




2022. 12. 28

Signed a "Positive Impact Finance" agreement with IHARANIKKEI CHEMICAL INDUSTRY CO., LTD.

As part of its commitment to the SDGs, Shizuoka Bank (President Minoru Yagi) has concluded a "Positive Impact Finance*" agreement with IHARANIKKEI CHEMICAL INDUSTRY CO., LTD. (hereinafter referred to as INC)

*Comprehensive analysis of the impact of corporate activities on either the environment, society, or the economy, and support for efforts to improve identified positive impacts and reduce negative impacts.

1. Contract date Wednesday, December 28, 2022
2. Loan amount 100 million JPY
3. Use of funds Working capital
4. INC initiatives (For details, please refer to the Evaluation Report)
 - INC is a chemical manufacturer that produces intermediates used as the raw materials for various products, with the chlorination of organic compounds, such as toluene and xylene.
 - INC has a high chlorination technology, and supplies high value-added fine chemical products that are used as raw materials for resins, fibers, agrochemicals, pharmaceuticals, dyes and pigments, etc., with high quality, safety and environmental friendliness.
 - The impact of the INC activities on the society, environment, and economy was evaluated as follows.

Environment	<ul style="list-style-type: none"> •Supplying products that contribute to reduction of environmental load (Supplying intermediates that use chlorine produced with renewable energy) •Reducing environmental pollution risks (Based on the environmental management system) •Waste reduction and effective use of resources (Appropriate treatment of waste and turning into renewable resources) •Climate change measure (The CO₂ emission reduction plan that utilizes hydrochloric acid heat recovery facility) 	
Society	<ul style="list-style-type: none"> •Enhancing human resource development (Improvement of employee training system) •Ensuring safety and health (Establishment of an occupational health and safety management system led by the Health and Safety Committee. Reduction of occupational accident risks through risk assessment) •Ensuring product quality and safety (Establishment of a quality management system. Ensuring the safety of the supply chain by issuing SDS for all products) 	
Economy	<ul style="list-style-type: none"> •Efficient production of fine chemical products that supports the industry (Supplying fine chemical products that supports various industries. R & D that creates new value. Advancements in the supply chain management that improve sustainability.) 	

5. Others

- (1) Impact evaluation／The evaluation was conducted by Shizuoka Economic Research Institute Ltd. in cooperation with Japan Credit Rating Agency, Ltd. based on the "Positive Impact Finance Principles" proposed by the United Nations Environment Programme Finance Initiative and the "Basic Approach to Impact Finance" proposed by the Positive Impact Finance Task Force.
- (2) Monitoring System／Under the internal control system established in accordance with the "Positive Impact Finance Principles" with the Shizuoka Economic Research Institute Ltd., monitored the borrower's impact performance during the loan period with respect to the KPIs identified in this impact assessment.

【Reference】Outline of IHARANIKKEI CHEMICAL INDUSTRY CO., LTD.

Address	5700-1 Kambara, Shimizu-ku, Shizuoka-shi	Establishment	1979
Capital	780 million JPY	Sales	7,022 million JPY (As of October 2021)

Positive Impact Finance Evaluation

Evaluation Target Company

IHARANIKKEI CHEMICAL INDUSTRY CO., LTD.

December 28, 2022

Shizuoka Economic Research Institute Ltd.

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As The Shizuoka Bank Ltd. implements Positive Impact Finance on IHARANIKKEI CHEMICAL INDUSTRY CO., LTD. (hereinafter referred to as INC), Shizuoka Economic Research Institute Ltd. analyzed and evaluated the (positive and negative) impact of the business activities of INC on environment, society, and economy.

With the support of The Japan Credit Rating Agency, this analysis and evaluation is applied to the finance for small and medium-sized enterprises^{*1} in accordance with the “The Principles for Positive Impact Finance” proposed by United Nations Environment Programme - Finance Initiative (UNEP FI) and “The Basic Concepts of Impact Finance” summarized by the Positive Impact Finance Task Force established based on ESG Finance High Level Panel Outline Paragraph 2 (4).

^{*1}: Small and medium-sized enterprises defined by IFC (International Finance Corporation) or the Small and Medium-sized Enterprise Basic Act, or enterprises other than large enterprises defined by the Companies Act

<Abstract>

INC is a chemical manufacturer that produces intermediates that are the raw materials for various products, with the chlorination of organic compounds, such as toluene and xylene, as its core technology. Initially when INC was founded as a joint venture between KUMIAI CHEMICAL INDUSTRY CO.,LTD. (hereinafter referred to as KUMIAI CHEMICAL) and Nippon Light Metal Company, Ltd. (hereinafter referred to as Nippon Light Metal), they only dealt with raw materials for pesticides. Presently, however, they support various industries of Japan by providing wide range of raw materials, such as polymeric and pharmaceutical raw materials. The chlorination process contributes to reduction of environmental load for the entire supply chain, such as with the use of chlorine produced with renewable energy.

Business activities of INC have a risk of polluting water (quality), atmosphere, and soil; thus, they maintain strong commitment to environmental protection, such as implementing environmental pollution countermeasures in accordance with the laws and regulations, and are actively engaged in reducing waste, effectively utilizing of resources, and reducing of CO₂ emissions. They are also enhancing the education of their human resources, such as providing an education system that fits the position and ability of their employees. The creation of a comfortable work environment and various work-related accidents countermeasures provides a secure and safe workplace for their employees. Intermediates manufactured with the optimized production management system are strictly checked to guarantee high quality. Their supply chain management is developed according to the basic policy on CSR (corporate social responsibility) procurement formulated by KUMIAI CHEMICAL.

The analysis of sustainability activities of INC showed the following positive aspects — “education”, “employment”, “climate”, and “economic convergence” — and negative aspects — “health and hygiene”, “employment”, “safety and security for personalities and persons”, “water (quality)”, “atmosphere”, “soil”, “resource efficiency and safety”, “climate” and “waste” — as the areas of impact. Among those aspects, KPIs (Key Performance Indicators) were set for eight aspects with a certain level of impact on environment, society, and economy, which increases the sustainability of INC.

Summary of “Positive Impact Finance” to be implemented.

Amount	100,000,000 JPY
Use of funds	Working capital
Monitoring period	Five years and zero months

Company Outline

Company name	IHARANIKKEI CHEMICAL INDUSTRY CO., LTD.
Address	5700-1 Kambara, Shimizu-ku, Shizuoka-shi
Office	Head office factory: 5700-1 Kambara, Shimizu-ku, Shizuoka-shi Tokyo office: 3-22-8 Ueno, Taito-ku, Tokyo
Number of employees	148
Investors	KUMIAI CHEMICAL INDUSTRY CO., LTD. 73.7% Nippon Light Metal Company, Ltd. 26.3%
Capital	780 million JPY
Type of industry	Chemical products manufacturing
Product lines (FY2021)	Polymeric materials (resin raw materials and fiber raw materials) 54.9% Pesticide raw materials 30.7% Pharmaceutical raw materials 9.3% Dye and pigment raw materials 5.1%
Related companies	Iharanikkei Chemical (Thailand) Co.,Ltd.
Certifications	ISO9001 (International Organization for Standardization: Quality Management System) ISO14001 (Environment Management System)

Main clients	<p><Suppliers> Nippon Light Metal Company, Ltd. Mitsui Bussan Chemicals Co., Ltd. MITSUBISHI GAS CHEMICAL TRADING, INC. Miki & CO., Ltd. SHIZUOKA GAS CO., LTD.</p> <p><Sales clients> KUMIAI CHEMICAL INDUSTRY CO., LTD. Nippon Light Metal Company, Ltd. Teijin Limited Bayer AG</p>
History	<p>1979: Founded. Plant construction began 1980: No. 1 and No. 2 plants completed 1981: No. 3 plant completed 1984: No. 4 plant completed 1985: No. 5 plant completed 1990: No. 6 plant completed 1996: ISO9002 certification acquired, No. 7 plant completed 2002: ISO14001 certification acquired 2003: ISO9001 certification acquired (transfer) 2010: No. 7 plant expansion completed (phase 1) 2015: No. 7 plant expansion completed (phase 2) 2016: Iharanikkei Chemical (Thailand) Co., Ltd. founded 2018L: Iharanikkei Chemical (Thailand) Co., Ltd. No. 1 plant completed 2020: Iharanikkei Chemical (Thailand) Co., Ltd. No. 2 plant completed</p>

(As of December 28, 2022)

1. Business outline

1-1 Business overview

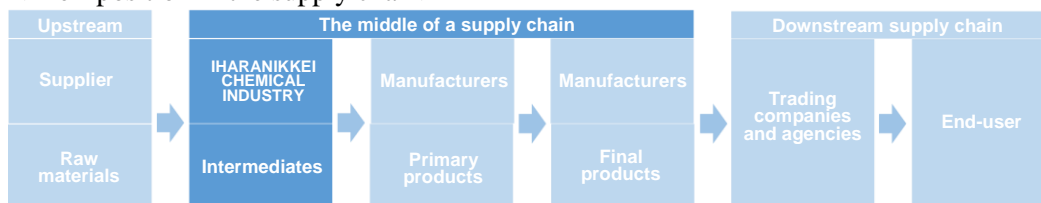
INC is a chemical manufacturer that produces intermediates that are the raw materials for various products, with the chlorination of organic compounds, such as toluene and xylene, as its core technology. Chemical products are divided into bulk chemicals that are mass produced by standard technology and fine chemicals that are produced by unique technology. INC uses advanced chlorination technology to provide fine chemical products with high value, which become the raw materials for resin, fiber, pesticides, pharmaceuticals, dyes and pigments, and so on.

<List of products>

Product lines		Sales ratio	Main final products
Polymers Raw materials	Resin raw materials	54.9%	Semiconductor encapsulants, brake pads, resin for substrate in 5G, etc.
	Fiber raw materials		Fire-protection clothing, fiber optics, tire cords, etc.
Pesticide raw materials		30.7%	Herbicides, bactericides, insecticides, etc.
Pharmaceutical raw materials		9.3%	Cold medicine, gastritis medicine, etc.
Raw materials for dye and pigment		5.1%	Fluorescent bleach, cosmetics, etc.

INC is in the middle of a supply chain. They use raw materials procured from suppliers to manufacture and provide intermediates to primary product manufacturers. In the beginning when they were founded as a joint venture between Kumiai Chemical and Nippon Light Metal, they only handled raw materials for pesticides. However, they began diversifying in the fields such as polymeric and pharmaceutical raw materials, reaching the product lineup of today.

<Their position in the supply chain>













They are focusing on proposal-based sales in addition to production, proposing the use of completely new raw materials to their client manufacturers in addition to raw materials that combine polymeric raw materials and other materials. They contribute to product development by manufacturers by analyzing the existing final products and studying intermediates that can be used to increase the functionality. Such proposal-based sales to manufacturers is an important initiative for a company in the middle of a supply chain to increase the added value of final products.

The head office factory has seven plants and a hydrochloric acid refining facility, manufacturing intermediates, and 35% hydrochloric acid from hydrogen chloride gas, a byproduct of chlorination process. In 2016, a local corporation was founded in Thailand. In 2018, No. 1 Plant was built, followed by No. 2 Plant in 2020. The production system was updated to accommodate increasing demands for polymeric raw materials and a system was created to allow continuous work even when an emergency occurs at the head office factory. In Thailand, the

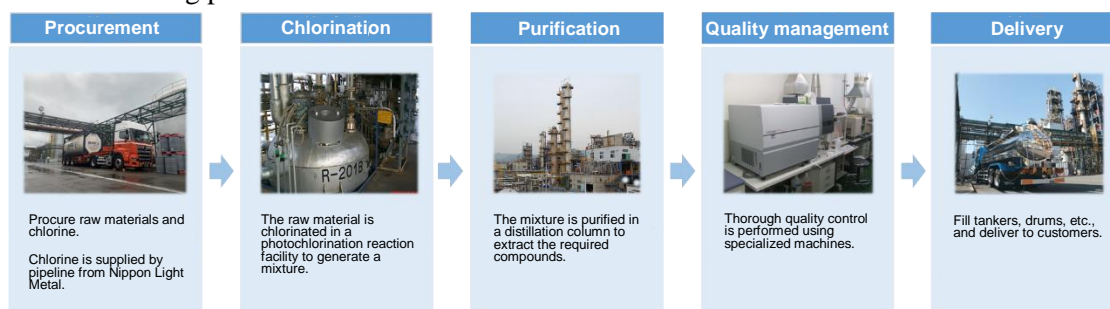
production volume increased to 26,000 t/yr, which is about 50% of the entire production volume of chemical products by the head office factory (50,000 t/yr).

<List of Plants>

Plant No.1  Plant No.1 produces toluene derivatives using raw materials supplied by the second plant.	Plant No.2  Plant No.2 performs the primary processing of toluene and supplies it to plant No.1 and No.3.	Plant No.3  Plant No.3 produces raw materials for xylene derivatives using raw materials supplied from Plant No.2.	Plant No.4  Plant No.4 produces aromatic monomers for fibers and aliphatic acid chlorides.	Thailand Plant No.1  This plant produces aromatic monomers for textiles.
Plant No.5  Plant No.5 produces aromatic fiber monomers from the xylene derivative feedstock produced in the plant No.3.	Plant No.6  Plant No.6 is a multi-plant that produces aromatic monomers mainly for textiles.	Plant No.7  Plant No.7 produces aromatic monomers for fibers.	HCl refining facility  This facility produces 35% hydrochloric acid from hydrogen chloride gas, a byproduct of the chlorination process.	Thailand Plant No.2  This plant produces aromatic monomers for textiles.

Manufacturing process can be divided into five processes: procurement, chlorination, purification, quality management, and delivery of goods. First, raw materials, such as toluene and xylene, are procured from suppliers. After procuring chlorine from Nippon Light Metal via a pipeline, raw materials are chlorinated in a photochlorination reaction facility at each plant to generate a mixture. Next, this mixture is purified by the distillation column to extract necessary compounds. The quality of the purified compounds are confirmed twice by gas chromatography and liquid chromatography, once immediately after production and once immediately before delivery. These compounds are then delivered to the clients in tank lorries, containers, and drums.

<Manufacturing process>

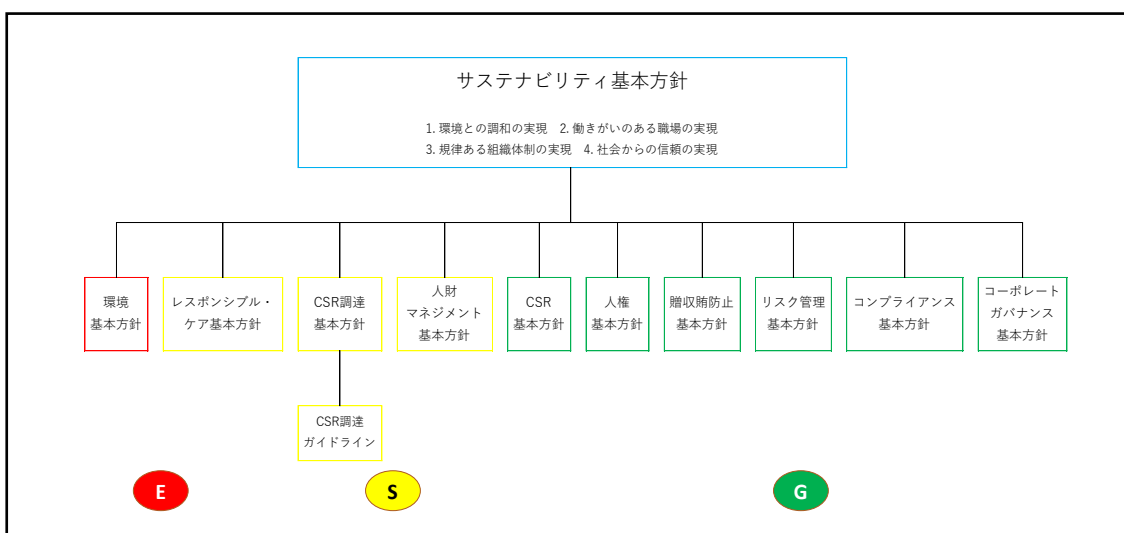


1-2 Management philosophy

Under the management philosophy — “provide products that clients appreciate”, “aim for the world’s best quality, price, and technology”, “create new value through creative thinking”, and “pursue the happiness for clients, stockholders, employees, and the human society”, — all employees of INC are working together to produce high quality products that are safe and environmentally friendly and provide raw materials that are essential for people’s lives.

KUMIAI CHEMICAL GROUP, that INC is affiliated with, established a sustainability basic policy to clarify how to execute the sustainability management that covers creation of social values through their business such as SDGs (Sustainable Development Goals) initiatives, solution of social problems, and enhancement of management/business foundation in response to social demands and ESG. Most recently, KUMIAI CHEMICAL formulated the basic policy on the KUMIAI CHEMICAL Responsible Care on November 1, 2022, and participated in the Responsible Care Committee of Japan Chemical Industry Association.

<KUMIAI CHEMICAL GROUP Sustainability Basic Policy>



<KUMIAI CHEMICAL GROUP Basic Policy on Responsible Care>

Under the “KUMIAI CHEMICAL Basic Corporate Philosophy”, KUMIAI CHEMICAL GROUP ensures environment, health, and safety through the entire lifecycle of chemical products, and by continuously improving such initiatives, we implement Responsible Care to contribute to improvements in quality of life and achievement of sustainable society.

1. The management takes on the leadership role to promote Responsible Care.
2. Through the entire lifecycle starting from the development to the disposal of chemical products, we voluntarily ensure and continuously improve the environment, health, and safety.
3. We promote resource and energy conservation along with waste reduction and effective use of resource and energy.
4. We protect health and safety of environment and people through the entire supply chain.
5. To meet the expectations of stakeholders regarding the activities related to environment, health, and safety, we make our achievements public and engage in conversations and communications with the society.
6. “To protect and nurture life and nature”, we continue with the challenges to create new values that lead to sustainable development of a rich society.

Furthermore, KUMIAI CHEMICAL GROUP has specified the materiality that indicates important issues for the organization. INC also established in June 2022 a Sustainability Promotion Committee, as an organization that executes Responsible Care along with the formulation of strategies and policies related to sustainability in accordance with the materiality of KUMIAI CHEMICAL GROUP, and engages in business activities in response to SDGs and ESG. Since they are in the middle of the supply chain and have a notable impact on downstream enterprises with their position as the supplier of intermediates, they consider the advancement of the supply chain as the most urgent issue and are actively engaged with sustainability activities to solve social issues through their main business.

In addition, INC is inline with Nippon Light Metal who are a shareholder of INC, and are closely tied in their businesses. Nippon Light Metal has specified the materiality from a short list created based on the requirements of international guidelines. INC is working to solve important issues in collaboration with Nippon Light Metal.

<KUMIAI CHEMICAL GROUP Materiality / Matrix>



1-3 Industry trends

[Responsible Care]

While chemical industry supports many industries, by manufacturing materials that are used for various products, chemical substances have the potential to cause negative impact on the health of the environment and people within its entire lifecycle from development to manufacture, use, and disposal. Reducing such risks is a challenge the entire industry must take on, and thus, Japan Chemical Industry Association (hereinafter referred to as JCIA), an industrial group consisting of chemical products manufacturers and others, has formulated “JCIA Basic Policy on Environment, Health, and Safety” to promote Responsible Care.

<JCIA Basic Policy on Environment, Health, and Safety>

1. The management takes on a strong leadership role to ensure environment, health, and safety both domestically and internationally.
2. We aim to continuously improve environmental, health, and safety performances and security of facilities, processes, and technology throughout the lifecycle of products, ranging from development to disposal, and make the achievements public.
3. Further promote resource and energy conservation, waste reduction, and effective use of resources and energy.
4. We promote continuous improvement in the safety and product stewardship of chemicals throughout the supply chain in order to protect health and safety of environment and people.
5. We participate in formulation of laws on risk-based management of chemicals, which is based on sound science, for the lifecycle of chemicals. Through the best practice, we enhance the chemical management system.
6. We encourage business partners to handle and manage chemicals safely.
7. We consider the interests of administrative authorities and citizens regarding the impact of products and business activities on environment, health, and safety, and disclose information necessary for accurate understanding in order to hold conversations.
8. To further meet the expectations of stakeholders regarding activities related to environment, health, and safety, we expand conversations from community, nation, and to the world
9. We contribute to sustainable development of society by developing and providing innovative technologies and other solutions.

Source: JCIA “JCIA Basic Policy on Environment, Health, and Safety”

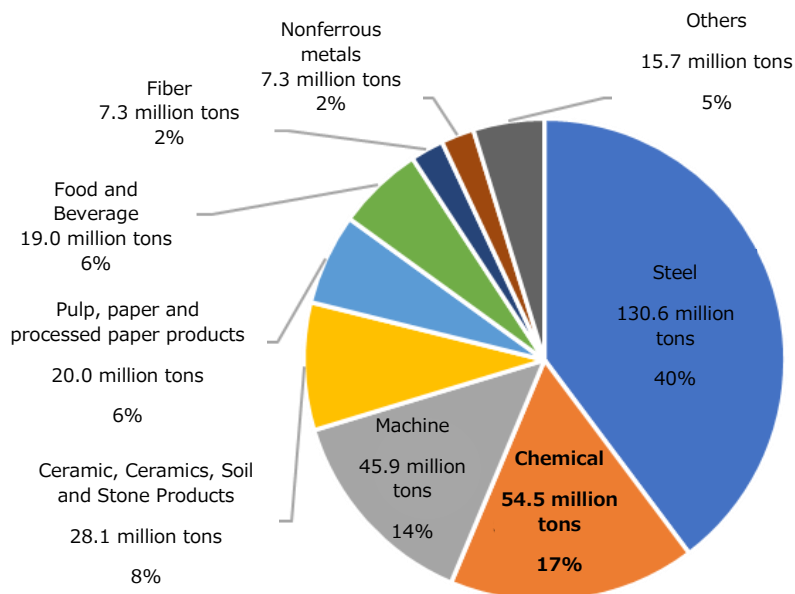
Responsible Care is not limited to adhering to the law but also refers to activities of engaging in voluntary management beyond what is stipulated by the law. The target range is diverse, including chemical and product safety, environmental protection, safety and disaster prevention, occupational health and safety, logistics safety, and so on. In recent years, the increased interest in environment issues has led to active efforts in regulating emissions of harmful chemicals and reducing waste.

Under such circumstances, INC focuses on reduction of environmental pollution risks to water quality, atmosphere, and soil. They contribute to sustainable development of industries by actively engaging in climate change countermeasures and effectively utilizing of resources.

[Reduction of CO₂ emissions]

The amount of CO₂ emitted by the chemical industry that INC is affiliated with was 54.5 million tonnes in 2020, which is 17% of the entire Japanese industry emissions. This is second only to the steel industry (40%); and thus, there is a demand for the chemical industry to reduce their CO₂ emissions as the world aims to become decarbonized.

<The FY 2020 CO₂ emissions by industry (after electricity/heat distribution)>



資料：国立研究開発法人国立環境研究所「日本の温室効果ガス排出量データ（1990～2020年度）＜確報値＞」

Under such circumstances, INC is aiming to reduce the amount of steam and electricity usage with Energy Conservation Promotion Committee and Improvements Proposal Committee taking the lead. They are actively introducing energy-saving facilities. In addition, by using chlorine manufactured with renewable energy in the chlorination process, INC contributes to reduction of CO₂ emission for the entire supply chain in addition to their own. In 2023, a hydrochloric acid heat recovery facility is scheduled to go into operation, with which further reduction in environmental load is anticipated.

1-4 Relationship with community issues

[The Basic Environment Plan for Shizuoka City]

Shizuoka city, where the headquarter of INC is situated, has implemented environmental protection measures that suit natural and social conditions by formulating the First Environment Plan for Shizuoka City based on the Basic Environmental Ordinance for Shizuoka City. When the term came to end in 2014, they formulated the Second Basic Environment Plan for Shizuoka City with a period of eight years to respond to the environmental issues that become more complex. The basic policy of this plan is “Shizuoka: a city where people nurture rich environment and environment nurtures healthy people”. Its aim is to clarify the role of citizens, businesses, and the city (administration) where various subjects actively promote initiatives while they work and help each other. There are four basic goals and 12 environmental goals to achieve the Basic Policy. There are also environmental indicators to confirm achievement of goals.

Among these goals and indicators, INC contributes to environmental goals such as “ensuring and improving secure and safe living environment”, “promoting energy conservation”, and “promoting cooperation to further reduce waste”. They also contribute to environmental indicators, such as “compliance rate of business operators to the Act on Pollution”, “reduction in the electricity use by citizens and businesses”, and “total waste per person per day”.

<The Second Basic Environment Plan for Shizuoka City Summary>



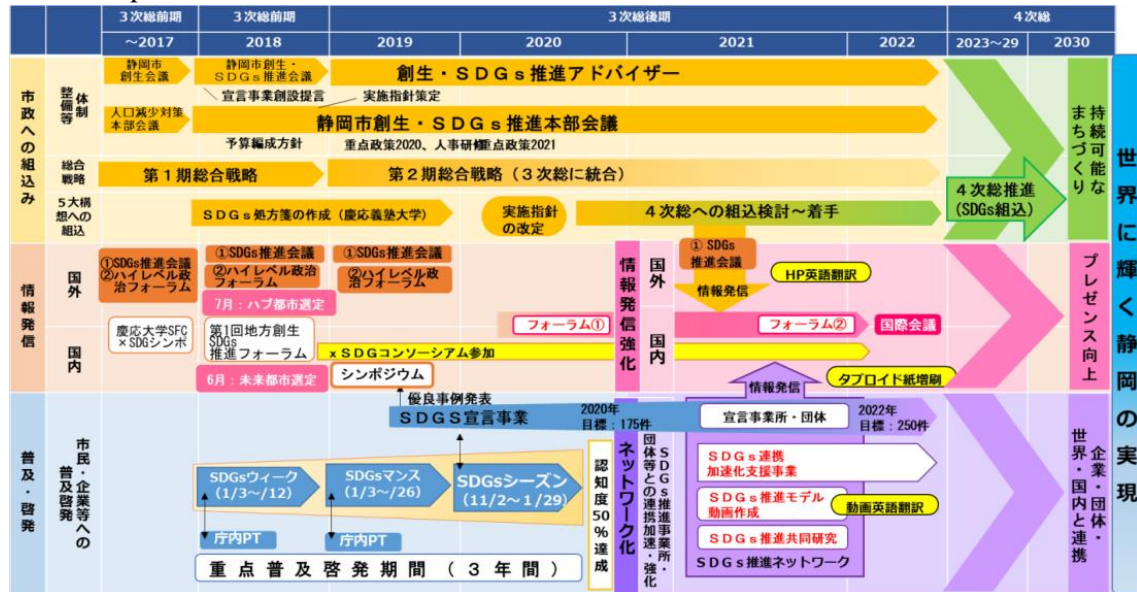
Source: Shizuoka City “The Second Basic Environment Plan for Shizuoka City (Summary)”

[SDGs Future City]

Among cities and communities that are promoting basic and comprehensive measures according to the SDGs philosophy, the Cabinet Office selected Shizuoka City to be a “SDGs Future City”: a city/community with especially high potential to achieve sustainable development through creation of new values in three aspects — economy, society, and environment. With the idea that the achievement of SDGs that the world is pursuing contributes to “achievement of ‘Shizuoka that excels in the world’”, which is part of the Third Comprehensive Plan for Shizuoka City, Shizuoka City promotes achievement of SDGs and formulated the SDGs Future City Plan for Shizuoka City in March 2021. Since awareness of SDGs is increasing every year, this Plan specified “10 years of activities” from 2020 and advocates linking “knowledge and understanding” of SDGs to “actions”.

For INC, a chemical products manufacturer that represents Shizuoka City, promoting SDGs and sharing its activities with the world promotes efforts of citizens and businesses related to SDGs and contributes to achievements of SDGs in Shizuoka City.

<Road map to 2030>



Source: Shizuoka City "SDGs Future City Plan for Shizuoka City (2021-2023)"

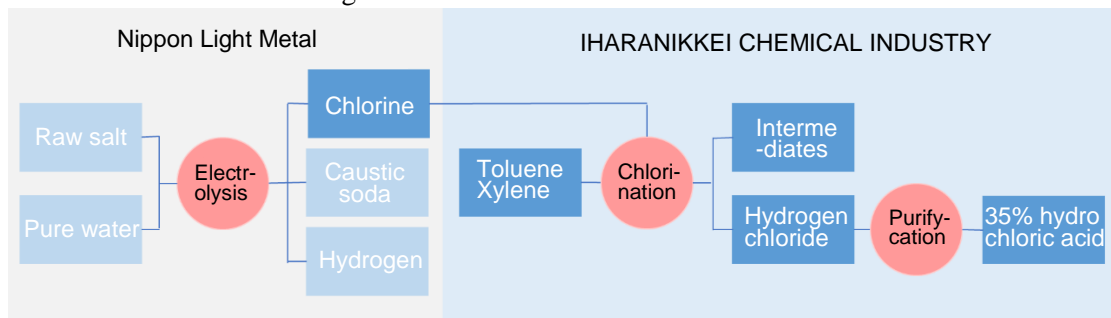
2. Sustainability activities

2-1 Activities related to environmental aspect

(1) Photochlorination technology, which is the core technology of INC and used for almost all products, requires a large amount of chlorine. The chlorine procured by INC is generated during manufacturing of caustic soda by Nippon Light Metal. Manufacturing of caustic soda has an electrolysis process on an aquatic solution (raw salt dissolved in pure water). Though it consumes a large amount of electricity, the majority of the electricity used for the electrolysis process of Nippon Light Metal is renewable energy generated with hydropower generation. Therefore, chlorine procured by INC is clean chlorine with extremely limited CO₂ in the manufacturing process. Various intermediates manufactured with such chlorine are environmentally-friendly products, and hydrogen chloride as a byproduct of this manufacturing process is purified to 35% hydrochloric acid. All of this 35% hydrochloric acid is supplied to Nippon Light Metal.

INC manufactures various intermediates with these processes and provides them to primary product manufacturers in order to reduce the overall CO₂ emission of the supply chain and contribute to reduction of environmental load.

<Flowchart for manufacturing of each intermediate>

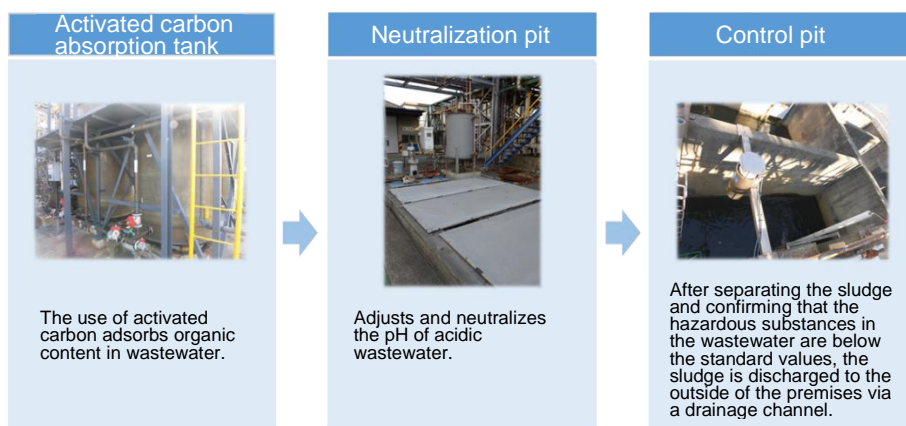


(2) Reducing environmental pollution risks

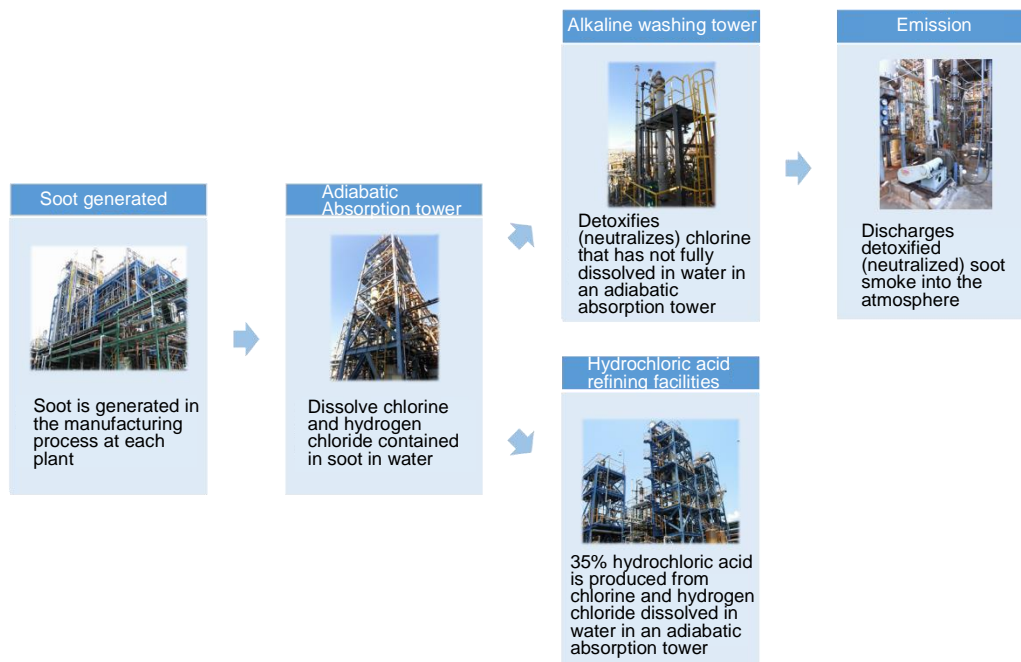
Chemical product manufacturing business of INC manufactures products that support many industries; however, since it uses various chemicals as raw materials, there is a risk of polluting water quality, atmosphere, and soil. To reduce such risk, INC pays utmost attention to transportation and disposal of chemicals, and focuses on building a system to execute strict environmental pollution countermeasures.

Specifically, when transporting raw materials into the plant or shipping products to a destination, they employ measures stipulated by regulations on product shipments and guidebooks on filling tasks. They also take measures such as performing the entire process in a closed space to prevent leakage during manufacturing. Wastewater generated during a manufacturing process goes under a wastewater treatment process that passes through an activated carbon absorption tank and a neutralization pit. For soot that contains chlorine and hydrogen chloride gas, a system that manufactures hydrochloric acid by dissolving chlorine and hydrogen chloride gas in water and a framework of releasing these substances after neutralization have been established to limit emission of chemicals that have a negative impact on the environment. Concrete is used to prevent leakage of hazardous substances to soil of plant properties.

<Wastewater Treatment System>



<Soot treatment system>



Manufacture and treatment systems of INC mentioned above adhere to the Occupational Safety and Health Act that requires autonomous management of chemical substances in an amendment and “JCIA Basic Policy on Environment, Health, and Safety” by JCIA that promotes Responsible Care.

Such environmental protection measures and manufacturing processes are managed altogether by the digital control system operated by the control room. The system of INC allows 1 or 2 operators to manage and control each plant and its roughly 870 items including values such as outside temperature. The system is operated 24 hours a day by four teams of 13 in three shifts. Abnormality such as outside leakages can be detected immediately. For chlorine and hydrogen chloride gas that are defined as the most important management items by INC, leak prevention sensors are installed in 24 locations including a reactor for strict management.

Of course, there is visual management in addition to the management that fully utilizes systems and devices. Plants are patrolled once every two hours to perfect the management system. There are also measures in cases of emergency. There is a system that seals the entire facility if an earthquake with seismic intensity of 5 or more is detected in order to prevent abnormality or leakage.

To perfect these measures, INC established Pollution Prevention Committee and acquired ISO14001 certification to create an advanced Environment Management System. There are also regulations related to environmental protection. Company regulations such as environmental monitoring and measurement regulations and pollution prevention management regulations clearly state measurement items, measurement standard, measurement methods, and response to abnormal situations. Some items, such as exhaust gas and wastewater, are managed at a standard of Shizuoka City Agreement that is more strict than the Shizuoka Prefecture Ordinance.

<Measurement items stipulated by environmental monitoring and measurement regulations>

Monitoring and measurement items	Facility name	Measurement frequency	Applicable laws/agreements
Exhaust gas measurement	Boiler	Twice a year (once every five years for dust only)	Air Pollution Control Act Shizuoka City Agreement
	Alkaline washing tower Blower	Twice a year	
Chlorine and hydrogen chloride leakage	No. 1 to 7 Plants Hydrochloric acid refining facilities Site boundary	Constant	
Concentrations of hazardous substances Concentrations of items under living environment	control pit outlet	Once a year	Water pollution prevention act Shizuoka City Agreement Nippon Light Metal agreement
pH, COD (chemical oxygen demand), SS (suspended solids), n-hexane extract		Three times a month	
pH, COD, and oil film detection	Neutralization pit Control pit	Constant	
Transparency, pH, DO (dissolved oxygen), Residual chlorine	Purification tank	Once a year	Purification Tank Act
Noise	Compressor Site boundary Cooling tower	Construction of new facilities or renovation	Noise Regulation Law
Vibration	Compressor Site boundary		Vibration regulation law

Specific malodorous substances	Within the plant property		Offensive Odor Control Low
Concentrations of waste oil and hazardous substances	Waste oil	Once a year	Law on treatment and cleaning of waste
Sludge hazardous substances concentration	control pit	Once a year	
Types and emissions of industrial waste	Manifest Management status	Once a month	
The amount of electricity, steam, and LNG used	Entire factory	Once a month	Act on Rationalizing Energy Use
Indoor organic solvent concentration	Manufacturing Section Laboratory, Quality Section Laboratory, Research Laboratory	Twice a year	Industrial Safety and Health Act

Activities that have notable impact on environment are strictly controlled by the Manufacturing Section through constant monitoring or on-site monitoring and measurement every two hours as a routine control item.

<Daily management items>

Notable environmental aspects	Operations and activities
Control pit water quality management	Control pit, strict adherence to the wastewater control value
Hydrochloric acid manufacturing process	Operation of appropriate hydrochloric acid manufacturing process Hydrogen chloride gas and hydrochloric acid leak prevention
Management of chloride and hydrogen chloride emissions	Switching and appropriate operation of alkaline tank Appropriate operation of water washing tower and alkaline washing tower Exhaust gas treatment process Compliance with exhaust gas regulations
Chlorination reaction and hydrogen chloride Generation process of each plant	Appropriate operation of reaction process Chlorination hydrolysis exchange reaction process Hydrogen chloride gas and chlorine gas leak prevention, abnormal reaction prevention
Neutralization pit management	Management of pH of wastewater from the neutralization pit

Internal audit regulations are stipulated to confirm that the formulated Environment Management System is being correctly operated. Regulations describe the procedure in detail from preparation of an audit, organization of audit results, preparation of a report, and a follow-up audit, summarizing the flowchart of correction points for improvements.

In addition, three-year intermediate objectives such as “no pH abnormality at the control pit inlet” and “monitoring of toluene and xylene in exhaust gas” are formulated. Concrete annual objectives to achieve the intermediate objectives, such as “report on the control room analytical result every 10 days” and “analytical result of toluene and xylene in exhaust gas”, are also set. As a result of these initiatives, there has not been any environmental pollution accident since their establishment.

These activities and management systems are incorporated by the local corporation established in Thailand, leading to acquisition of ISO14001 certification. Since their founding, there has not been any environmental pollution accident, presently maintaining a high level of environmental protection awareness.

(3) Waste reduction and effective use of resources

INC does not illegally dispose waste generated in their business activities and is making effort toward appropriate treatment and recycling. Presently, discharged waste oil and plastic are treated or recycled by expert waste disposal contractors, but in the fall 2023, construction of hydrochloric acid heat recovery facility is scheduled with a plan to effectively use about 1,400 t as the raw fuel.

<List of waste emissions (as of 2021)>

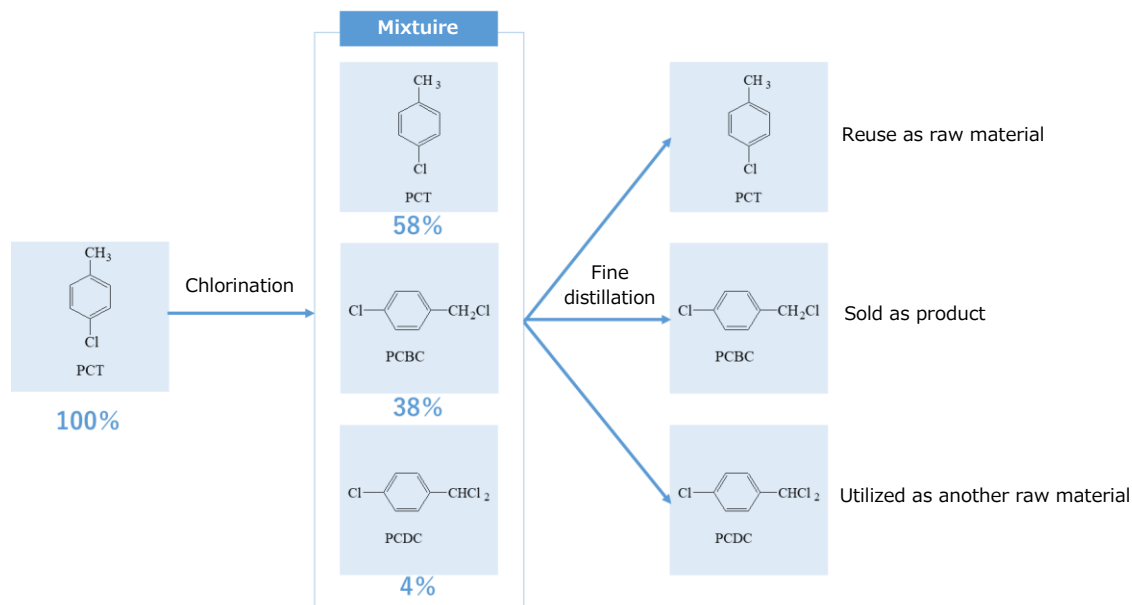
Items	Waste oil	Waste plastic	Sludge	Scrap metal	Wood chips	Glass, concrete, ceramic	Mixed waste	Total
Emission (t)	1,565.55	32.23	20.95	9.64	3.19	0.59	0.72	1,632.87
Percentage (%)	95.9	2.0	1.3	0.6	0.2	0.0	0.0	100.0

Behind introduction of the hydrochloric acid heat recovery facility, there are increases in the volume of domestic treatment due to China and Southeast Asian countries restricting waste import, and restriction of waste volume accepted by waste treatment contractors because of the irritating and odorous nature of waste oil generated by INC. These events led to a concern that waste treatment might become impossible in near future, and INC solidified their policy to effectively use their waste as raw fuel. The facility that is scheduled to be introduced can recover hydrogen chloride gas and thermal energy generated when raw fuel is combusted, contributing to effective use of resources and reduction of CO₂ emission. It is anticipated that about 1,470 t/y of 35% hydrochloric acid can be manufactured from recovered hydrogen chloride gas, which is about 5% of 35% hydrochloric acid manufactured by INC at present time.

In addition to these initiatives, Waste Reduction Committee and Improvements Proposal Committee actively lead activities to limit waste emission itself, such as reducing waste liquid generation and inventory, reducing product restocking, and preventing production troubles, and to promote recycling, kind of sorting and recovering waste. The goal is to achieve annual decrease of ▲0.5% for waste liquid and to achieve annual decrease of ▲1.0% for waste related to major products. Particularly, in the process of manufacturing derivatives of toluene and xylene, commercializing byproducts leads to reduction of waste. For example, chlorination of PCT (p-Chlorotoluene) to manufacture PCBC (p-Chlorobenzyl chloride) generates a mixture that contains PCT, PCBC, and PCDC (p-Chlorobenzal chloride). After extracting each substance from the mixture via superfractionation, PCBC is sold as a product, PCT is used as a raw material, and PCDC is used as a raw material that manufactures other intermediates such as PCAD (p-

Chlorobenzaldehyde) and PCTC (p-Chlorobenzotrichloride). This waste-free production is the strength of INC, who creates a group of products that are used in many fields.

<PCBC manufacturing process>



The entire volume of hydrogen chloride gas generated during chlorination is converted to 35% hydrochloric acid in the refining facility and is sold to Nippon Light Metal. With creation of manufacturing process with high productivity, the yield of INC reached a high level of 95%. Direct yield is nearly 100%. Rare nonconforming products are either reworked to fit within specifications and delivered to clients, consumed as raw materials for other products, or treated as waste. With these three steps, the amount of wasted nonconforming products is minimized.

In addition, long-term use of their products is promoted with an extension of quality assurance period, and drums that were filled with products being reused as drums for waste. In this manner, waste is being reduced.

(4) Climate change countermeasures

The hydrochloric acid heat recovery facility scheduled to go into operation in 2023 contributes to reduction of CO₂ emissions by recovering thermal energy as steam. Though CO₂ emission during waste combustion does not change, a reduction effect is anticipated since there is no need to ship to external treatment contractors. According to the calculation by INC, when 1,400 t of waste, the processing capacity of the facility, is treated by INC themselves, the reduction effect reaches ▲1,515 t-CO₂, which is equivalent to 12.1% of the CO₂ emission from the entire head office factory.

<CO₂ emission reduction effect of hydrochloric acid heat recovery facility (unit: t-CO₂)>

Discharge process	Before introduction	After introduction	Reduction effect
During shipping	38	0	▲38
Power consumption	350	350	0
During treatment	2,843	2,843	0
Steam recovery	0	▲1,477	▲1,477
Total	3,231	1,716	▲1,515

In addition to the hydrochloric acid heat recovery facility, INC is planning to introduce a refrigerated reactor that increases heat exchange rate, high efficiency transformers, and a steam trap diagnosis and management system. In recent times, they reduced CO₂ emission by reducing vapors through continuous process and vacuum source for the pump, and by installing a heat pump that preheats boiler soft water. Lighting, that is about 10% of power consumption by the head office factory, is to be changed to LED (light-emitting diode) over nine years. Presently, it is about 50% complete.

Energy Conservation Promotion Committee and Improvements Proposal Committee lead reduction of steam and electricity consumption. The reduction goal for steam is ▲1.0% per year and for electricity is ▲0.1% per year.

<List of initiatives related to reduction of vapors and electricity use>

Classifications	Main measures	
Steam	Pursuing the optimum operation point	Steam usage summary
	Trace management	Steam loss prevention activities
	Verification of reduction effect per unit steam consumption	Considering introduction of energy-saving equipment
	Considering introduction of an energy-saving facility, maintenance management	Confirmation of the effect of energy-saving equipment
Electric power	Considering introduction of an energy-saving facility, maintenance management	Summary of unit electricity consumption
	Turning off the reactor mercury lamp when not in use	Replacing mercury lamp for lighting with LED
	Summary of air conditioning power consumption	Considering introduction of energy-saving equipment
	Summary of electricity monitoring Considering usage	Confirmation of the effect of energy-saving equipment

As a result of these initiatives, the CO₂ emission from the head factory in 2021 (12,488 t-CO₂) was reduced by ▲2.6% compared to 2019.

<Changes in CO₂ emission from the head office factory>

Fiscal year	2019	2020	2021	2019 ratio Reduction rate
CO ₂ emissions (t-CO ₂)	12,818	11,812	12,488	▲ 2.6%

*Due to the impact of the COVID-19 Pandemic, CO₂ emission in 2020 was lower than usual.

2-2 Activities related to social aspects

(1) Enhancing human resource development

INC has skill development systems that match positions at the company, such as position-specific training and level-specific training. In addition, there are trainings that match each employee's skill, such as topic-based training and department-specific training. In this manner, they are improving employee's skills.

<List of training>

Training		Details
Position-specific training	Training for new officers	Expectations for officers, internal control, risk management
	Training for new managers	Organizational management, compliance, risk management
	Training for new management	Role recognition, performance appraisal
	Training for new foreman	Role recognition and improvements to work methods
	Training for new employees	Basic manners and communications as a member of society
Level-specific training	Training for top management	Expectations for officers, internal control, risk management
	Training for senior management	Management strategy planning and management, training of subordinates, leadership
	Training for middle management	Management, human resource development, environmental change and strategic ideas
	Middle training	Project management, problem solving, communication application
	Junior training	Logical thinking, communication basics, conservation concept
Training by topic		Health and safety management, 5S ((organization (Seiri), tidiness (Seiton), cleaning (Seisou), cleanliness (Seiketsu), and discipline (Shitsuke)), ISO, global human resource development, language, IT, mental health, mental health care
Department-specific training		Correspondence study /e-learning, acquisition of various qualifications Specialized seminar, book recommendations, and audiovisual learning material

There is an annual training schedule for new employees, company-wide education and training related to Quality/Environment/Safety, special education related to operation of tasks with high environmental load, education on disaster drills and quality operations, and compliance. With this

schedule, every employee can plan to participate. These educations/trainings are not limited to the entire company but for the section level. There are educations/training at workplace meetings performed at a unit of each workplace. By creating a record of workplace meeting and education, those who missed the sessions are followed up.

Task execution skills needed for each role are visualized by a task allocation table. By providing education based on this table, efficient education is achieved. Feedback provided by superiors every term uses the same table. Since employees can objectively confirm their skill levels, it improves employee motivation and contributes to a planned skill development.

At a workplace, on-the-job training guidance is provided by experienced staff, such as operation and task procedures for a plan and handling of chemical compounds. At INC, tasks change by workhours due to their four-team three-shift system. Thus, shifts are designed so that staff can experience all three shifts after their assignment. In this manner, staff can learn a series of manufacturing processes. In addition, when staff is judged to have reached a level where they can be in charge of the plant operation, there is a system to recognize them as a plant operator.

As for necessary official qualifications for handlers of dangerous goods and pollution prevention managers, examinees are recruited four times a year and they are encouraged to acquire the qualifications. Such qualifications are actively encouraged: e.g., 11 staff have passed the CSR test related to environmental considerations and activities that contribute to the society. When taking such examinations, INC covers the examination fee and the transportation cost. Employees who acquired certifications are given scholarships. In this manner, acquisition of certifications is promoted in order to improve employee's skills.

Furthermore, INC is actively hiring and nurturing female employees, foreign employees, and employees with disabilities. There is a policy that specifically increases the ratio of female management, which should create a diverse workplace.

(2) Ensuring safety and health

The chemical product manufacturing business of INC, which has seven plants to handle chemicals, has many risks, such as small accidents to major accidents that could harm health of their employees. Thus, Health and Safety Committee and their four subcommittees — Zero Accident Subcommittee, Near Miss Subcommittee, 5S Subcommittee, and Kilo Lab/Prototype/Trian Run Subcommittee — were established with the safety policy of “reducing the health and safety risks and aiming toward zero disaster”.

<Role and main activities of the subcommittee of the Health and Safety Committee>

Subcommittee names	Role	Main activities
Zero Accident Subcommittee	Identify risk factors and take measures toward safe operations	<ul style="list-style-type: none"> • Implementation of safety education • Maintenance of safety gear, and so on • Investigation and implementation of countermeasures against risk factors
Near Miss Subcommittee	Identify risk factors from the near miss report and take measures	<ul style="list-style-type: none"> • Gathering near-miss cases and sharing them internally • Risk level assessment • Investigation and implementation of countermeasures against risk factors

5S Subcommittee	Promote 5S throughout the company	<ul style="list-style-type: none"> • 5S patrol • Greeting • Cleaning activities in the factory
Kilo Lab Test/Prototype/Trial Run Subcommittee	Verify and take measures to ensure that there is no problem with scaled-up tests conducted in the technology research building.	<ul style="list-style-type: none"> • Risk assessment • Management of chemical substances • Formulation of trial run plans

The Health and Safety Committee identifies the risks and hazards when new facilities are introduced, new raw materials are used, raw materials are changed, or accidents result in lost work time, and estimates the risks according to the Risk Assessment Standard formulated by the Near Miss Subcommittee. Risks are scored from three perspectives — severity, likelihood, and the level of risk/hazard — and classified into four risk levels. When classified into the highest risk level (IV), it is considered a problem that must be solved immediately, and work is stopped or put on pause while measures are implemented. For risk levels III and II, where it is determined that there is a serious problem, or moderate problems, respectively, facility/work process might be changed, work environment might be changed, or staff might be retrained. In this manner, risks are reduced down to risk level I, which is allowable. Risk assessment sheet is prepared for risks for which a series of steps has been taken and the result is shared with stakeholders.

<Risk assessment standard>

重篤度	点数		レベル	点数	優先度	取扱基準
致命傷	10		IV	12～20	直ちに解決すべき問題がある	直ちに中止または改善する
重傷	6		III	9～11	重大な問題がある	早急な改善が必要
中傷	4		II	6～8	多少問題がある	改善が必要
軽傷	2		I	5以下	必要に応じて低減措置を実施	残っているリスクに応じて教育や人材配置する
軽微	1					
可能性	点数					
確実である	6					
可能性が高い	4					
可能性がある	2					
ほとんどない	1					
頻度	点数					
頻繁	4					
時々	2					
ほとんどない	1					

To confirm that risk reduction measures via such risk assessment are effectively functioning, and to identify new risk factors, five types of patrols are performed, such as officer/manager patrol and security patrol. Inspection result is summarized into a list of Health and Safety/Security Patrol Results with items such as points to note, need for response, and solutions. This list is reported at a monthly Health and Safety Committee meeting. As for inspection of facilities, aside from the above patrols, there are facility management regulations, where each department performs routine inspections, legal inspections, and voluntary inspections.

<List of patrols>

Name of patrol	Practitioner	Frequency	Details
Office/Manager Safety Patrol	Officers Managers	Twice a year	Patrol by officers and managers conducted during the safety week and at the end of year
Security patrol	Health and Safety Committee	Once a month	Based on the security patrol inspection table, plants are inspected
5S Patrol	5S Subcommittee	Once every two months	5S at workplaces is inspected
Disaster prevention warehouse patrol	Each person in charge	Once a month	Inspection of disaster prevention equipment, confirmation of expiration date
Site patrol by Occupational physician	Occupational physician	Once every two months	Site patrol by an occupational physician

In addition to these patrols, risk factors are identified from a near miss report prepared by each department. This report is anonymous and easy to file so that anyone can submit them. In addition to near misses employees experienced themselves, issues noticed by watching other employees' work can be reported. It is useful in educating employees whose skills are inadequate.

If there are abnormalities in facilities or abnormal incidents in routine tasks due to human error, an abnormal incident report is prepared, summarizing specific situations, causes, and measures. If an abnormal incident leads to an accident resulting in lost work time, a disaster accident report is prepared within 24 hours and is shared within the company. At the same time, measures are taken to prevent recurrence.

Safety education is provided as needed, ranging from properties of chemicals, handling of facilities, and management of work environment through training of new employees, workplace meetings at each workplace, and seminars held for stakeholders. Furthermore, such safety education is provided to not only employees but also to external contractors, such as carriers and vendors performing repair work, in order to ensure safety of all workers.

At INC, not only has there been the creation of a safe workplace as above, but various initiatives are also being taken to improve the work environment. As for reducing total workhours, INC succeeded in reducing the total workhours in 2021 by ▲ 11.5% compared to 2019 (pre-COVID-19 Pandemic) by managing workhours of each employee using a timetable and reaching out to employees with excessive overtime every month. With introduction of a work-at-home system and staggered working hours, employees are able to spend more time with their family and experience less stress associated with commute. In this manner, work-life balance is being improved. As for a leave system, not only are there systems such as maternity leave, childcare leave, and care-giving leave, a childcare leave consultation office was established so that everyone can take a leave at this workplace. As a result, they have achieved the results that two employees took maternity leave and five employees took childcare leave in 2022. Of course, users of childcare leave are not limited to women. Four out of five staff who took the childcare leave were men. In terms of a paid leave, it became obligatory in 2020, which improved the awareness of employees regarding the paid leave. This led to a dramatic improvements of the leave rate: five times higher than the previous year.

<Changes in the total workhours and paid leave utilization rate>

Fiscal year	2019	2020	2021
Total working hours (hour/person)	2,168	2,267	1,917
Rate of paid vacation usage (%)	10.8	49.2	53.6

INC also works on initiatives toward management that focuses on health of employees. They participate in health promotion activities organized by Hotoku Doei Health Insurance Association with which INC is affiliated to improve health of their employees. If daily exercise record is submitted for a set period of time based on exercise items and goals declared by themselves at the beginning of each fiscal year, award is given by the Association. With this system, participants remain motivated. INC has their unique award system in addition to this award system. They encourage participation by using a standard less strict than that of the Association. In the FY 2021, 34 employees participated. As a result, 17 were awarded by the Association and 26 were awarded by INC.

Health checkup and stress check stipulated by the law are provided without fail. Employees working at the head factory receive special health checkup twice a year in addition to the standard health checkup. As for health checkup, there is a follow-up for employees who could not attend the checkup due to scheduling conflict. In this way, 100% attendance is achieved. Following the stress check, occupational physicians follow up based on the result to encourage employees' awareness of their own stress. Mental health training for all employees is provided once a year. In this manner, INC created a system to prevent mental health problems.

In addition, INC has declared that they "constantly maintain healthy work environment, respect human rights of each person, and never do anything that leads to sexual harassment, power harassment, maternity harassment, paternity harassment, and caregiver harassment or discrimination" under the compliance code of conduct to create secure and safe work environment that respects human rights and does not allow discrimination. A complete compliance system has been established, such as external consultation offered by the compliance committee and third-party organizations. Amendments to laws and regulations are shared, and compliance seminars are held every month. In this manner, a high level of compliance awareness is maintained.

Activities related to occupational health and safety as described above are incorporated by the local corporation in Thailand. Work environment of locally-hired employees is at the same level as that at the head factory.

(3) Ensuring product quality and safety

The chemical product manufacturing business of INC produces intermediates used in the final products, which has a large impact on post-processes such as manufacturers and distributors, and therefore has a strict check system on the quality. The Quality Management Section at its center performs quality management before the delivery of goods using 25 gas chromatography devices and six liquid chromatography devices. The Production Section confirms the quality of products immediately after manufacture using the same number of gas chromatography devices to inspect possible defects in the manufacturing process. Employees who are able to perform inspections are limited to those certified by INC. By subdividing inspection certifications by role, such as inspector of raw materials, INC products, and contractor products, and inspector of intermediate product quality, more accurate and precise quality management is achieved.

There is a routine internal audit for such quality management system to ensure that effective operation is being maintained. The ISO9001 certification, which is an international standard that verifies a quality management system of a certain standard, has been acquired. INC is enhancing the organizational system related to compliance with the law, smooth tasks, risk management, and quality assurance.

INC prepares SDS (Safety Data Sheet) for all products manufactured by them. SDS is a document required by the Industrial Safety and Health Act and is provided with the information on physiochemical properties, risks, hazards, and handling when transferring or providing specific chemical substance or mixtures. Among products handled by INC, there are 12 substances and 48 products legally stipulated to be the subject of a SDS. However, by preparing SDS for all products, all stakeholders of the supply chain is notified of potential risks and safety is ensured.

(4) Community contributing activities

INC actively engages with community contributing activities. In addition to supporting the annual “Kambara Festival” in the town of Kambara, where the headquarters is situated, there is a factory tour requested by Kambara Higashi Elementary School, and invitation for community children to attend the games played by the professional basketball team of Shizuoka City, “VELTEX Shizuoka”, of which INC is the official club partner. There also is support for “Chinju no Mori Project” that promotes the nature-rich forest to protect community development and livelihood. As such, INC contributes to the community through a wide range of activities.

Such community contributing activities are incorporated by the local corporation in Thailand. With donations to local schools, temples, and festivals, and cooperation with blood donation drives, the corporation has become deeply rooted in the community. They also co-sponsor soccer clinics held in Thailand by “Shimizu S-Pulse”, a professional soccer team based in Shizuoka City, to focus on activities that build a connection between Shizuoka and Thailand.

2-3 Activities related to economic aspect

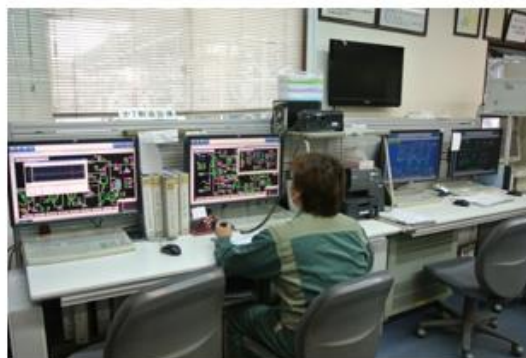
(1) Efficient production of fine chemical products that support the industry

Fine chemical products manufactured by INC are used in diverse fields, such as resin, fiber, pesticides, pharmaceuticals, and dye and pigments, and support these industries by providing raw materials with stable quality. The product management system, as the result of knowledge accumulated so far, has realized efficient production of products, greatly contributing to the high economic productivity of INC.

Specifically, the digital control system that manages 870 items is the key to advanced control of the plants. With real-time monitoring of operations at each plant by the control room, production conditions, such as temperature, flow rate, and pressure, can be remotely adjusted. Even in a case of trouble, the control room can flexibly respond without stopping the entire system. Since production data can be obtained every five seconds, it is useful for data analysis. Since the acquired data can be stored on the cloud, rapid response is possible when pharmaceutical manufacturers demand production data, which improves the convenience for clients.



▲ Control panel



▲ Monitoring in the control room

A core technology of INC, the photochlorination reaction, is more efficient than reactions that use radical generator since there is no change in the rate of radical generation by temperature and there is no half-life. Since it does not require a radical-generator removal process, it is environmentally friendly. It is relatively easy to use and does not generate byproducts; thus, it is more advantageous in safety and economy. Automating 60 to 80% of production processes at many plants contributes to improvements in production efficiency.

INC is actively engaged in research and development, creating new value by pursuing new products and manufacturing methods. In recent years, a method to manufacture BOC (benzoyl chloride) as the chlorination agent for production of MAOC (methacryloyl chloride) was developed, succeeding in limiting the generation of waste and impurities. It offers new opportunities for revenue of INC.

Furthermore, as a company that provides intermediates, which are raw materials, to downstream companies, INC is engaging in advancement of supply chain management. According to the basic policy for CSR procurement and CSR Procurement Guidelines formulated by KUMIAI CHEMICAL GROUP, clients are requested to sign an agreement for CSR Procurement Guidelines. With this, sustainable procurement environment is achieved for the entire supply chain, contributing to the development of Japanese industries. By continuing to answer the requests from clients and the society, the policy of INC promises to engage in further advancement of supply chains.

<KUMIAI CHEMICAL GROUP Basic policy on CSR procurement and the CSR Procurement Guidelines>

Basic policy for CSR procurement	CSR Procurement Guidelines
<ol style="list-style-type: none"> 1. Compliance with laws and regulations 2. Fair trade 3. Respect for basic human rights 4. Ensuring the quality and safety of products and services 5. Environmental considerations 6. Appropriate information management 	<ol style="list-style-type: none"> 1. Compliance with laws and regulations 2. Consideration for human rights and occupational health 3. Environmental considerations 4. Ensuring quality, safety, and delivery date 5. Appropriate information management 6. Corruption prevention 7. No tie with antisocial forces

3. Comprehensive analysis

3-1 Analysis that used the impact analysis tool of UNEP FI

Using the impact analysis tool of UNEP FI, comprehensive impact analysis was performed especially for the chemical product manufacturing business of INC. As a result, “employment” and “inclusive and healthy economy” were identified as positive impact and “health and hygiene”, “employment”, “water (quality)”, “atmosphere”, “soil”, “climate”, and “waste” were identified as negative impact.

3-2 Identification of impact areas with a consideration to individual factors

Impact areas of INC were identified by considering individual factors. Based on the result, “inclusive and healthy economy” was removed from positive impact since there is no initiative that improves economical efficiency of employees. On the other hand, “education”, “climate”, and “economic convergence” were added as positive impact and “safety and security for personalities and persons” as negative impact related to sustainability activities of INC.

[Identified impact areas]

	UNEP FI のインパクト分析ツール により抽出されたインパクト領域		個別要因を加味し 特定されたインパクト領域	
	ポジティブ	ネガティブ	ポジティブ	ネガティブ
入手可能性、アクセス可能性、手ごろさ、品質 (一連の固有の特徴がニーズを満たす程度)				
水	○	○	○	○
食糧	○	○	○	○
住居	○	○	○	○
健康・衛生	○	●	○	●
教育	○	○	●	○
雇用	●	●	●	●
エネルギー	○	○	○	○
移動手段	○	○	○	○
情報	○	○	○	○
文化・伝統	○	○	○	○
人格と人の安全保障	○	○	○	●
正義	○	○	○	○
強固な制度・平和・安定	○	○	○	○
質 (物理的・化学的構成・性質) の有効利用				
水	○	●	○	●
大気	○	●	○	●
土壌	○	●	○	●
生物多様性と生態系サービス	○	○	○	○
資源効率・安全性	○	●	○	●
気候	○	●	●	●
廃棄物	○	●	○	●
人と社会のための経済的価値創造				
包括的で健全な経済	●	○	○	○
経済収束	○	○	●	○

3-3 Identified impact areas and their relationship with sustainability activities

Among sustainability activities of INC, as areas of positive impact, employee education that suits company position and ability of each person corresponds to “**education**” and “**employment**”. Supply of intermediates that use chlorine manufactured with renewable energy is evaluated as an initiative that contributes to “**climate**”. An efficient production management system that supports various industries is equivalent to “**economic convergence**”.

For negative impact, construction of an occupational health and safety management system, workplace that achieves work-life balance and respects human rights, thorough quality management system, and safety assurance of products are equivalent to “**health and hygiene**”, “**employment**”, “**safety and security for personalities and persons**”, “**resource efficiency and safety**”, and “**waste**”. Appropriate handling and treatment of hazardous substances and each environmental pollution countermeasures contribute to “**health and hygiene**”, “**water (quality)**”, “**atmosphere**”, “**soil**”, and “**waste**”. In addition, initiatives related to reduction of waste and effective use of resources are evaluated to contribute to “**resource efficiency and safety**” and “**waste**”. Climate change countermeasures, such as reduction of CO₂ emissions, contribute to “**climate**”.


3-4 Methods to identify impact areas




Referring to the result of an impact analysis that used the impact evaluation tool of UNEP FI, sustainability activities of INC were comprehensively analyzed based on the INC homepage, documents provided, and interviews. At the same time, activities of INC that have the most impact on environment, society, and economy were examined, considering external environment and community characteristics that surround INC. Activities of INC that should focus contributions to increase positive impact and decrease negative impact on environment, society, and economy of the target areas and supply chains were identified as impact areas.


4. Setting of KPI



Among identified impact areas, KPI was set as shown below for items that are assumed to have a certain level of impact on environment, society, and economy and improve sustainability of management at INC.

4-1 Environmental aspect


Relationship with impact radar	Climate
Example of impact	Increase in positive impact
Topic	Supplying products that contribute to reduction of environmental load
Details of initiatives	Supplying intermediates that use chlorine produced with renewable energy.
Relationship with SDGs	<div>13.1 Enhance resilience and adaptation skills regarding climate-related disasters and natural disasters in all countries.</div> 
KPI (indexes and goals)	① Maintain a supply cycle of intermediates that use chlorine manufactured with the current renewable energy.

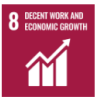
Relationship with impact radar	Health and hygiene, water (quality), atmosphere, soil, waste
Example of impact	Reduction in negative impact
Topic	Reducing environmental pollution risks
Details of initiatives	Sealed manufacturing process to prevent leakage of hazardous substance. Building a wastewater/soot treatment system that prevents environmental pollution. Management system based on the Environment Management System.
Relationship with SDGs	<p>6.3 By reducing pollution, eliminating dumping, minimizing the release of hazardous chemicals and materials, halving the ratio of untreated wastewater, and dramatically increasing recycling and safe reusing at a global scale by 2030, water quality is improved.</p> <p>11.6 By paying extra attention on the quality of atmosphere and management of general and other wastes by 2030, negative impact on environment per person in a city is reduced.</p> <p>12.4 To minimize negative impact on human health and environment by achieving management of environmentally appropriate chemicals and all wastes throughout product lifecycle by following the agreed international framework by 2020, release of chemicals and wastes to the atmosphere, water, and soil is dramatically reduced.</p>   
KPI (indexes and goals)	① Maintain zero environmental pollution accidents.



Relationship with impact radar	Resource efficiency, safety, waste
Example of impact	Reduction in negative impact
Topic	Waste reduction and effective use of resources
Details of initiatives	Appropriate treatment of waste and turning waste into renewable resources. The 35% hydrochloric acid manufacturing plan with the hydrochloric acid heat recovery facility. Activities to reduce waste discharge. Effective use of byproducts.
Relationship with SDGs	12.2 Achieve sustainable management and efficient use of natural resources by 2030. 12.5 Dramatically reduce waste generation by 2030 through prevention, reduction, recycle, and reuse of waste. 
KPI (indexes and goals)	① Reduce the amount of waste from the 2021 level (1,632.87 t) by ▲85% to reach 245 t by 2030.

Relationship with impact radar	Climate
Example of impact	Reduction in negative impact
Topic	Climate change countermeasures
Details of initiatives	The CO ₂ emission reduction plan that utilizes hydrochloric acid heat recovery facility. Reduction of CO ₂ emissions through energy-saving facility and activities
Relationship with SDGs	9.4 Sustainability is improved by 2030 through infrastructure and industry improvements by improved resource reuse efficiency, clean technology, and increased use of technological and industrial processes that consider environment. All countries take initiatives that suit their abilities. 13.1 Enhance resilience and adaptation skills regarding climate-related disasters and natural disasters in all countries.  
KPI (indexes and goals)	① Reduce the CO ₂ emission of 2019, 12,818 t-CO ₂ , by ▲30% to reach 8,972 t-CO ₂ by 2030. ② Reach the operation rate of 100% for the hydrochloric acid heat recovery facility by 2024.


4-2 Social Aspect

Relationship with impact radar	Education and employment
Example of impact	Increase in positive impact
Topic	Enhancing human resource development
Details of initiatives	Establishing an employee education system that suits company position and ability of each employee. Developing efficient skills by visualizing task execution skills. On-the-job training by veteran staff. Support to acquire official qualifications.
Relationship with SDGs	<p>4.4 By 2030, dramatically increase the ratio of meaningful work with technological and occupational skills and employment, and the ratio of young and mature employees equipped with skills necessary to start business.</p> 
KPI (indexes and goals)	① By 2024, every employee at the management level or above acquires CSR certification Level 3

Relationship with impact radar	Health and hygiene, employment, Safety and security for personalities and persons
Example of impact	Reduction in negative impact
Topic	Ensuring safety and health
Details of initiatives	Creation of the Occupational Health and Safety Management System led by the Health and Safety Committee. Reducing occupational hazard risks through risk assessment. Achieving work-life balance Implementation of health management. Create workplace that respects human rights and does not discriminate.
Relationship with SDGs	<p>8.8 Rights of all workers, such as migrant workers, especially female migrant workers, and workers in unstable employment, are protected to promote safe and secure work environment.</p> 
KPI (indexes and goals)	① By 2023, reduce the number of occupational hazard accidents of five (2021) by ▲5 to reach zero.

Relationship with impact radar	Health and hygiene, resource efficiency and safety, and waste
Example of impact	Reduction in negative impact
Topic	Ensuring product quality and safety
Details of initiatives	Establishment of strict quality check system. Creating the Quality Management System. Ensuring the safety of the supply chain by preparing SDS for all products.
Relationship with SDGs	<p>3.9 By 2030, dramatically reduce the number of deaths and illnesses caused by hazardous chemicals and pollution of atmosphere, water quality, and soil.</p> <p>12.2 Achieve sustainable management and efficient use of natural resources by 2030.</p> <p>12.5 Dramatically reduce waste generation by 2030 through prevention, reduction, recycle, and reuse of waste.</p>  
KPI (indexes and goals)	<p>① Maintain the current 0% defect</p> <p>② Maintain the current 0% return</p> <p>③ Reduce the number of complaints (2) in 2021 by two (▲2) to reach zero complaint in 2023.</p>

4-3 Economic Aspects

Relationship with impact radar	Economic convergence
Example of impact	Increase in positive impact
Topic	Efficient production of fine chemical products that support the industry
Details of initiatives	Supplying fine chemical products that support various industries. Production management system based on knowledge. Research and development that create new values. Advancements in the supply chain management that improves sustainability.
Relationship with SDGs	<p>8.2 By focusing on high-value-added and labor-intensive sectors, high-level economic productivity is achieved through diversification, improved technology, and innovations.</p> 
KPI (indexes and goals)	<p>① By 2025, increase the labor productivity* from the present value of 8,000 JPY by 10% to 8,800 JPY</p>

*Labor productivity = added value (operating Income + personnel Expenses + depreciation)/total workhours

5. Measurement of the ripple effect on local economy

INC aims to reach the sales of 10 billion JPY and 148 employees in three years by achieving the KPIs of this Positive Impact Finance.

Calculating the ripple effect on Shizuoka Prefecture economy using “the 2015 Shizuoka Prefecture Input-Output Table” shows that INC could become a company with a ripple effect of 14 billion JPY per year for the entire Shizuoka Prefecture economy by achieving this goal.

6. Management system

At INC, CEO Satoshi Yamanashi takes the lead on the Positive Impact Finance. By improving the efficiency of systems, plans, daily tasks, and various activities at the company, the relationship of the business activities of INC with impact radars and SDGs, and KPI settings, were examined multiple times.

Following the Positive Impact Finance, the Sustainability Promotion Committee, with CEO Satoshi Yamanashi as the chairman and the managing director Katsuyuki Matsunaga as the executive manager, will take the central role in further development. Through ISO meeting and Zero Accident Subcommittee, it is spread through the company, and all employees work toward achievement of KPI.

Committee chair	CEO Satoshi Yamanashi
Executive manager	Managing Director: Katsuyuki Matsunaga
Department in charge	Sustainability Promotion Committee (Organizer: Planning and Management Section)

7. Frequency and method of monitoring

Achievements and progress of KPIs set by this Positive Impact Finance are shared at routine meetings by responsible personnel from The Shizuoka Bank Ltd. and INC. Meetings are held at least once a year. In addition, meetings are held during routine information exchanges and sales activities.

The Shizuoka Bank Ltd. supports the achievement of KPIs by providing necessary funds and other knowledge, or by matching with external resources within the network of The Shizuoka Bank Ltd.

For KPIs that were achieved during the monitoring period, maintenance of their levels is confirmed following the achievement. If it is necessary to change KPIs due to changes in management environment and so on, The Shizuoka Bank Ltd. and INC will discuss the new setting.

The End

Important information on this evaluation

1. This evaluation was performed by Shizuoka Economic Research Institute Ltd. as a commission from The Shizuoka Bank Ltd. It was submitted by Shizuoka Economic Research Institute Ltd. to The Shizuoka Bank Ltd.
2. The evaluation presented by Shizuoka Economic Research Institute Ltd. was for the present plans and situations based on the information provided by the client, The Shizuoka Bank Ltd., and INC for which Positive Impact Finance is implemented by The Shizuoka Bank Ltd., and the information gathered by Shizuoka Economic Research Institute Ltd. This evaluation does not ensure positive results in the future.
3. This evaluation was implemented in accordance to “The Principles for Positive Impact Finance” proposed by UNEP FI and “the Basic Concept of Impact Finance” summarized by the Positive Impact Finance Task Force established based on ESG Finance High Level Panel Outline Paragraph 2 (4). The Japan Credit Rating Agency provided third-party opinions on the present Positive Impact Finance.

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This report is made in Japanese and translated into English. The Japanese text is original and the English text is for reference purposes. If there is any conflict or inconsistency between two texts, the Japanese text shall prevail.

Third-Party Opinion

December 28, 2022

Japan Credit Rating Agency, Ltd.

Evaluation Subject:

IHARANIKKEI CHEMICAL INDUSTRY CO., LTD.

Positive Impact Finance Evaluation

Lender: The Shizuoka Bank, Ltd.

Shizuoka Economic Research Institute Ltd.

Third Party Opinion Provider: Japan Credit Rating Agency, Ltd.

Conclusion:

This financing conforms to the Positive Impact Financing Principles developed by the United Nations Environment Programme Finance Initiative.

It is also consistent with the "Basic Approach to Impact Finance" compiled by the Positive Impact Finance Task Force established under the Ministry of the Environment's Outline for Establishment of the High Level Panel on ESG Finance, Section 2 (4).

I. JCR's Confirmation and Notes

JCR has referred to the analysis and evaluation by the Shizuoka Economic Research Institute of the Positive Impact Finance (PIF) Principles for Small and medium-sized enterprises (SMEs) to be implemented by Shizuoka Bank for Iharanikkei Chemical Industry CO., LTD. (hereinafter referred to as INC), and has concluded that the PIF Principles are consistent with the PIF Principles developed by the United Nations Environment Programme Finance Initiative (UNEP FI). The PIF was also confirmed to be consistent with the "Basic Approach to Impact Finance" compiled by the Positive Impact Finance Task Force established under Section 2 (4) of the Outline for Establishment of the High Level Panel on ESG Finance by the Ministry of the Environment of Japan.

A PIF is an operation that identifies and evaluates the positive impact of corporate activities on the achievement of the SDGs through the screening and evaluation of corporate activities by financial institutions, and provides financing and monitoring with the aim of contributing to the realization of a sustainable society.

The PIF consists of four principles. Principle 1: Positive outcomes for the three pillars of the SDGs (environmental, social, and economic) are identified or negative impacts are identified and addressed; Principle 2: An evaluation framework, including adequate processes, methodologies, and evaluation tools, is developed for the implementation of the PIF; Principle 3: Ensure transparency regarding the details of the project and other measures of positive impact, the evaluation and monitoring process, and positive impact; and Principle 4: The PIF is evaluated by an internal organization or a third party.

UNEP FI formed the Positive Impact Finance Initiative (PIF Initiative) and developed a model framework, impact radar, and impact analysis tools to promote PIF. Shizuoka Bank has developed analysis and evaluation methods and tools that refer to these tools in collaboration with the Shizuoka Economic Research Institute when developing a PIF implementation system for SMEs. However, some of the steps in the impact analysis tool developed by the PIF Initiative uses analysis and evaluation items that assume major enterprises with large domestic and international market shares and relatively great influences. JCR, in consultation with the PIF Initiative Secretariat, has identified items that should be omitted from the comprehensive analysis and evaluation of SMEs, and has presented them to Shizuoka Bank and the Shizuoka Economic Research Institute. Shizuoka Bank has used the IFC definition of SMEs as referenced in the PIF Principles, in this financing.

In assessing the impact of SMEs, JCR considered the following characteristics to ensure conformity with the PIF Principles.

- (i) It is a business entity that is expected to achieve positive results in terms of "inclusive and sound economy" and "economic convergence" in terms of the economy, one of the three elements of the SDGs, and the impact areas referred to in the PIF Principles. In the project classification of social bonds, financing for SMEs that aims to create or maintain jobs is itself defined as having social benefits.
- (ii) Despite accounting for 99.7% of the total number of firms in Japan, SMEs count for only 52.9% of the market value. This fact indicates that the way and degree of impact of individual SMEs is not as large as that of major companies, according to the size of their operations.¹
- (iii) Sustainability implementation systems and the level of disclosure are also less developed than those of large companies, mainly because they do not have the same disclosure requirements as listed companies.

II. Opinion on Conformity with PIF Principles

PIF Principle 1

Positive outcomes for the three pillars (environmental, social, and economic) contributing to the SDGs have been identified or negative impacts have been identified and addressed.

By conducting a comprehensive SDGs review, the PIF directly addresses the challenges of financing the SDGs.

Through this financing, Shizuoka Bank and the Shizuoka Economic Research Institute conducted a comprehensive analysis of the impact that INC could have on the impact areas defined by UNEP FI and the 169 targets of the SDGs.

As a results, they confirm that INC has impact areas that manifest positive outcomes and is working to identify and reduce negative impacts.

The contributions to the SDGs are also clear.

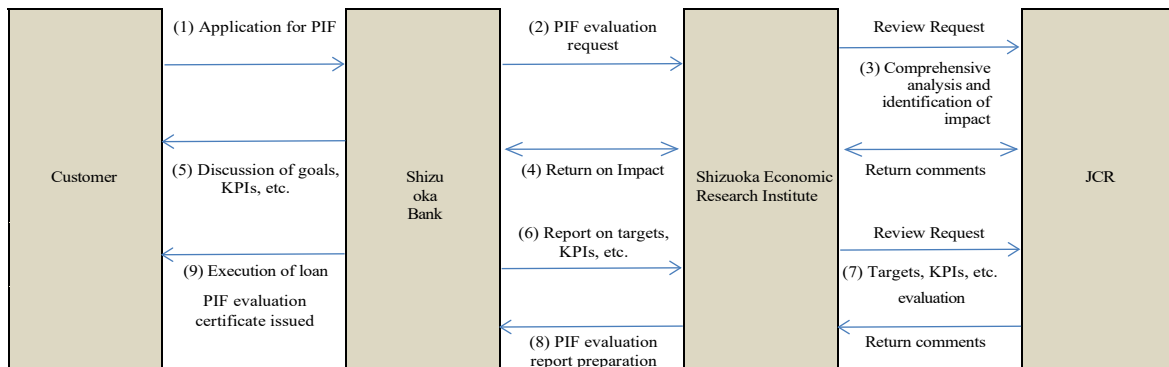
PIF Principle 2

In order to implement the PIF, business entities (banks, investors, etc.) need adequate processes, methods, and tools to identify and monitor the positive impact of the business activities, projects, programs, and business entities in which they invest and finance.

JCR confirmed that Shizuoka Bank has established an appropriate implementation structure and process, valuation methodology, and valuation tools to conduct the PIF.

(1) Shizuoka Bank established the following implementation framework for this financing

¹ Economic Census of Activity Survey (2016)SMEs are defined under the SME Basic Law. The number of employees varies depending on the type of industry, with manufacturers having capital of 300 million yen or less or 300 employees or less, and service companies having capital of 50 million yen or less or 100 employees or less. A small business is a company with 20 or fewer employees in the manufacturing industry.



(Source: Materials provided by Shizuoka Bank)

(2) Shizuoka Bank has established internal regulations regarding the implementation process,

(3) Regarding the method and tool development for impact analysis and evaluation, the Shizuoka Economic Research Institute, commissioned by the Shizuoka Bank, has established the analysis method and tools with reference to the PIF model framework and impact analysis tools set by UNEP FI.

PIF Principle 3 Transparency

Entities providing PIF should ensure transparency and disclosure regarding the following:

- Positive Impact intended by the Borrower through this PIF
- Process for determining, monitoring, and verifying impact eligibility
- Post-financing impact reporting by the borrower

It is confirmed that all information required by PIF Principle 3 will be disclosed to the bank and the public through a evaluation report prepared by the Shizuoka Economic Research Institute.

PIF Principle 4 Evaluation

The PIF provided by the business entity (bank, investor, etc.) must be evaluated by an internal professional or external evaluation agency based on the impact to be realized.

For this financing, the Shizuoka Economic Research Institute, in cooperation with JCR, conducted a comprehensive analysis, identification, and evaluation of the impact. JCR has confirmed as a third party that the impact of both positive and negative aspects of this financing have been properly identified and evaluated.

III. Opinions on consistency with the "Basic Approach to Impact Finance

The basic idea of impact finance is to pursue environmental, social, and economic impact as an advanced form of ESG finance. The purpose of impact finance is to mainstream by involving large-scale private capital. For this purpose, we will refer to the concept of impact finance in various investments and loans that have been developed domestically and internationally. The JCR will not confirm

conformity with the Basic Approach, as it is a summary of the basic approach of the JCR and is not a principle, guideline, regulation, etc. related to impact finance. However, as an important message from the Ministry of the Environment and the ESG Finance High-Level Panel to mainstream impact finance in Japan, it was decided to confirm whether the implementation of this finance is consistent with this basic approach.

Impact finance is fundamentally defined as satisfying the following four elements and this financing is consistent with them. However, with respect to element (iii), the monitoring results will be disclosed by the loaner, INC, to the lender, Shizuoka Bank, and the evaluator, Shizuoka Economic Research Institute. External disclosure will also be considered to the furthest extent possible.

Element (1): An intention to create a positive impact in at least one aspect, provided that significant negative impacts in any of the environmental, social, or economic aspects are appropriately mitigated and managed at the time of investment and financing.

Element (2): Evaluation and monitoring of impact.

Element (3): Information disclosure of impact evaluation results and monitoring results.

Element (4): Based on a medium- to long-term perspective, ensure an appropriate risk/return for individual financial institutions/investors.

In addition, the evaluation and monitoring process for this finance is envisioned to be equivalent to the evaluation and monitoring flow presented in this basic approach, and is particularly consistent with a comprehensive understanding of the various impacts of the company.

IV. Conclusion.

Based on the above confirmation, this financing is in compliance with the Positive Impact Financing Principles developed by the United Nations Environment Programme Finance Initiative.

It is also consistent with the "Basic Approach to Impact Finance" compiled by the Positive Impact Finance Task Force established under the Ministry of the Environment's Outline for Establishment of the High Level Panel on ESG Finance, Section 2 (4).



(Third-Party Opinion officer)

Japan Credit Rating Agency, Ltd.

Head of Sustainable Finance Evaluation Dept.

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Important Explanation of this Third-Party Opinion

1. Assumptions, Significance, and Limitations of the JCR Third-Party Opinion

The third-party opinion provided by Japan Credit Rating Agency, Ltd. (JCR) is an expression of JCR's current overall opinion on the conformity of the Project Entity and the Procuring Entity with the PIF Principles developed by the United Nations Environment Programme Finance Initiative and the PIF Task Force on Positive Impact Finance established within the High Level Panel on ESG Finance of the Ministry of the Environment of Japan (the "Task Force"). It is an expression of JCR's overall opinion at this point in time regarding the consistency with the "Basic Approach to Impact Finance" compiled by the Ministry of the Environment's High Level Panel on ESG Finance, and does not fully represent the extent of the positive impact that such positive impact finance may have.

This third-party opinion is an expression of JCR's opinion on the current plan or situation based on information provided by the requesting procuring entity and the project entity, as well as information collected independently by JCR, and is not a guarantee of a positive outcome in the future. This third-party opinion is not quantitative proof of the positive effects of the PIF, nor does it assume responsibility for such effects. JCR will confirm that the degree to which the funds raised by the Project achieve the impact indicators set by the company is measured quantitatively and qualitatively by the procuring entity or a third party requested by the procuring entity, but will not, in principle, measure this directly.

2. International Initiatives, Principles, etc. Referred to in Preparing this Third Party Opinion

In preparing this opinion, JCR has referred to the following principles, among others

United Nations Environment Programme Financial Initiative Positive Impact Financial Principles

Positive Impact Finance Task Force within the High Level Panel on ESG Finance, Ministry of the Environment

The Fundamentals of Impact Finance."

3. Relationship to Credit Rating Business Conduct

The act of providing the Third-Party Opinion is conducted by JCR as a related business and is different from an act in the credit rating business.

4. Relationship with Credit Rating

This evaluation differs from a credit rating and does not constitute a commitment to provide or make available for inspection a pre-determined credit rating.

5. JCR's Third-Party Status

There are no capital, personal, or other relationships that may cause conflicts of interest between JCR and the PIF's operating entity or procuring entity.

■ Matters that require attention

The information contained herein has been obtained by JCR from the operating entity or procuring entity and from accurate and reliable sources. However, such information may contain errors, whether human, mechanical, or otherwise. Accordingly, JCR makes no representation and warranty, express or implied, as to the accuracy, results, precision, timeliness, completeness, merchantability, or fitness for a particular purpose of such information, and JCR shall not be liable for any errors or omissions in such information or for the results of using such information. JCR shall not be liable for any errors or omissions in the information or for any consequences of the use of such information. Under no circumstances shall JCR be liable for any special, indirect, incidental, or consequential damages of any kind, including lost opportunities and monetary losses, arising out of any use of this information, whether based on contract, tort, negligence, or any other cause of liability, and whether such damages are foreseeable or unforeseeable. This third-party opinion does not express any opinion regarding the various risks (credit risk, price volatility risk, market liquidity risk, price volatility risk, etc.) associated with the positive impact financing that is the subject of the evaluation. This third-party opinion is a representation of JCR's current overall opinion, not a statement of fact, and does not constitute any recommendation with respect to any risk assessment or decision to purchase, sell, or hold individual bonds, commercial paper, or other securities. This third-party opinion may be modified, suspended, or withdrawn due to changes in information, lack of information, or other reasons. All rights pertaining to this document are reserved by JCR. No part of this document may be reproduced, adapted or modified in any way without the prior written consent of JCR.

■ Glossary

Third-Party Opinion: At the request of the client, this report provides a third-party opinion from an independent, neutral, and impartial standpoint on the conformity of the Positive Impact Financing Assessment prepared by the Bank and others with the Positive Impact Financing Principles of the United Nations Environment Programme Finance Initiative.

Project Entity: A financial institution that implements positive impact financing.

Procuring entity: A business or other entity that borrows through positive impact financing for a positive impact business.

■ Status of registration as an external evaluator of sustainable finance, etc.

Member, Positive Impact Working Group, United Nations Environment Programme Financial Initiative

Registered as an external reviewer for Green Bonds, Ministry of the Environment

ICMA (registered as an observer as an external evaluator with the International Capital Markets Association) Member of the Social Bond Principles Working Group

Climate Bonds Initiative Approved Verifier

■ For inquiries regarding this matter, please contact
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The end