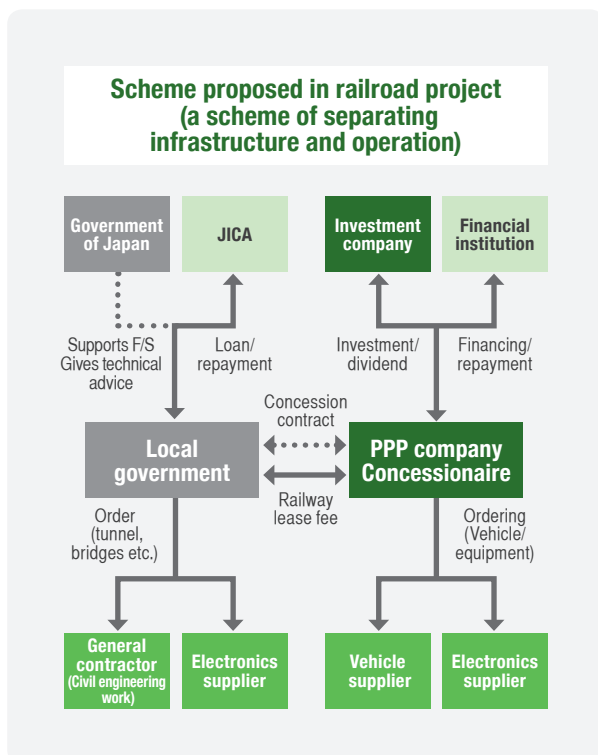
In the second phase, we study development and operation method of facilities, basic schemes, fund raising methods and order unit (bundling multiple facilities). We could also support by gathering the willingness of investors to participate in the bid, and conducting financial simulation as well.

In the third phase, we accompany and support until realizing the signing of agreements by developing the RFP (Request for Proposal) including the design of the criteria for prequalification and/or bids, proposal evaluation, management of selection committee, and creation of meeting material for committee.

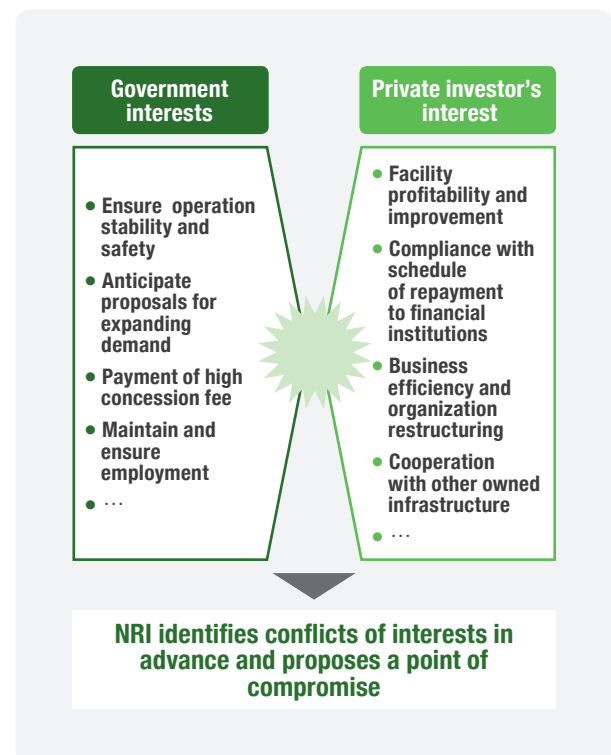
Provides practical solutions based on the experience of supporting domestic and overseas infrastructure development

NRI has conducted numerous projects on waterfront development, new transportation infrastructure development (LRT, etc.), redevelopment in central urban areas to resolve urban problems such as overcrowding, congestion and environment destruction in the major cities of Japan. We have been supporting the formulation of infrastructure plans in various fields such as transportation, urban development, sanitation and other facilities overseas using our past experience. For example, we proposed a scheme for a railroad project in which the funding for the infrastructure portion (e.g. tunnels, bridges, etc.) can be procured through government funds (local government budget and ODA loans) and operational portion (e.g. for vehicles, electronic equipment etc.) can be procured through private funds (as shown in the left figure below). In a project for support of a project in Southeast Asia, we actively supported the implementation of business by identifying expected issues beforehand and proposing common interests of the both parties' needs based on the findings of conflicts between the interests of government and private sector using our vast experience (as shown in the right figure below).

Proposal Illustration by the Study of Business Methods



Solutions of Advisory Services



Support for Implementing Measures on Environmental Protection and Sustainability



While the economy is developing and standard of living is improving, there is a rising concern over environmental pollution that requires urgent attention on taking measures for sustainable development.

Need to resolve various environmental issues simultaneously with industrial development and urbanization

In the course of economic development, there has been a rapid increase in the emission of exhaust gas and wastewater from factories due to industrial development, which is raising concern of industrial pollution, including pollution in surrounding areas and damage to residents' health. Furthermore, various environmental issues, such as generation of large amount of waste and exhaust gas from automobiles are becoming apparent with urbanization. Also, in many cases, it is difficult to establish an environmental policy that address all of these various environmental problems simultaneously.

The SDGs (Sustainable Development Goals) that are being advocated by the United Nations also include sustainable targets to strike a balance between economic development and environmental protection, and require activities and collaboration by various governments and companies.

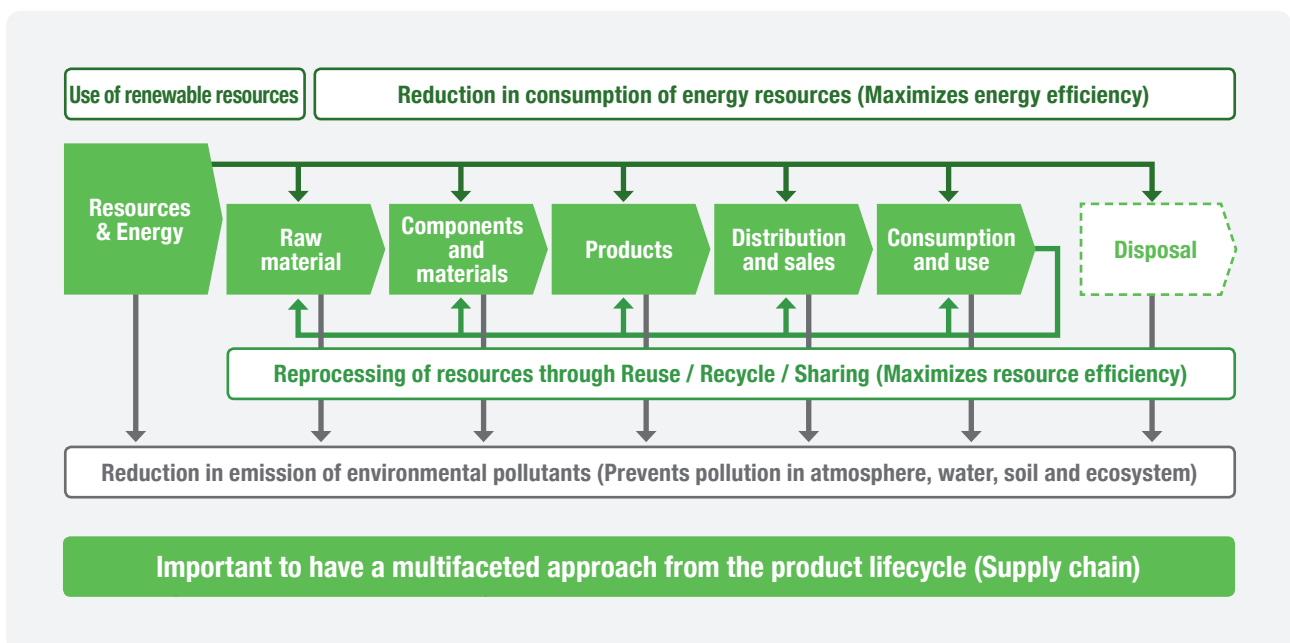
Sustainable development requires a multifaceted approach from the product lifecycle

Sustainable development requires implementation of measures against factories that are the source of industrial pollution as well as development of various multifaceted solutions throughout the product lifecycle of manufacturing companies.

If we look at the product lifecycle, environmental pollution is not only caused by the energy that is consumed or pollutants that are emitted while the product is in use, or due to inappropriate disposal of a used product, but also by various pollutants that are generated during the production of a product.

Companies are required to ensure environmental protection not only when manufacturing a product in their own factory, but during the entire supply chain, including manufacturing of components, materials and/or resources. With an aim of developing sustainable social systems, it is important to expand the policies and systems to take into account the whole product lifecycle.

Environmental Protection and Sustainability from the View of Product Lifecycle



NRI specifies the issues related to environmental protection and sustainability from the perspective of product lifecycle, proposes policies, designs systems and provides execution support.

Support for conducting research, formulating plans and implementing technical demonstration related to appropriate disposal and recycling of waste

It is anticipated that with improvement in standard of living, the waste discharged will also increase significantly. Therefore, it is necessary to organize the social systems for appropriate disposal and recycling of waste.

NRI extends various support related to waste processing and 3Rs (Reduce, Reuse, Recycle), which includes implementing research, proposing policies, formulating plans and designing systems. In order to develop a recycling system, it is necessary to implement various researches related to the product lifecycle, such as emissions from a used product, initiatives taken at the manufacturing stage, case studies of best practice and recycling technology of overseas companies.

Moreover, we support the implementation of demonstration projects and subsidy-funded projects to develop and introduce technologies and systems related to waste processing and 3Rs. Further, execution support is also provided to government and companies which includes taking charge of the office that manages these businesses and participating as a joint proponent in demonstration business, etc.

Support for implementing research about the current situation, creating guidelines and formulating standards to promote green buildings

In order to solve the climate change issue associated with consumption of fossil resources, wide-scale adoption of green buildings (ZEB/ZEH*) has become a challenge to promote energy conservation or renewable energy use in buildings.

NRI provides support for the planning and execution of policies that promote green buildings. In order to materialize green buildings, mutual understanding between the parties, including building owners, developer, designer and construction company, and the initiatives. In addition, various building materials, facilities and design-related knowhow are required for such buildings, is necessary as well as their proactive engagement. Therefore, we have been involved in activities, such as creation of policy roadmap, guidelines and standards for building material in collaboration with the related entities.

Moreover, from the perspective of technological development and resource training associated with green buildings, we are also working on a “design / demonstration competition” of green buildings through universities and private companies.

*ZEB/ZEH: Zero Energy Building / House

NRI’s Solution Menu for Environmental Protection and Sustainable Buildings

