Nitto
Innovation for Customers

Environmental Data Book 2022

Material flow

Material Flow

Environment Index				Value	Unit
Inputs	Raw materials	Other than organic solvent (resin film, chemicals etc.)(non-consolidated)		148	kton
		★Organic solvents purchased		47	kton
	Energies	★Electricity purchased		665,163	MWh
		★Green electricity purchased		130,076	MWh
		★Solar electricity generated & used		2,603	MWh
		★Steam purchased		3,501	ton
		★Hot water purchased		4.1	TJ
		★Diesel oil / A-type heavy oil purchased		3,105	kL
		★LPG purchased		1,438	ton
		★Natural gas / City gas purchased		2,839	TJ
		★LNG purchased		30,712	ton
		★Gasoline / kerosene purchased		13	TJ
	Water withdrawal	★Municipal supply water/ Industrial water		3,776	thousand m^3
		★Ground water		2,414	thousand m^3
Outputs	Atmospheric release	★Organic solvents		1,437	ton
		★CO_2		649	kton
	Waste etc.	★Amount disposed		144	kton
		Disposal	★Amount recycled	119	kton
			Final disposal amount (landfill or incineration without energy recovery)	25	kton
	Water discharged	★Amount discharged		4,964	thousand m^3
		Discharge to	Public water areas	3,182	thousand m^3
			Sewage lines	1,782	thousand m^3
		★Pollutants(COD) to public water areas		8.3	ton
Others		★Organic solvent recycled		16	kton
		★Water recycled		1,133	thousand m^3
		Water consumed		1,225	thousand m^3

Environmental efficiency(to sales)

Energy intensity

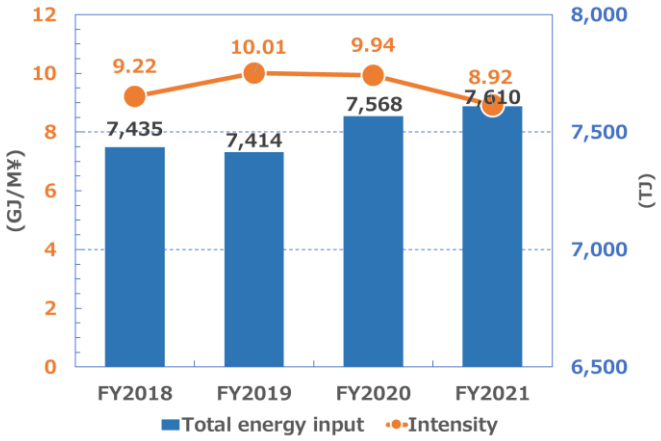
Item	Unit	FY2018	FY2019	FY2020	FY2021
Total energy input	TJ	7,435	7,414	7,568	7,610 ★
Sales	M¥	806,495	741,018	761,320	853,448
Intensity	GJ/M¥	9.22	10.01	9.94	8.92

CO_2 emissions intensity

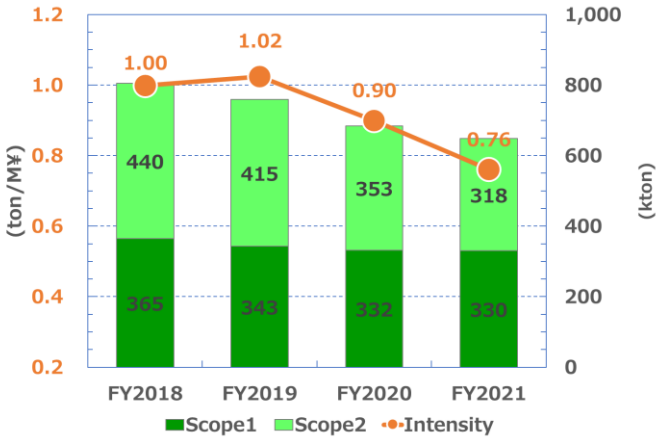
Item	Unit	FY2018	FY2019	FY2020	FY2021
CO_2 emissions(Scope1)	kton	365	343	332	330 ★
CO_2 emissions(Scope2)	kton	440	415	353	318 ★
CO_2 emissions(Total)	kton	806	759	685	649
Sales	M¥	806,495	741,018	761,320	853,448
Intensity	ton/M¥	1.00	1.02	0.90	0.76

*) Due to rounding, sum of values may not equal total value.

Energy intensity



CO_2 emissions intensity



Change in environment indexes

1. Basis data

□**Total energy input** Unit: TJ

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	4,574	4,626	4,807	4,809
The Americas	500	449	392	361
Europe	485	473	483	505
Asia and Oceania	1,877	1,865	1,886	1,935
Total	7,435	7,414	7,568	7,610 ★

□**CO_2 emissions(Scope1 + 2[*1])** Unit: kton

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	494	464	400	381
The Americas	40	35	30	27
Europe	45	39	36	33
Asia and Oceania	226	222	219	207
Total	806	759	685	649 ★

*1 Scope2 is calculated on a market basis.

□**CO_2 emissions(Scope3)** Unit: kton

Category	FY2018[*2]	FY2019[*2]	FY2020[*2]	FY2021[*3]
Purchased goods and services[*4]	389	326	500	654
Capital goods	86	107	73	142
Fuel-and-energy-related activities(not included in Scope1 or 2)	44	58	61	67 ★
Upstream transportation and distribution	9	8	8	6
Waste generated in operations	35	27	30	32 ★
Business travel	1	1	1	4
Employee commuting	3	3	3	14
Upstream leased assets	-	-	-	-
Downstream transportation and distribution	-	-	-	-
Processing of sold products	-	-	-	-
Use of sold products	-	-	-	-
End of life treatment of sold products	72	53	62	71
Downstream leased assets	-	-	-	-
Franchises	-	-	-	-
Investments	-	-	-	-
Total	638	582	736	991

*2 The boundary of the data for FY2018 ~ FY2020 is non-consolidated.
*3 The boundary of the data for FY2021 is consolidated for capital goods, business travel, and employee commuting, and non-consolidated figures for the rest.
*4 Until FY2020, the top 80 % of purchased raw materials by purchased weight were tabulated, but in order to appropriately represent the actual situation of Category 1 emissions, the top 90% of purchased weight has been calculated from FY2021. Until FY2020, we had adopted emission intensity as defined in the LCI database IDEAv2 (for calculating greenhouse gas emissions in the supply chain) for calculating Category 1 emissions, but since FY2021 we have adopted emission intensity units specified in LCI database IDEAv3.2. As a result of these factors, Category 1 emissions in FY2021 increased compared to FY2020.

□**Total waste etc. disposed** Unit: kton

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	67	66	71	75
The Americas	10	9	8	16
Europe	10	9	9	8
Asia and Oceania	40	40	41	45
Total	127	123	129	144 ★

□**Percentage of waste etc. recycled** Unit: %

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	99	98	99	99
The Americas	17	21	29	53
Europe	97	93	87	86
Asia and Oceania	42	56	65	64
Total	75	79	83	82 ★

□**Hazardous waste disposed** Unit: kton

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	8	10	11	14
The Americas	1	1	2	4
Europe	1	1	1	1
Asia and Oceania	15	13	13	16
Total	25	25	27	35 ★

□**Water withdrawal, consumed, discharged** Unit: thousand m^3

Item	FY2018	FY2019	FY2020	FY2021
Withdrawal	6,836	6,417	5,819	6,190 ★
Comsumed	1,170	1,203	1,073	1,225
Discharged	5,666	5,215	4,746	4,964

□**Pollutants(COD) to public water areas** Unit: ton

Country/Region	FY2018	FY2019	FY2020	FY2021
Japan	9.7	11.6	8.5	8.0
The Americas	0.0	0.0	0.0	0.3
Europe	0.0	0.0	0.0	0.0
Asia and Oceania	3.1	2.2	0.5	0.0
Total	12.8	13.8	9.0	8.3 ★

□**Atmospheric release**[*5] Unit: ton

Item	FY2018	FY2019	FY2020	FY2021
Dust	6.5	2.1	1.9	7.4 ★
NOx	161.0	154.7	138.4	160.0 ★
SOx	0.3	0.3	0.3	4.1 ★
Organic solvents	1,391	2,004	1,951	1,437

*5 Dust, NOx, SOx are non-consolidated and organic solvents are consolidated.
Until FY2020, when the measurement result of air emission concentration was less than the quantitative lower limit of the measuring instrument, the concentration was calculated as 0, but from FY2021, the calculation method was changed to calculate using the concentration of the quantitative lower limit value if it is less than the quantitative lower limit. Calculated using conventional methods, atmospheric emissions in fiscal 2021 are approximately 1.9 tons of dust, 140 tons of NOx, and 0.3 tons of SOx.

*) Due to rounding, sum of values by country or region may not equal total value.

Environmental Data Calculation Standards

To enhance the reliability of its disclosed information, Nitto Group has such information assured by a third-party organization. In this Environmental Data Book 2022, environmental performance indicators marked with ★ have been assured accordingly.

1. Period and Organizations Covered by Environmental Data

FY	Period	Organizations Covered (No. of companies)	Organizations Covered (% of production unit)
2021	April 2021 to March 2022	30	97%

2. Calculation methods

2-1. Energy, CO_2, Dust, NOx and SOx related

Data	Calculation method
Total Energy Input Unit: TJ	Total Energy Input = Energy purchased, and Solar electricity generated & used x Heat value per unit 3.6MJ/kWh is adopted as the heat value per unit value of electric power. Energy purchased includes "Green electricity purchased". Heat values per unit of fuels are based on " Act on Rationalizing Energy Use enforcement regulations ".
Electricity purchased Unit: MWh	Total amount of purchased electricity from third parties (except green electricity)
Green electricity purchased Unit: MWh	Total amount of purchased green electricity from third parties
Solar electricity generated & used Unit: MWh	Total amount of solar electricity generated & used by Nitto Gr.
Steam purchased Unit: ton	Total amount of purchased steam from third parties
Hot water purchased Unit: TJ	Total amount of purchased hot water from third parties
Diesel oil / A-type heavy oil purchased Unit: kL	Total amount of purchased Diesel oil, gas oil and A-type heavy oil (Japan) from third parties
LPG purchased Unit: ton	Total amount of purchased Liquefied petroleum gas from third parties
Natural gas / City gas purchased Unit: TJ	Total amount of purchased natural gas and city gas from third parties
LNG purchased Unit: ton	Total amount of purchased Liquefied natural gas from third parties

<table>
<tr><td>Gasoline / kerosene purchased
Unit: TJ</td><td>Total amount of purchased gasoline and kerosene from third parties</td></tr>
<tr><td>CO_2 emissions
Scope1: Direct emissions
Scope2: Energy indirect emissions
Unit: kton</td><td>The calculation method is based on “A Corporate Accounting and Reporting Standard Revised Edition” issued by The Greenhouse Gas Protocol.

Emission coefficient
a) Energy (fuel, steam):
Coefficient stipulated in” Act on Promotion of Global Warming Countermeasures”
b) Energy (electric power):
Emission coefficients by electric power companies or individual region’s coefficients provided by “IEA, CO_2 emissions from fuel combustion”, “EPA, Emissions & Generation Resource Integrated Database (eGRID)” or “Ministry of Natural Resources and Environment of Vietnam”
c)Materials burned by Nitto Gr. (solvent):
Coefficient decided by Nitto assuming combustion reaction of solvent
d) Materials burned by Nitto Gr. (waste):
Coefficient stipulated in” Act on Promotion of Global Warming Countermeasures”</td></tr>
<tr><td>CO_2 emissions
Scope3:Other indirect emissions
Unit: kton</td><td>The calculation method is based on The Basic Guidelines on Accounting for Greenhouse Gas Emissions throughout the Supply Chain ver.2.4 (Ministry of the Environment and Ministry of Economy, Trade and Industry in Japan).
Emission coefficients are based on the following database:
a) the Emissions per Unit Database for the Purpose of Calculating the Greenhouse Gas and other Emissions of Organizations throughout the supply Chain ver.3.2
b) IDEA v3.2
<table>
<tr><td>1</td><td>Purchased goods and services</td><td>Σ{Weight of purchased material by type x CO_2 emissions per unit}</td></tr>
<tr><td>2</td><td>Capital goods</td><td>Equipment investment amount x CO_2 emissions per unit</td></tr>
<tr><td>3</td><td>Fuel-and energy-related activities</td><td>Σ{Amount of purchased energy by type x CO_2 emissions per unit}</td></tr>
<tr><td>4</td><td>Upstream transportation and distribution</td><td>Based on the Act on the Rationalizing Energy Use</td></tr>
<tr><td>5</td><td>Waste generated in operations</td><td>Σ{Amount of industrial waste discharged by type x CO_2 emissions per unit}</td></tr>
<tr><td>6</td><td>Business travel</td><td>Number of employees x CO_2 emissions per unit</td></tr>
<tr><td>7</td><td>Employee commuting</td><td>Σ{Number of employees by site x Number of employees x Annual operating days}</td></tr>
<tr><td>8</td><td>Upstream leased assets</td><td>Included in Scope1 & 2</td></tr>
</table></td></tr>
</table>

	9	Downstream transportation and distribution	Included in “Upstream transportation and distribution”
	10	Processing of sold products	Not calculated (because our products are intermediate materials and it is difficult to recognize processes of our customers.)
	11	Use of sold products	Not calculated (because our products are intermediate materials and it is difficult to recognize processes of our customer.)
	12	End-of-life treatment of sold products	Shipped weight (plastic product) x CO_2 emissions per unit
	13	Downstream leased asset	N/A (no leased asset)
	14	Franchises	N/A (no franchises)
	15	Investments	N/A (We are not investors or financial providers.)
Dust atmospheric emissions Unit: ton	Dust atmospheric emissions = Concentration of dust contained in exhaust gas x Amount of exhaust gas		
NOx atmospheric emissions Unit: ton	NOx atmospheric emissions = Concentration of nitrogen oxides contained in exhaust gas x Amount of exhaust gas		
SOx atmospheric emissions Unit: ton	SOx atmospheric emissions = Concentration of sulfur oxides contained in exhaust gas x Amount of exhaust gas		

2-2. Water-related

Data	Calculation method
Water withdrawal Unit: thousand m^3	Sum of municipal supply water, industrial water and ground water.
Municipal supply water/ Industrial water Unit: thousand m^3	Total amount of water of quality that can be used for household use, and water of quality not suitable for household use purchased from outside the Nitto Gr.
Ground water Unit: thousand m^3	Total amount of ground water pumped by Nitto Gr.
Water recycled Unit: thousand m^3	Total amount of rainwater stored for reuse and recycled water within the Nitto Gr. *Results of Nitto Denko Corp. Onomichi and Kameyama Plants, Korea Nitto Optical Co., Ltd., and Nitto Denko Fine Circuit Technology (Shenzhen) Co., Ltd.
Water discharged Unit: thousand m^3	Total amount of water discharged to public water areas, sewage lines and the others from Nitto Gr. Some sites, which do not measure amount of water discharged, regard amount of water withdrawal as amount of water discharged.
Pollutants (COD) /COD	Pollutants(COD) = Concentration of chemical oxygen demand (COD) contained

Discharged Unit: ton	in water discharged x Amount water discharged This data covers only sites which must measure COD according to local rules.
Water consumed Unit: thousand m^3	Deduct amount of water discharged from water withdrawal

2-3. Organic solvents-related

Data	Calculation method
Amount purchased Unit: kton	Total amount of purchased organic solvents (see below) from third parties: Toluene, Ethyl acetate, Cactus solvent, Dimethylformamide, Isopropyl alcohol, Hexane
Amount recycled Unit: kton	Total amount of refined organic solvents for the purpose of reuse by Nitto Gr.
Atmospheric release of organic solvents Unit: ton	Atmospheric release of organic solvents (see below) = Σ{Concentration of organic solvent by type x Amount of exhaust gas}. Some sites use estimated figures calculated from purchased solvents. Toluene, Ethyl acetate, Cactus solvent, Dimethylformamide, Isopropyl alcohol, Hexane

2-4. Waste-related

Data	Calculation method
Amount disposed / Total waste etc. disposed Unit: kton	Total amount of waste (including hazardous waste) and valuable resources that are treated by external experts' service.
Amount recycled Unit: kton	Amount recycled = Total amount of waste which is recycled, reused or incinerated for energy recovery + Total amount of valuable resources
Percentage of waste etc. recycled Unit: %	Percentage of waste etc. recycled = Amount recycled ÷ Total waste etc. disposed
Hazardous waste disposed Unit: kton	Total amount of hazardous waste regulated by each country and is treated by external experts' service.

Third-Party Assurance

KPMG

Independent Assurance Report

To President, CEO and COO of Nitto Denko Corporation

We were engaged by Nitto Denko Corporation (the "Company") to undertake a limited assurance engagement of the environmental performance indicators marked with ★ (the "Indicators") for the period from April 1, 2021 to March 31, 2022 included in its Environmental Data Book 2022 (the "Data Book") for the fiscal year ended March 31, 2022.

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Data Book.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements' issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Data Book, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Data Book and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Making inquiries and reviewing materials including documented evidence of two of the Company's subsidiaries selected on the basis of a risk analysis, as alternative procedures to site visits.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Data Book are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Data Book.

Our Independence and Quality Control

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Shinnosuke Kayumi

Shinnosuke Kayumi, Director
KPMG AZSA Sustainability Co., Ltd.
Osaka, Japan
June 28, 2022