

# Addressing Social Issues in Each Stage of the Value Chain

The Nitto Group takes into account the gamut of social impact that may be incurred throughout the entire value chain from procurement of raw materials to disposal of products. We fulfill our corporate social responsibility by complying with the applicable laws and regulations in every country and region that we operate in. We review the risks and opportunities to our business operations as appropriate.

## Risks and Opportunities to the Nitto Group's Business Operations

		Procurement of Raw Materials		R&D		Production		Logistics/Sales		Use/Disposal of Products	
Risks		<ul style="list-style-type: none"> <li>Administrative disposition (shut-downs, payment of fines and/or supplementary charges) and loss of public trust due to violation of laws/regulations, etc.</li> <li>Increase in business costs and impact on product development and operations due to tightening of applicable laws/regulations, etc.</li> </ul>		<ul style="list-style-type: none"> <li>Intensifying competition for recruitment of human resources with advanced expertise and drain of human resources</li> <li>Slowdown in production, occurrence of accidents and misconduct, and loss of public trust due to damage to employees' mental and physical health</li> </ul>		<ul style="list-style-type: none"> <li>Human rights infringement due to expansion of the supply chain</li> </ul>					
		<ul style="list-style-type: none"> <li>Human rights infringement and aggravation of conflicts as a result of procurement of conflict minerals</li> <li>Depletion of resources as a result of procurement of minerals, water, and other natural resources</li> <li>Environmental disruption as a result of procurement of mineral resources and petroleum-derived materials</li> <li>Increase in business costs as a result of a rise in cost percentage</li> </ul>	<ul style="list-style-type: none"> <li>Increase in business costs due to strengthening of initiatives, etc.</li> <li>Air pollution as a result of consumption of electricity, fossil fuels, and other energy sources</li> <li>Impact on the ecosystem and human health due to use of chemical substances</li> <li>Pollution of the global environment and increase in business costs as a result of emissions of pollutants and hazardous substances</li> </ul>	<ul style="list-style-type: none"> <li>Damage to health, shut-downs, decreased orders and suspended sales due to occupational accidents</li> <li>Cancellation of contracts, compensation for damages, and loss of public trust due to fraudulent quality claims</li> <li>Damage to neighborhood by fire and explosions</li> <li>Shut-downs and increase in business costs due to soil/river pollution as a result of environmental accidents</li> </ul>	<ul style="list-style-type: none"> <li>Increase in business costs due to shortage of human resources</li> <li>Compensation for damages, decreased orders and suspended sales due to logistic accidents, such as cargo breakage, and occupational accidents</li> <li>Decrease in the working/productive population in Japan</li> </ul>	<ul style="list-style-type: none"> <li>Impact of products on the ecosystem and human health</li> <li>Fines and loss of public trust as a result of serious complaints and recalls</li> </ul>					
Opportunities	Human Resources	<ul style="list-style-type: none"> <li>Recruitment of human resources with advanced expertise by enhancing recruitment branding</li> <li>Strategic placement/development of employees by promoting talent management</li> <li>Expansion of job opportunities by promoting diversity (elderly employment, empowerment of women and foreign national employees, employment of individuals with disabilities, etc.)</li> <li>→ Creation of innovation and sustainable growth by diverse employees</li> </ul>		<ul style="list-style-type: none"> <li>Development of employees by systematic training</li> <li>Promotion of work style reform</li> <li>Reducing presenteeism (working while sick) by developing a system for supporting employees' health</li> <li>→ Improvement in labor productivity and employee engagement</li> </ul>							
	Product Safety / Quality	<ul style="list-style-type: none"> <li>Ensuring access to resources by procurement of biomaterials and recycled materials</li> <li>→ Providing added value and reduction in procurement cost by replacing materials</li> <li>Reduction in procurement cost by using a wider range of vendors</li> <li>→ Expansion of options for material selection</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring safety of workers and products and reducing waste by changing/curtailing use of raw materials</li> <li>→ Reduction in business costs</li> <li>Ensuring safety of workers by improving work environment and managing chemical substances properly</li> <li>→ Enhancement of stable production and promotion of job security</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring safety of workers and reducing risks of fire/explosion accidents by risk assessment / chemical risk assessment</li> <li>→ Ensuring stable production and social credibility</li> </ul>	<ul style="list-style-type: none"> <li>Improvement in distribution productivity by business reform and promotion of work style reform</li> <li>→ Reduction in transportation cost and ensuring social credibility</li> </ul>	<ul style="list-style-type: none"> <li>Unified management of information for appropriate disclosure of information on chemical substances</li> <li>→ Increase in customer satisfaction</li> </ul>					
	Environment	<ul style="list-style-type: none"> <li>Reduction in CO2 emissions by switching means of transport</li> <li>→ Reduction in transportation cost</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in environmental impact on the ecosystem and humans by developing environmentally friendly products</li> <li>→ Development of new markets and increase in market share</li> <li>Discovery and creation of concepts for new products</li> <li>Development of technology for efficient use of energy and raw materials</li> <li>→ Reduction in business costs</li> <li>CO2 fixation by recovery and recycling of CO2</li> <li>→ Greater recognition by contributions to local communities and society at large</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in CO2 emissions by developing/introducing new technologies, use of renewable energy, etc.</li> <li>→ Discovery of concepts for new products, reduction in electricity cost</li> <li>Environmental conservation by proper management of chemical substances</li> <li>→ Ensuring safety of local residents</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in CO2 emissions by switching means of transport</li> <li>→ Reduction in transportation cost and improvement of logistics operations</li> </ul>	<ul style="list-style-type: none"> <li>Providing products that are healthier and more environmentally friendly</li> <li>→ Development of new markets, increase in market share</li> </ul>					
	<ul style="list-style-type: none"> <li>Reduction in waste through cyclic use of resources, ensuring access to resources, and reduction in pollutant and hazardous substance release</li> <li>→ Discovery of concepts for new products, reduction in treatment cost</li> </ul>										

# Human Resources

## Reasons for Materiality

The Nitto Group considers human resources to be our most valuable assets. Recruitment and retention of able human resources will determine the competitive advantage of the entire Group. In order for us to sustain our growth and continue creating new innovations, we see it as necessary to not only recruit global-minded people but also to create a work environment in which employees are constantly encouraged to take on challenges, thus enabling our diverse human resources to demonstrate their abilities to the fullest.

## Nitto Group's Approaches

At the Nitto Group, every employee is expected to be a "Nitto Person," who comprehends and lives up to the Nitto Way, that is, one who can function as an integral member of a global team to create new value by joining hands with people of diverse backgrounds without being divided by differences in culture and values. To empower human resources across the globe, we provide a shared personnel system and infrastructure, which encompass global grading, Nitto Competency, a Human Resource Information System (HRIS), and other programs. Going forward, we intend to develop more Nitto Persons on a global basis by accelerating the introduction of these programs to establish them within the Group firmly.

## Recruitment and Development of Employees

The ever-changing business environment these days is pushing the Nitto Group into the global market with the result that its overseas sales ratio reached over 75% in fiscal 2019. Against this backdrop, we will ensure that the Nitto Group continues to deliver innovation and sustains its growth by making greater efforts to recruit and develop people through enhanced employer branding and a systematic training scheme.

### Recruitment of Global-Minded Human Resources

#### Nitto Internship Academy hosted 1,400 graduate/undergraduate students

The Nitto Internship Academy is designed to provide students from across the globe with opportunities to grow through various experiences at Nitto.

Four unique programs were offered to students of all grades. Each student joined a team with Nitto employees to suggest new businesses or work on a task at various workplaces, after being briefed on the Nitto Group's hallmark innovations and strategies. In fiscal 2019, a total of 1,400 students were given this internship opportunity.

On the Experience Internship program, students were invited to join the branding team to communicate the Nitto Group's powerful appeal to people the world over at the Nitto ATP Finals in London. An exceptional opportunity to recruit students from the global job market, this program not only helps students to get to know the Nitto Group better but also enhances the Group's recognition in society at large.

#### Nitto Internship Academy Organization Chart

	First-year students	Second-year students	Third-year students (M first-year students)	Fourth-year students (M second-year students)
Innovation Internship			Attempting a new business	
1-day Internship	Designing one's own career path			
Extended Internship			Gaining workplace experience	
Experience Internship	Learning about global branding			

### Development of Global-Minded Employees Nitto Global Business Academy (NGBA)

Launched to foster future senior executives, the Nitto Global Business Academy (NGBA) is driving the Group forward in the areas of new business creation and solutions to managerial issues, transforming itself into a program that better caters to practical needs as a powerhouse that cultivates the human resources who will shape Nitto Person's identity.

More than 70% of Nitto's executives have undergone this training program offered by the NGBA and its predecessor Nitto University. We will continue to invite management candidates from around the world to this excellent training opportunity.

#### Textbook for Nitto Persons available in 15 languages

A training course on the Nitto Cultivation System (NCS) began in fiscal 2007 for all Nitto Persons to learn what it takes to live up to their namesake. The course covers basic knowledge from the six key areas that a manufacturing business should have, i.e., "Corporate Philosophy, CSR, safety, environment, quality, and 5S\*." The course textbook has been translated into 15 languages for people working at the Nitto Group companies around the world to gain shared understanding and was partially revised in fiscal 2019. In fiscal 2020, we will distribute the revised course textbook to our sites both in Japan and abroad to forge ahead with human resource development for the entire Nitto Group.

\*5S: A workplace organization method designed to maintain/improve the workplace environment. Short for "Seiri (Sort)," "Seiso (Shine)," "Seiton (Set)," "Seiketsu (Standardize)," and "Shitsuke (Sustain)."

### Empowerment of Employees Employee engagement survey "Seeds"

In May 2019, we conducted an engagement survey, "Seeds (Survey for Employee Engagement, Diversity, and Satisfaction)," to make ours a company where each of its members feels motivated. The questionnaire was sent to a total of 8,955 employees of Nitto Group companies in Japan, and 95.2% of them responded. The survey results show that, while the safety culture is highly regarded within the Nitto Group, it is imperative to enhance "communication between management and employees" and "productivity" in order to advance employee engagement. With this in mind, we drew up action plans for increased engagement in fiscal 2019, which will be implemented in fiscal 2020.

We plan to conduct the Seeds for the entire Nitto Group, including overseas Group companies in fiscal 2021, after which it will be conducted every other year.

### A Reviewed In-House Award System

To foster a culture of commending employees, each year, the Nitto Group awards businesses that had an outstanding performance. In fiscal 2019, the categories of the awards were realigned into four, i.e., "Financial Results Contribution and Marketing Award," "ESG Contribution Award," "Technology Contribution Award," and "Emotional Capital Contribution Award," to shed light on achievements by those from functions that underpin business.

From among the four award-winning projects, the best is selected and presented with the President's Award. In the first year of the new award system, a project on the "development of emulsion adhesion technology," the winner of the Technology Contribution Award, also won the President's Award, in recognition of its significant contributions to ESG and brand value enhancement for having received the "Excellence Award," a category of the 46th Environmental Award supported by the Ministry of the Environment of Japan.



Presenting the President's Award

## Diversity & Inclusion

The Nitto Group employs diverse people around the world, representing a wide range in terms of nationality, cultural background, gender, age, and employment type. As the working/productive-age population continues to shrink in Japan, it is vital over the long term that we open our doors wider to prospective employees by promoting diversity, while at the same time pushing forward work style reform to provide an environment in which employees find it rewarding and comfortable to work. Our goal is to create new values in management that incorporate multiple perspectives through these two approaches.

## Human Resources

### Empowerment of Women

Empowerment of women is among the top priority issues at the Nitto Group. For the sake of promoting diversity, we set a KPI of increasing the ratio of women in management from 17% (fiscal 2018 result) to 19% (fiscal 2020 target).

From fiscal 2020 and beyond, we are making it obligatory for employees, both male and female, to take childcare leave for at least five days within a year of having a child, so that all employees can work without worry.

### Well-being of Foreign National Employees

The Nitto Group appreciates the values and sensibility of foreign national employees, which are different from those of their Japanese counterparts. By making the most of their unique traits, we wish to bring about changes to develop products and services of high value and augment efficient operation. To retain foreign national employees, we organize a training course on cross-cultural communication, while at the same time assigning them foreign national mentors.

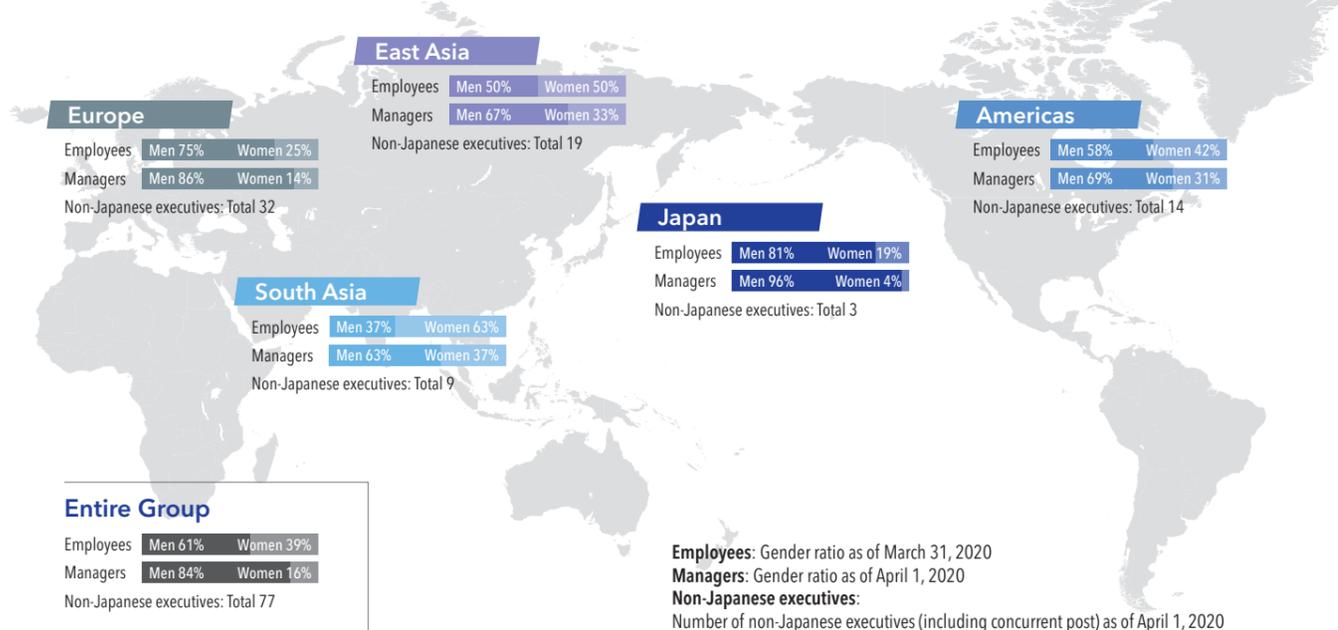
### Percentage of Employees with Disabilities Reaching 3.3%

The Nitto Group is committed to the employment of individuals with disabilities. In fiscal 2019, we held Himawari Summit where representative members from Nitto Denko Himawari Group companies (special subsidiary companies) and other sites where individuals with disabilities work were invited to compare notes on their employment and retention. As of March 2020, the percentage of employees with disabilities stood at 3.3% in Japan, which is among the highest in the country.



Himawari Summit

### Employment Data of the Nitto Group



## Product Safety/Quality

### Reasons for Materiality

The Nitto Group operates in 28 countries and regions around the world. As such, we are aware of the magnitude of impact that our diversified business activities have on local communities and economies. As a responsible manufacturer, we deem it imperative to ensure product safety, a secure workplace environment, and respect for human rights, not to mention product quality, cost, and timely delivery, throughout the supply chain. In fact, we currently receive customer requests that are more diverse and advanced than ever before, and local authorities are tightening their laws and regulations across the world. We at the Nitto Group consider it part of our corporate social responsibility to ensure that the workplace environment is improved and that human rights infringements are prevented, while at the same time providing products and services that satisfy our customers.

### Enhancement of Safety and Quality of Products

We do our utmost to ensure product safety and quality to prevent our products from having a negative impact on society, thus avoiding critical complaints and product recalls. To deliver products and services that satisfy customers, we identify and analyze any and all risks so that they might be minimized, thus assuring product safety and quality. At the same time, we anticipate changes in society and the market to come up with innovative product ideas.

### Building of a Quality Management System

Responding to customer needs by building a management system aligned with the evolution of our portfolio

In order to properly respond to ever-diversifying and advancing customer needs and the evolution of our product portfolio, all the Nitto Group companies seek to strengthen their foundation by raising the overall level of their quality management system and reengineering their business management system. In response to the ever-increasing level of requirements as we migrate to next-generation mobility, many of our overseas sites have acquired an IATF16949 certification. In Japan, too, we are working to acquire such a certificate in line with the expected demands of our customers.

In order to capture customer needs early via customer-oriented marketing and deliver products that meet customer requests, we localize the entire process from procurement to distribution. We provide high-quality products by differentiated technologies such as design that consider work efficiency.

### Nitto Group's Approaches

In order to deliver well-being and satisfaction to our valued customers through the supply of products and services, we assign quality managers in the corporate quality division, business divisions, and Group companies, to build a structure for proper quality management and we have obtained certifications of external international standards for management systems.

To develop a safe and secure workplace environment, the Environment & Safety Committee, which includes members from the management team, meets to discuss goals and programs to integrate activities with management objectives.

Respect for human rights is another key consideration for the Nitto Group that needs to be promoted globally, not only within the Group but also throughout the entire supply chain. The Nitto Group endorses the Universal Declaration of Human Rights and has established its own Basic Policy on Human Rights to promote CSR-based procurement.

### Proper Management of Chemical Substances

Anticipating future trends in regulations to apply standards stricter than applicable laws/regulations

Proper management of chemical substances is an essential responsibility for the Nitto Group. We use upwards of 4,000 varieties of chemical substances, which include chemicals that can pollute the environment and create health hazards if misused.

As one government after another tightens its laws and regulations, we stay abreast of the latest information to set for ourselves stricter voluntary standards in order to implement proper global management of chemical substances. Furthermore, by centralizing the management of data on chemical substances contained in materials and products, we respond to inquiries from customers promptly and properly.

# Product Safety/Quality

## Improvement of Workplace Environment

The Nitto Group is working to prevent occupational accidents and injuries through concerted efforts to create workplace environments where everyone can work in good health without anxiety. We believe it is our responsibility as an employer to protect the safety of all the persons working on the Nitto Group's premises, including Nitto employees and workers from subcontracting businesses and construction services. Our goal is to reduce to zero all accidents and injuries that involve workers within our premises. To this end, we encourage persons in charge of workplace safety at each site to demonstrate captaincy, and we have established a Safety Council, which includes our business partners, to discuss safety so as to involve all the sites in our efforts to minimize risks of such accidents.

Meanwhile, as an integral member of a value chain, we strive to reduce risks of closedowns and suspended sales to ensure timely supply to customers.

### Efforts to Prevent Critical/Serious Occupational Accidents\*

#### Taking preventive measures for high-risk operations

In fiscal 2019, we had seven critical/serious accidents, down from 12 in fiscal 2018. To safeguard against high-risk operations, such as reaching out for moving machine parts or carrying heavy loads, we distance "sources of hazards" from "humans," thus enforcing machine safety. For instance, we have introduced human detecting sensors and a tag system to forklifts to further enhance the safety of their operators.

To curb critical/serious accidents that result from unpredictable conditions, we facilitate good workplace communication and create an open workplace culture for early discovery of hazards which can cause such accidents. At the Safety Council meeting held at the Onomichi Plant, we identified more than 100 risks and five new serious risks, each of which were addressed immediately, thus successfully preventing serious occupational accidents.

\* Critical accidents: Accidents resulting in death or permanent disability  
Serious accidents: Accidents with potential to have been much more serious

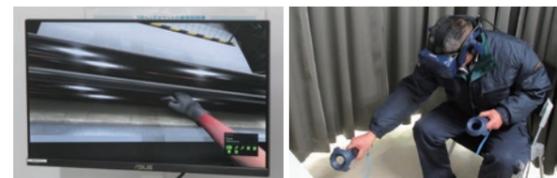
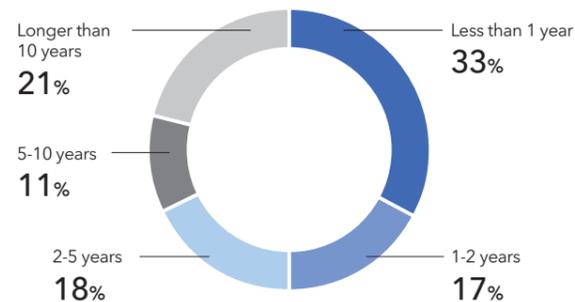
### Efforts to Prevent General Occupational Accidents

#### Simulating hazards at the Safety Training Room

The number of general occupational accidents did not show the major decline that we had hoped for between fiscal 2018 and fiscal 2019. In Japan, younger employees with less than two years' experience are largely responsible for such accidents, and many occurred while they were transporting

items or making preparations for production. To prevent accidents involving younger employees, we are giving them thorough training, reminding them of which operations they need permission for, and compiling procedure manuals. In addition, we have introduced a new form of training that provides trainees with a simulated experience of accidents and injuries from the victim's point of view to give them a strong impression and resultant memory. In fiscal 2019, we established a Safety Training Room at our Shiga Plant, where employees are given simulated experiences. Going forward, we intend to establish one at each Group company to form a corporate culture of "every single person takes safety to heart" and "act with integrity in all decisions."

**Incidence of general accidents (by number of years of experience)** \* Group companies in Japan only



Simulated experience training using VR

### Efforts to Ensure Traffic Safety

#### Traffic safety training in Asia

As the rapid advancement of motorization in Asian countries is causing an increase in traffic accidents, we are taking steps to improve traffic safety in different traffic conditions in each country and region. At Nitto Denko India Private Limited, a Traffic Safety Training Center was established to provide employees with opportunities to experience hazards from the viewpoint of both the driver and the pedestrian, thus providing a broader perspective on safety. At our sites in Japan and Southeast Asia, they also began bus-commuting services for their employees, to eliminate traffic accidents while simultaneously considering the environment.

## Commitment to Health and Productivity Management

### Drawing up a new three-year plan for the good health of mind and body

At the very core of our endeavors to live up to our Mission, "Contribute to customers' value creation with innovative ideas," is people. By setting the basic health and productivity policy of "realizing a vibrant organization by enhancing employees' well-being" in Japan, we are working to create a workplace where each and every employee enjoys physical and mental health and gives their individuality and competence full play.

In fiscal 2019, the last year of the most recent three-year occupational health plan, we focused on anti-obesity initiatives. On the mental side, we used stress checks to improve the workplace environment.

In recognition of these initiatives, two Nitto Group companies were chosen under the 2020 Certified Health and Productivity Management Outstanding Organizations Recognition Program. We will continue to work on health and productivity management under the mantra of "All in it together to promote physical and mental well-being."

### Participation in the "White Logistics Movement" Promoting improvement in the working environment and productivity in logistics service providers, a key partner of ours

The "White Logistics Movement" started in Japan in 2019 in order to stabilize logistics services by tackling the serious shortage of truck drivers in Japan, thus contributing to the sustainable growth of the Japanese economy.

At the Nitto Group, we have chosen improvement in logistics as one of the managerial issues in relation to sustainable growth, compliance, and ESG, and have participated in the campaign to support this betterment.

In addition to the current task of improving the mode of transportation, we have added two new projects of "shortening truck drivers' work/portal-to-portal hours," two major causes of additional overtime work, and "ensuring the safety of truck drivers." In more concrete terms, we focused on slashing trucks' waiting time and time for manual loading and worked to shorten waiting time at the Onomichi Plant.

Going forward, we will make efforts to increase the efficiency of the entire supply chain in collaboration with other companies endorsing the "White Logistics Movement." As we work to reform operations other than logistics, we will work with our stakeholders to standardize and streamline our operations in a bid to keep improving the working environment and logistics productivity.

## Respect for Human Rights throughout the Supply Chain

Endorsing the Universal Declaration of Human Rights, the Nitto Group has established its own Basic Policy on Human Rights. To prevent human rights infringements due to an expanded supply chain, we involve all participants in the supply chain in this effort in accordance with the Basic Policy.

### Revisions of the CSR-Based Procurement Guidelines

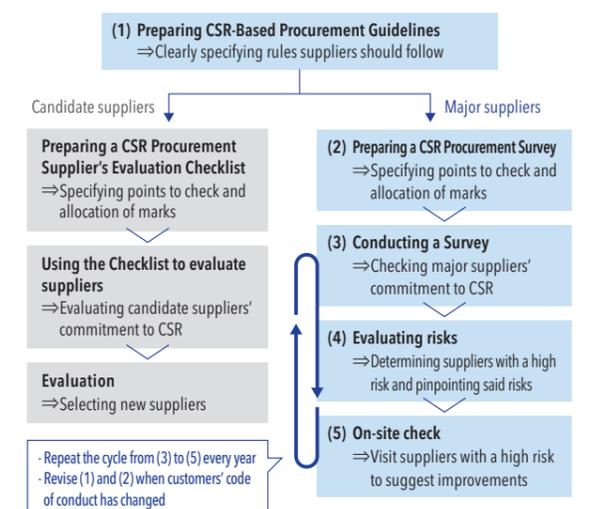
#### Conducting a CSR survey with suppliers and visiting them for a follow-up, if necessary

In compliance with the Action Guidelines, which are based on the Basic Procurement Policy, we at the Nitto Group make every effort to conduct procurement activities without deviating from corporate ethics or social norms. We also share the CSR-Based Procurement Guidelines with suppliers to ask them to engage in fair and equitable trade, comply with corporate ethics and applicable laws, and show consideration for the environment.

In fiscal 2019, we revised the CSR-Based Procurement Guidelines and conducted a survey with partners to ask about the state of compliance with the revised guidelines. In fiscal 2020 we plan to visit suppliers for a follow-up survey and suggest improvements where necessary. When selecting new suppliers, we evaluate candidates in terms of CSR-based procurement and pick ones that meet the criteria.

The CSR Procurement Survey and CSR Procurement Supplier's Evaluation Checklist include questions on the respect for human rights. Based on their responses, we make doubly sure that there is no child labor or forced labor within and outside of the Group.

#### Overarching approach for CSR-based procurement



# Environment

## Reasons for Materiality

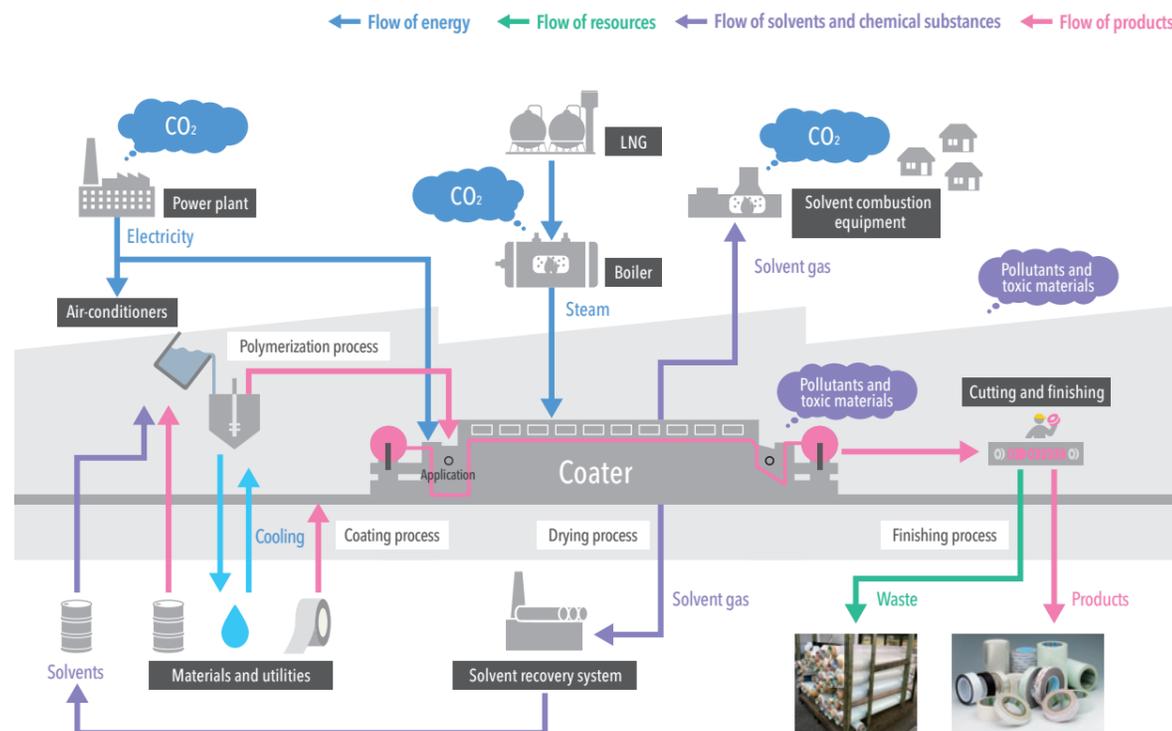
Climate change due to CO<sub>2</sub> emissions, depletion of resources, and marine pollution by plastics and other waste - the global environment is in a state of crisis. For the Nitto Group, it is essential to consider the environment, as we emit CO<sub>2</sub> from the consumption of electric power and fossil fuels and use plastics, organic solvents, and water and other resources as raw materials, which generate waste, at our plants (see the illustration below).

As customers and the public expect environmental efforts from private enterprises, environmental friendliness constitutes one of the overriding conditions for sustainable business growth. We at the Nitto Group consider it an integral part of our corporate responsibility to minimize the environmental impact from our manufacturing process in order to confront the crisis facing the global environment.

## Nitto Group's Approaches

In order to fulfill our corporate social responsibility through manufacturing, the Nitto Group maintains the Environment & Safety Committee, which includes board members, to discuss environmental goals and programs, thus integrating our environmental activities with our management objectives. In an effort to involve the entire Group in these initiatives, we have assembled a team of engineers to develop environmental technologies, while at the same time using the management fund for new businesses and other resources to implement investments and action plans in a timely manner. Furthermore, true to our corporate environmental slogan, "Creating Wonders for the Earth," we will expand our efforts to help our employees raise their environmental awareness.

## Major environmental impact made in Nitto Group's manufacturing process



## Reduction in CO<sub>2</sub> Emissions

As climate change heightens the risk of natural disasters globally each passing year, private enterprises are required to do something to mitigate these conditions.

The Nitto Group's key platform for tackling climate change is reduction of CO<sub>2</sub> emissions. To achieve a self-set FY2025 target, we are curbing our CO<sub>2</sub> emissions by reducing energy consumption by high energy-consuming coaters and air-conditioners in clean rooms. We are also reducing the volume of solvent gases treated by combustion, which is one of the direct causes of CO<sub>2</sub> emissions. We are also proactive in introducing renewable energy, which does not emit CO<sub>2</sub>, and developing techniques for collecting and recycling CO<sub>2</sub>.

In fiscal 2019, our annual CO<sub>2</sub> emissions decreased by 46,612 tons from the previous year to 758,903 tons.

	FY2025 target
CO <sub>2</sub> emissions	730,000 tons/year

## Efforts to Curb CO<sub>2</sub> Emissions

### Reduction of CO<sub>2</sub> emissions by 14,400 tons a year by introducing the cogeneration system at the Toyohashi Plant

As coaters need vast amounts of electric power and steam, we are introducing a cogeneration system\* to our sites in Japan and abroad in order to generate both efficiently. In fiscal 2019, we installed a cogeneration system at the Toyohashi Plant, which should reduce CO<sub>2</sub> emissions by 14,400 tons annually. The system can also serve as an emergency power system.

\*Cogeneration system: Collects waste heat from electricity generation that uses oil or gas as a fuel

### Reduction of CO<sub>2</sub> emissions by 60% by steamless air-conditioning for clean rooms at a new factory of the Kameyama Plant

Clean rooms consume large quantities of energy as their air-conditioners operate 24/7, regardless of whether or not production is ongoing. At the Tohoku Plant, they managed to find ways to stop air-conditioners when there is no ongoing production. They took matters one step further to curb their energy consumption by fluctuating the output of fans according to the air cleanliness of the room; previously, fans were operated at a constant output regardless of air cleanliness.

At the Kameyama Plant, on the other hand, they launched a new factory in May 2019 that utilizes water humidifiers and heat pumps to do away with steam to humidify clean rooms. The Kameyama Plant expects that using this "steamless" humidifying technique will help them to reduce their CO<sub>2</sub> emissions by 60%. We are planning to roll out this technique to other sites in Japan as well as abroad.

## Other efforts to reduce CO<sub>2</sub> emissions

In order to reduce a large amount of CO<sub>2</sub> emissions generated by combusting solvent gases, we are introducing solvent recovery systems. Recovery of solvents not only helps us to curb CO<sub>2</sub> emissions but also put resources to efficient

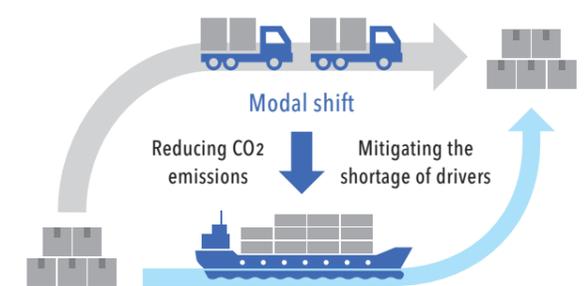


Solvent recovery equipment at the Toyohashi Plant

use. In addition to the aggressive efforts to recover toluene, the Toyohashi Plant began recovering solvents other than toluene in the amount of more than 200 tons annually. In doing so, they expect to reduce CO<sub>2</sub> emissions by 400 tons a year. We will introduce the system to other sites as well.

In distributing goods, significant fuel is required for transportation when shipping by trucks, so we are making a modal shift to alternative transportation methods with less environmental impact to reduce CO<sub>2</sub> emissions. Nitto Belgium NV successfully reduced their CO<sub>2</sub> emissions by 60% a year for transportation from the United States and Asian countries as a result of shifting the mode of transportation from trucks to ships. The modal shift also provides a solution to the shortage of truck drivers in some countries and regions.

## Shifting to alternative transportation methods



# Environment

## Efforts to Minimize CO2 Emissions

**Solar power generation to reduce emissions by 811 tons /year**

The Nitto Group is introducing solar power generation systems. Such systems installed at the Tohoku Plant, Onomichi Plant, and other plants together reduce CO2 emissions by 811 tons/year. Going forward, we will continue to install solar panels on the roofs of plant buildings in a move to accelerate the use of renewable energy.

## Efforts to Recover and Recycle CO2

**Developing technologies for recovery/recycling of CO2**

Besides reducing CO2 emissions, the Nitto Group has embarked on the development of technologies for recovering and recycling CO2 generated as a result of our business activities as well as atmospheric CO2, for their early commercial applications.

## Efficient Use of Resources

Out of the belief that all manufacturers are obliged to efficiently use resources, including water and other natural resources and chemical substances as raw materials, we at the Nitto Group engage in various activities in this regard. Currently, we are working to achieve a 3% reduction per unit production from the previous year. In fiscal 2019, we implemented effective measures, including reducing treatment costs. Our next step is to set a higher target to reduce more waste plastics and liquid waste as a solution to waste treatment issues. We will also develop technology for recycling waste plastics, which account for a majority of waste, to promote the cyclic use of resources.

## Efforts to Reduce the Amount of Resources Used

**Reducing waste by pinpointing where it is generated**

Because much of our waste is generated from the manufacturing process, we have introduced truck scales to our sites in Japan, so that we can pinpoint and visualize where and how much waste is generated. Our reduction efforts cover the entire life cycle – designing products in a way to reduce the use of materials, increasing productivity at the manufacturing process, and recycling components/devices within the process.

## Efforts for Cyclic Use of Resources

**Reducing the amount of resources discharged by recycling waste plastics and wastewater**

At the Toyohashi Plant Recycling Promotion Center, they process plastic waste from their manufacturing process into pellets, which are recycled into roll cores and tablewares, etc., to promote circulation within the company.

They also introduced a system for recovering toluene from waste solvents to further increase the recycling rate. As for wastewater, the Shiga Plant is working to increase its wastewater recycling rate to 90% by fiscal 2022. In fiscal 2019, they recycled 70% of wastewater. At the Onomichi Plant, on the other hand, they are recycling more water by way of evaporative concentration and treatment by Nitto's RO membranes. This way, in-house technology is utilized to put water resources to efficient use and minimize impact when water supply from the outside is interrupted, thereby contributing to the business continuity plan (BCP).



Toyohashi Plant Recycling Promotion Center

### Waste reduction efforts in each country

In recent years, an increase in food waste from cafeterias and other places, in addition to waste from manufacturing processes, has added to the problem of waste management. We at the Nitto Group address this problem in a way that meets the culture of each host community in Japan and abroad. At

Nitto Denko America Latina, for instance, food waste was slashed by 80% in fiscal 2019 from fiscal 2018 by installing equipment that produces fertilizers out of food waste generated from their cafeteria, on top of sorting waste and raising awareness among employees. The fertilizers thus produced are donated to nearby kindergartens.



Donating fertilizers made from food waste

## Emissions-reduction of Pollutants and Hazardous Substances

To minimize the impact on the work environment and the environment surrounding our plants, the Nitto Group is making concerted efforts to reduce emissions of organic solvents and hazardous substances, thus ensuring the well-being of our employees and nearby residents.

## Reduction in Atmospheric Toluene Emissions

**Emissions treatment efforts at the Toyohashi Plant and other sites resulted in a 66% reduction (vs. fiscal 2016, non-consolidated)**

In accordance with a self-set target for toluene emissions at our sites in Japan, we are taking a combination of measures including replacement of coaters, treatment of solvent gases, and prevention of leakage from buildings. In fiscal 2019, atmospheric toluene emissions were reduced by 52.2 tons (non-consolidated) from the previous year to 197.9 tons, thus achieving the target one year early. Going forward, we will further reduce our toluene emissions by reviewing product design with the three keywords of "Reduce, Replace, Eliminate" in mind.

	FY2020 target
Atmospheric toluene emissions (non-consolidated)	200 tons/year

## Enhancement of Employees' Environmental Awareness

We at the Nitto Group believe that it is vital to develop individuals who can think and act on environmental problems independently, and we do this by helping each and every employee to raise their environmental awareness, rather than merely addressing the relevant issues through business undertakings.

## Nitto Environment Week

We have proclaimed June 5 to be the "Nitto Environment Day," when every member of the Nitto Group stops to think about the future of this planet, and that the week containing the day is the "Nitto Environment Week." In addition, on a weekly "Environment Day," everyone wears an eco-badge and takes a turn giving an eco-talk at morning assemblies and before meetings.

In fiscal 2019, we published the "Environment Guidebook," which showcases environmental initiatives within the Group. In Japan, some of our sites began serving special lunches that minimize food loss and waste at cafeterias, while others organized lectures by competent directors on the promotion of environmental activities within the Group and invited experts from the outside to talk about the importance of recycling waste plastics.

Overseas, Nitto Denko Material (Thailand) Co., Ltd. offers a diverse range of environmental activities, including the provision of educational opportunities for every member to learn about the environment, limitations on the use of disposable containers and straws, and collection and recycling of disused articles from employees' homes.

In fiscal 2020 and beyond, we are planning to bolster our environmental education and conduct an employee attitude survey in order to expand the scope of these activities on a global scale.



Working for environmental protection