



Environmental Report 2018

Japan Display Inc. Group

Our Purpose and Environmental Policy

Our Purpose

With fresh perspectives and advancing technologies, we work constantly to realize a world that is inspiring and free of stress.

Environmental Policy

Recognizing that global environment conservation is one of the most important challenges for humanity, we at Japan Display Inc. Group respect people and the environment, and aim to contribute to a sustainable society.

Basic policy

- We will continually improve our environmental management system to work to reduce environmental burden, considering lifecycle of our display products.
- We will comply with domestic and foreign legal requirements and other voluntarily accepted requirements.
- We will set environmental objectives or others on the following priority themes and promote activities for their achievement to work for prevention of pollution and protection of environment.

Priority themes

1) We will reduce environmental burden of business activities.

- We will:
- 1-1) Promote measures against global warming, energy conservation and effective use of water;
 - 1-2) Thoroughly manage chemical substances and promote their reduction and substitution;
 - 1-3) Promote 3R (Reduce, Reuse, Recycle) activities of wastes.

2) We will reduce environmental burden of products.

- We will:
- 2-1) Promote the development of products harmonized with the environment;
 - 2-2) Thoroughly manage chemical substances contained in products;
 - 2-3) Promote green procurement.

3) We will work on activities for conservation of biodiversity and environmental activities at local communities.

April 1, 2018

Nobuhiro Higashiiriki

CEO, Representative Director and Chairman
Japan Display Inc.

Message from the Management

Thank you very much for your continued support of Japan Display Inc.

In November 2016, the “Paris Agreement” was adopted as a new international framework for the reduction of greenhouse gas emission. The Paris Agreement aims to keep projected increases in the average global temperature to well below 2 degrees above pre-industrial levels by 2050.

In aiming at achieving this global target, each Party has set its country’s greenhouse gas emission target to promote the fight against climate change.

In recent years, there is a growing movement to evaluate business sustainability from the perspectives of ESG (Environment, Social, and Governance). This includes efforts and actions taken by a company to contribute to the achievement of SDGs (consisting of the 17 sustainable development goals developed by the United Nations, including eradication of hunger and measures against global warming, which are to be achieved by 2030 through collective actions by the international community) and establishment of non-financial information concerning business strategies. In any case, we need to remind ourselves again that we should give the highest priority to the environment.

JDI is continuously improving its environmental activities, paying more attention to the relationship between business plan and management, and strategic directions, which are in accord with the Environmental Management System Standard, ISO 14001 (2015 version), which was adopted by JDI last year.

We respect the law and sincerely respond to demands from customers and various stakeholders on environmental issues. Prevention of production-related or product-related environmental accidents is the foundation to ensure our business continuity. Regarding our production activities, we have been continuously working to reduce our environment burden because we have a responsibility as a business that places a significant burden on the environment due to our using a large amount of energy and resources and emitting waste, etc.

Regarding our products, JDI responds to regulations and demands from customers by establishing and operating processes to provide products harmonized with the environment through proper management of chemical substances in our products and adoption of environmentally considered design.

We have Our Purpose, Our Vision, and Our Behaviors as well as the companywide Environmental Policy. We will concurrently promote business and environmental activities to achieve environmental targets on the priority themes.

We hope for your unwavering support in the future.



Nobuhiro Higashiiriki

CEO, Representative Director, and Chairman
Chief Environmental Officer

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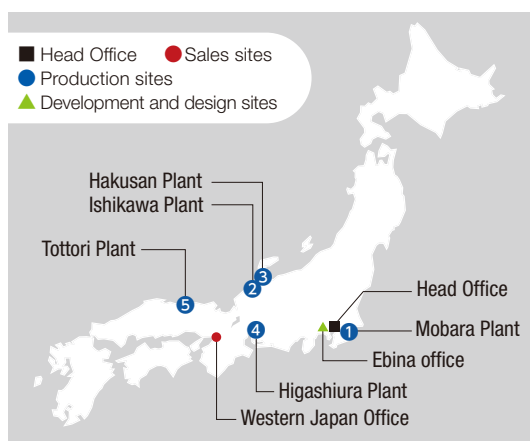
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Company Outline

Company name Japan Display Inc.
Start of business April 1, 2012
Business content Development, design, production, and sale of small- and medium-sized display devices and related products

Head office address 3-7-1 Nishi-shinbashi, Minato-ku, Tokyo
Capital 114.4 billion yen
 (as of the end of June 2018)
No. of Employees Approximately 11,542 (Consolidated)

Domestic sites



Main production lines by plant

① Mobarra Plant	G6 LTPS
② Ishikawa Plant	G4.5 LTPS
③ Hakusan Plant	G6 LTPS
④ Higashiura Plant	G3.5 LTPS
⑤ Tottori Plant	G4 a-Si

a-Si: Plants adopting amorphous silicon technology
 LTPS: Plants adopting temperature poly-silicon technology

Overseas sites

Sales subsidiaries	① JDI Display America, Inc.
	② JDI Europe GmbH
	③ JDI China Inc.
	④ JDI Hong Kong Limited
	⑤ JDI Taiwan Inc.
	⑥ JDI Korea Inc.

Manufacturing subsidiaries	① Suzhou JDI Electronics Inc.
	② Nanox Philippines Inc.
	③ Kaohsiung Opto-Electronics Inc.

Product and Service

We expand our core technology creating integrated circuit with LTPS, low temperature polycrystalline silicon, into achieving high definition and low power consumption and creating new products such as displays and sensors. With these products, we will pursue innovative solution services to anticipate a wide variety of needs. We are going to introduce some of our products and solution services.

Development of Display for Automotive application

We make full use of LTPS and amorphous silicon technology, and produce displays for automotive application. For automotive application, it is essential to achieve adequate luminance of the display to view it clearly under daylight condition. Furthermore, it is necessary to develop displays matched with the car design. We develop futuristic displays with new technologies shown below.

We also pursue low energy consumption of displays to harmonize with the environment as well as developing them viewed clearly under ambient light.

• WhiteMagic™ and Local Dimming Technology

Bringing white pixels into a display, WhiteMagic™ improves transparency of display panel to save energy consumption of display backlight. Furthermore, a display backlight dimming locally in accordance with the picture, Local Dimming Technology contributes to reduces energy consumption.

• Active Mirror

In order to improve safety, Active Mirror displays picture of blind spots around the car, such as the rear of it, on the rear-view mirror. When Active Mirror is turned off, it functions as a mirror. Switching between a mode of display and that of mirror, Active Mirror saves energy consumption.

• Electric Mirror

Replacing fender mirrors with cameras and displays, Electric Mirror results in slim design of the car and reduces air resistance, fuel consumption, and noise pollution.

For automotive application, it is very important to harmonize with the environment. We will contribute to reduce the environmental impact through our display products.

Rearview E-Mirror
Display with Active Mirror



Future Dashboard
Ultra-wide Curved Displays



CID^{*1}
Pixel Eyes™
WhiteMagic™
2D Local Dimming



Cluster
Free Shape Display WhiteMagic™
2D Local Dimming



HUD^{*2}
WhiteMagic™ 2D Local Dimming



Cockpit inspired by our cutting-edge technologies

For displays for automotive application, we must develop products harmonized with the environment as well as high reliability and high quality. We will remove barriers together with automotive manufactures to reduce the environmental impact.





Akio Nakamura, a developer

*1: Center Information Display

*2: Head-up Display

WhiteMagic™ and Pixel Eyes™ are trademarks of Japan Display Inc.

JDI's only one FULL ACTIVE™

FULL ACTIVE™ is a display which has slim bezel design to enable full screen design. FULL ACTIVE™ also contributes to create flexible User Interfaces and new User eXperiences.

Design of smartphones had been stereotype, which smartphones had equipped a bezel on all four edges of a display. FULL ACTIVE™, which was developed by JDI, had slim bezel design to boost flexible design and enable full screen smartphones which had approximately same size as their display.

FULL ACTIVE™, an innovative development, have been followed by a variety of full screen smartphones put on the market.

Development of FULL ACTIVE™ did not originate from high luminance and high definition, our customers' requirements, as well as other specifications. "What is a display most customers admire?" We started asking ourselves. "It could be interesting for this product to arrive in store." We discussed it with each other to create FULL ACTIVE™.

A first FULL ACTIVE™ is a 5.5 inch display for full screen smartphones. FULL ACTIVE™ is also a platform technology to expand its application to automotive use, laptop PC, and HMD^{*1}-type VR^{*2} as well as other applications. Therefore, our customers could be highly interested in FULL ACTIVE™.



In 2017, beginning production of FULL ACTIVE™ for full screen smartphones

FULL ACTIVE™ and its application

FULL ACTIVE™ is expanding its application from smartphone to other fields.



Seamless
Fusion with AR^{*3}





Borderless
Extremely wide screen
Compact body



Expansion
Enlargement of space
Connection with people

"A display covers a product." That was our concept. We were wondering whether we could really make it.

When we succeeded in getting a picture on a mock-up of FULL ACTIVE™, we believed that FULL ACTIVE™ could impact on all over the world.

Ken Sugiyama, a developer

*1: Head Mounted Display

*2: Virtual Reality

*3: Augmented Reality

FULL ACTIVE™ is a trademark of Japan Display Inc.



Electric Paper Display and Solution with it

We develop a variety of solutions to diversify our business. As one of them, we develop solutions for retailers. Electric Paper Display, which features the LTPS of our core technology, wide screen of about thirty centimeters and low energy consumption, is applied to the solutions.

In the retails, there are a lot of operations with paper. For example, you can see price labels and advertisement POPs. These things are frequently updated. In a backyard of the store, operating instructions for inventory control as well as other operations are issued with paper and print. By replacing these operations with the Electric Paper Displays, it is possible to reduce consumption of paper and to approach efficient operations or less mistake.

In response to it, we fully consider both hardware and software, and develop solutions to achieve convenience like paper. We develop and propose the solution to harmonize it with legacy systems of our customer smoothly to introduce it. Moreover, We also develop and propose the solution to update pictures on the Electric Paper Displays in accordance with goods displayed on shelves.

We will expand the solutions and the products with the Electric Paper Display as well as other display devices and software to meet customers' requirements.



We deal with a variety of needs of each store. We try to adapt ourselves to a new business. We are striving. Most stores have high level of awareness to reduce the environmental impact. We also will continue dealing with it to contribute sustainable society.

Kazuyoshi Yoshida (left) and Keiichiro Takahashi (right), developers



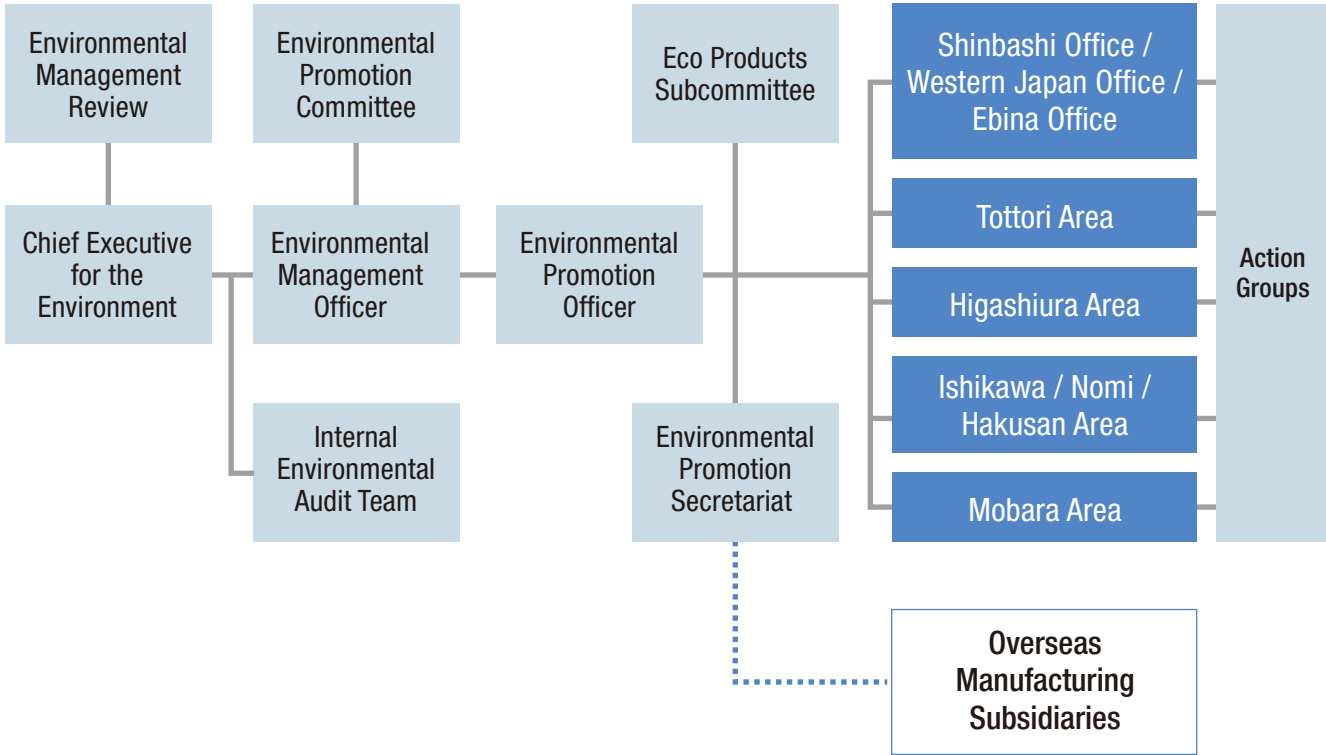
Environmental Management Activities

Management Organization

Our environmental management organization, which promotes continuous environmental management activities, consists of a structure with the Chief Executive Officer (CEO), Representative Director, and Chairman as the Chief Executive for the Environment, and also comprises an Environmental Management Officer and Environmental Promotion Officer; and the Shinbashi, Western Japan, and Ebina Offices as well as manufacturing sites. Our overseas manufacturing subsidiaries have set up an environmental management organization, which promotes environmental activities. With an aim to secure consistency of environmental activities in the JDI Group, we are making efforts to strengthen governance of overseas manufacturing subsidiaries by meeting periodically with them.

Cooperation between the Environmental Management Organization in Japan and Overseas Manufacturing Subsidiaries

* Based on the organizational structure in FY2017



Activity Plans and Actual Performance

In accordance with the activity plan approved by the management review, we are making continuous improvements of our activities by going through the PDCA cycle. In FY2017, we acquired ISO 14001 (2015 version) by implementing activities for the system migration.

○Plan ●Results

Items	Frequency	Category	1st Quarter (April – June)	2nd Quarter (July – September)	3rd Quarter (October – December)	4th Quarter (January – March)	Note:
Environmental Management Reviews	Twice every year	Planned			○Extraordinary Environmental Management Review (Oct)	○Environmental Management Review (Mar)	
		Conducted			●Extraordinary Environmental Management Review (Oct 26)	●Environmental Management Review (Mar 28)	
Environmental Promotion Committee	Once every term	Planned			○Environment Promotion Committee (Oct)	○Environment Promotion Committee (Mar)	
		Conducted			●Environment Promotion Committee (Oct 13)	●Environment Promotion Committee (Mar 16)	
Internal / external audits	Once every term	Planned		○Internal audits (July-Aug)	○External assessment (Nov)		
		Conducted		●Internal audits (July 10-Sep 5)	●External assessment (Nov 13-Nov 16)		
Develop annual plan for next year	Once every year	Planned				○Development of plan (Feb-Mar)	
		Conducted				●Development of plan (To be approved on Mar 28)	
Confirm legal compliance / target progress	Once every quarter	Planned	○April	●July	○October	○January	
		Conducted	●April	○July	●October	●January	
Environmental education	Once every year for each activity	Planned	○General environmental education (May-June) ○Auditor training (Apr-June) ○Auditor BU training (June-July)	○Product-related environmental education (July-Sep)			
		Conducted	●General environmental education (May 23-June 30) ●Auditor training (June 8-June 23) ●Auditor BU training (June 26-July 14)	●Product-related environmental education (Sep 12 -)			
External communication	As needed	Planned	○Update of environmental website (Apr-May)	○Publication of Environmental Report (Aug)	○Update of environmental website (Oct-Nov)		
		Conducted	●Update of environmental website (Apr 7)	●Publication of Environmental Report (Japanese: Aug 7. English: Sep 1)	●Update of environmental website (Oct 31)		
Strengthen governance of overseas manufacturing subsidiaries ¹	Twice every year	Planned	○(O) Liaison meeting	○(P) Liaison meeting ○(O) Visit	○(O) Liaison meeting	○(P) Liaison meeting ○(O) Visit	(O) Visits scheduled in the 2nd Quarter and 4th Quarter were cancelled. Instead, they will communicate through email, etc.
		Conducted	●(O) Liaison meeting (Chinese subsidiaries: Apr 26, NXP: Apr 27)	●(P) Liaison meeting (Chinese subsidiaries: Sep 12, KOE: Sep 14, NXP: Sep 15) ●(O) Visit cancelled	●(O) Liaison meeting (NXP: Oct 26, Chinese subsidiaries: Oct 31)	●(P) Liaison meeting (Chinese subsidiaries: Feb 27, KOE: Mar 6, NXP: Mar 2) ●(O) Visit cancelled	

Major Activities and their Outcomes

Sites	Major Activities	Outcomes
Domestic sites	<ul style="list-style-type: none"> •Setting environmental targets for reduction of energy-derived CO₂ emissions, the amount of waterreceived, waste emissions, and priority controlled chemical substances' emissions and implementation of our Environmental Policy •Management on legal compliance and responding to change in compliance requirements •Promotion of Eco-products and green procurement, and management for chemical substances contained in our products •Implementation of biodiversity conservation activities and environment-related activities in the locality •Implementation of activities to acquire ISO 14001 (2015 version) and acquisition of the certification through internal audits and external assessment (maintenance audit, assessment for the system migration to the 2015 version, and assessment on expansion of Hakusan Plant) 	<ul style="list-style-type: none"> •Target achieved at all sites •Responding to legal requirements on industrial wastes of mercury-added products •Achieved as planned •Implemented as planned •Activities implemented as planned and the system migration to integrated ISO 14001 (2015 version) completed at JDI's domestic sites
	SE	<ul style="list-style-type: none"> •Setting environmental targets, implementation of the Environmental Policy and responding to China's tightened environmental protection laws and regulations •Implementation of necessary measures for the system migration to ISO 14001 (2015 version)
Overseas manufacturing subsidiaries ^{*1}	NXP	<ul style="list-style-type: none"> •Setting environmental targets, implementation of the Environmental Policy, management on legal compliance and responding to change in compliance requirements •Implementation of necessary measures for the system migration to ISO 14001 (2015 version)
	KOE	<ul style="list-style-type: none"> •Setting environmental targets, implementation of the Environmental Policy, management on legal compliance and responding to change in compliance requirements •Implementation of necessary measures for the system migration to ISO 14001 (2015 version)

*1 Please refer to "Company Profile" (page 4) for abbreviations of the Overseas Manufacturing Subsidiaries.

Environmental Aspects (Environmental Burden)

Our business activity consists of inputting energy and resources to create products, which are accompanied by outputs such as CO₂, waste, and so on. These inputs and outputs are regarded as environmental aspects within ISO 14001.

An overview of this is shown in the figure below (covers all domestic plants + overseas manufacturing subsidiaries in FY2017). The basis of our environmental improvement activities lies in reducing the amount of inputs and outputs, and we work to address such activities by determining each of these items for every area in a detailed manner.

INPUT

Contents		Japan	Overseas
Electricity (purchased power)	MWh	1,172,026	105,560
Electricity (solar power)	MWh	122	0
City gas	million m ³	14.669	0.207
Heavy fuel oil	kL	4,451	9
LPG	t	3,075	14
LNG	t	1,350	0
Diesel oil	kL	0	1,288
Amount of water received	million m ³	15.193	1.164
Amount of priority controlled chemical substances ¹ used	t	18,884	156

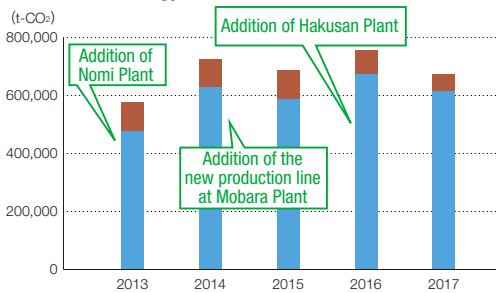


OUTPUT

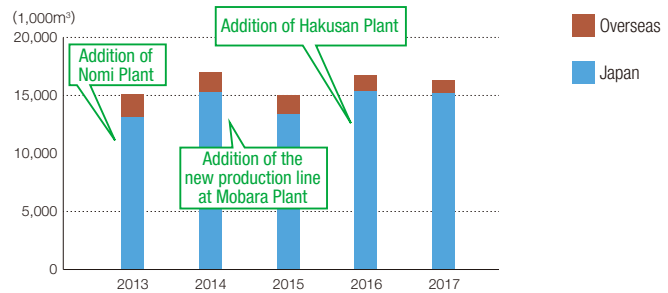
Contents		Japan	Overseas
Energy-derived CO ₂ ²	t-CO ₂	613,000	61,000
Greenhouse gases ³	t-CO ₂	64,000	0
Wastewater	million m ³	13,953	1,000
Amount of priority controlled chemical substances ¹ emitted	t	221	17 ⁴
Amount of industrial materials, etc. emitted	t	23,677	4,747
Industrial waste	t	15,930	1,106
Valuables	t	7,479	1,935
General waste	t	268	1,705

*1: The priority controlled chemical substances refer to 38 substances selected as being subject to priority control efforts.
 *2: The CO₂ emissions coefficient from electricity in Japan is 0.476 t-CO₂ / MWh (receiving-end CO₂ emissions basic unit for FY2011 announced by the Federation of Electric Power Companies of Japan). The other conversion factors are from the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures. Local emissions coefficients for China, Taiwan, and the Philippines were used for the CO₂ emissions coefficients from electricity in other countries.
 *3: Among substance covered in the Act on Promotion of Global Warming Countermeasures, we use the term "greenhouse gases" to refer to these seven substances: PFC (CF₄, C₂F₆), HFC (CHF₃, C₂HF₅), SF₆, NF₃ and N₂O. We use AR4 for the global warming potential.
 *4: Within Japan, this refers only to emissions of the 38 priority controlled chemical substances designated by JDI, and overseas it refers only to emissions of VOC.

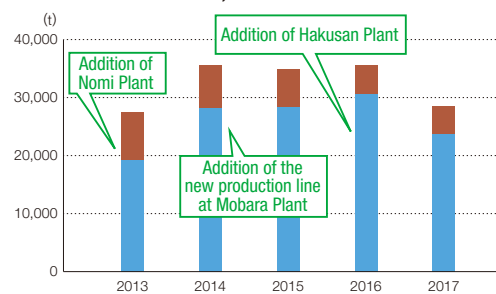
Emissions of energy-derived CO₂



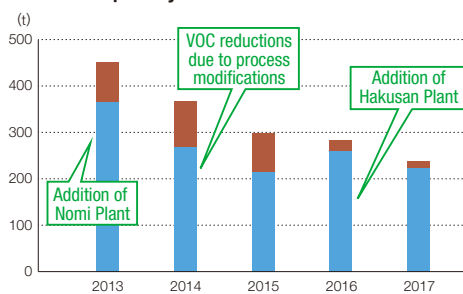
Amount of water received



Total emissions of waste, etc.



Emissions of priority controlled chemical substances



Environmental Targets

We have set eight environmental targets on a companywide basis. They conform to our Environmental Policy and are aimed at reducing the environmental burden of our business activities and products, and conserving biodiversity. We intend to make continual improvements.

Environmental Targets for FY2017

Our FY2017 record relative to environmental targets is shown below. In all cases, targets were achieved. On the following pages, case examples of items within each initiative are introduced.

	Item	Indicator	Target value ⁶	Actual value	Evaluation ⁷
①	Reduce emissions of energy-derived CO ₂ ¹	Reduction rate for basic unit ⁴ (Baseline: FY2013)	-29.1%	-14.7%	○
②	Reduce the amount of water received		-35.3%	-1.8%	○
③	Reduce emissions of priority controlled chemical substances ²		5.1%	15.7%	○
④	Reduce emissions of waste, etc. ³		5.3%	5.7%	○
⑤	Conserve biodiversity and implement ongoing regional environment-related activity with local communities	Implemented as planned		Implemented as planned	○
⑥	Supply Eco-products that take product life-cycle into consideration	Proportion of Eco-products ⁵ (excluding customer causes)	100%	100%	○
⑦	Confirm chemical substances contained in products in the development process	Application in conformity assessment on judgment on contained chemical substances		All cases appropriate	○
⑧	Promote environmentally conscious procurement activities	Discussion of Green Procurement Guideline revision in light of legal and other considerations		Revision carried out	○

Applicable range: (1) – (4) apply to five plants of Tottori, Higashiura, Ishikawa, Nomi, and Mobara, which are manufacturing sites in Japan. (The applicable range for the baseline year includes the Fukaya Plant.)

*1: The CO₂ emissions coefficient from electricity is 0.476 t-CO₂/MWh (receiving-end CO₂ emissions basic unit for FY2011 announced by the Federation of Electric Power Companies of Japan). The other conversion factors are from the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures.

*2: The priority controlled chemical substances refer to 38 substances selected as being subject to priority control efforts. They include volatile organic compounds (VOC) and PRTR targeted substances, and constitute the bulk of the substances that we use and emit.

*3: Waste, etc. = General waste + Industrial waste + Valuables

*4: The denominator for the basic unit is the glass substrate area (converted value)

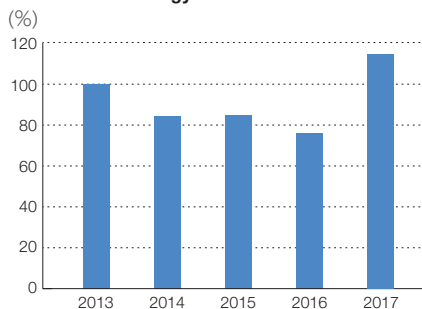
*5: Proportion of Eco-products = Number of Eco-products / Number of products developed

*6: This value takes into account production fluctuations.

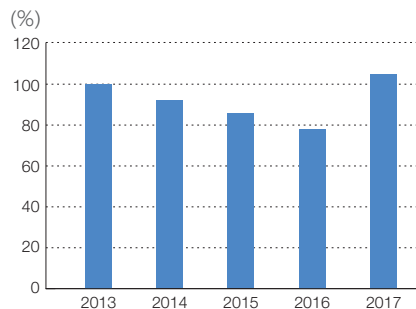
*7: "○" indicates that target was achieved.

Results in Four Production-Related Items (basic units) vs. FY2013 Baselines

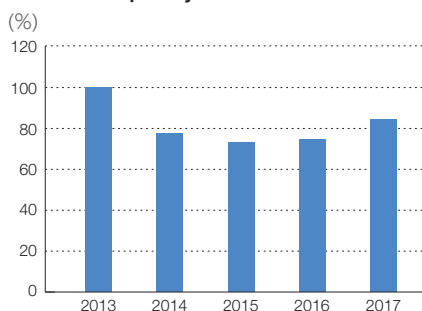
Emissions of energy-derived CO₂



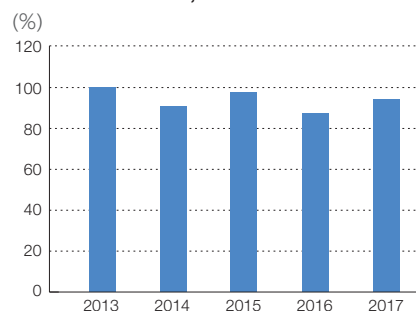
Amount of water received



Emissions of priority controlled chemical substances



Emissions of waste, etc.



Environmental Targets for FY2018

Our environmental targets for FY2018 are shown in the table below. In items ① to ③, big changes in the scale of production from FY2017 will probably worsen results. We have factored in reduction measures and reviewed targets accordingly.

	Item	Indicator	Target value	
①	Reduce emissions of energy-derived CO ₂	Reduced amount (main) Total amount (supplementary)	Reduced amount	Not less than 3,545 t-CO ₂
			Total amount	Not more than 546,007 t-CO ₂
②	Reduce the amount of water received*1		Reduced amount	Not less than 288,000 tons
			Total amount	Not more than 24,548,000 tons
③	Reduce emissions of waste, etc.		Reduced amount	Not less than 2,337 tons
			Total amount	Not more than 30,129 tons
④	Thorough management of chemical substances and promotion of their reduction and substitution	No misapplication of chemical substances		
⑤	Conserve biodiversity and implement ongoing regional environment-related activity with local communities	Implemented as planned		
⑥	Supply Eco-products that take product life-cycle into consideration	Proportion of Eco-products (excluding customer causes)100%		
⑦	Confirm chemical substances contained in products in the development process	Appropriate management of judgment on contained chemical substances		
⑧	Promote environmentally conscious procurement activities	Discussion of Green Procurement Guideline revision in light of legal and other considerations		

*1 Total amount of water used = amount of water received + amount of water recycled + amount of water reused

Activities with Environmental Considerations

Global Warming Prevention and Energy Conservation Activities

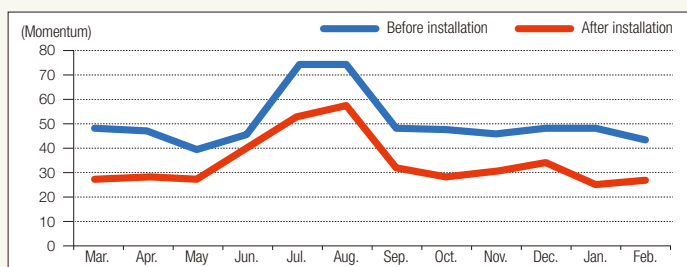
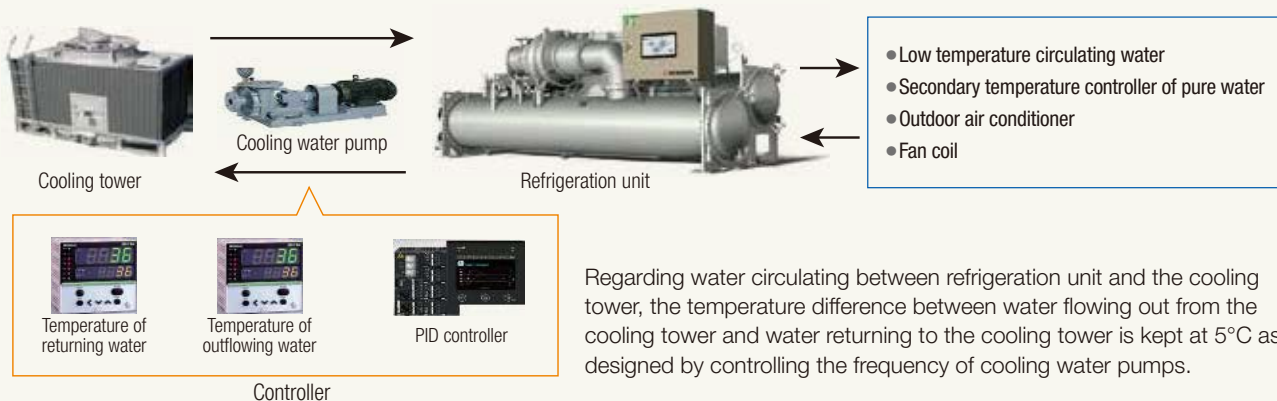
We are working on preventing global warming and promoting energy conservation. In FY 2017 We took action based on the medium-term environmental targets which take FY2013 as their baseline. We also participate in the “Action Plan for Commitment to a Low Carbon Society” being implemented by the electrical and electronics industry as a whole, and are working on improving energy efficiency with a view towards FY2020. Case examples from our Ishikawa, Nomi, Mobara, and Higashiura Plants are introduced below.

Ishikawa Plant Energy conservation through reduction in power consumption to drive cooling water pumps

14°C cooling water is supplied for air conditioning of cleanrooms and cooling of production facilities in manufacturing processes. Cooling water, which is produced by emitting heat from water using coolant of a refrigeration unit, circulates between the refrigeration unit and a cooling tower to cool the former. It was designed to keep the temperature difference at 5°C between water flowing out from the cooling tower and water returning to the cooling tower. However, there were times when more water circulated than the optimum flow rate because the system was controlled with an inverter which fixes the frequency. Hence, there was wastage. With installation of a controller to maintain the temperature differences of water, the volume of water flowing through the pump has become better controlled. As a result, electricity use was reduced through reduced power consumption required to drive the cooling water pumps.

Content of Improvement

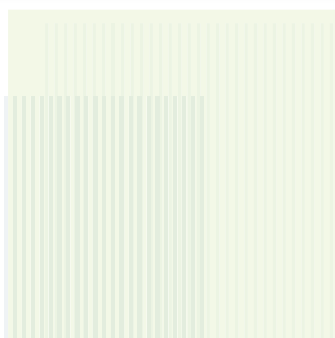
Reduction in power consumption to drive the cooling water pumps by controlling the volume of water flowing through the pumps



With installation of a variable flow controller, the power consumption is expected to be reduced by 33.3% on average compared with the actual performance of the previous fiscal year.

Effects (Expected reductions in electricity usage and CO₂ emissions)

Reduced amount of electricity usage: 201.7MWh/year,
 Effect in monetary amount: 2,218.7 thousand yen/year,
 Effect in CO₂ emission reduction: 96 t-CO₂/year

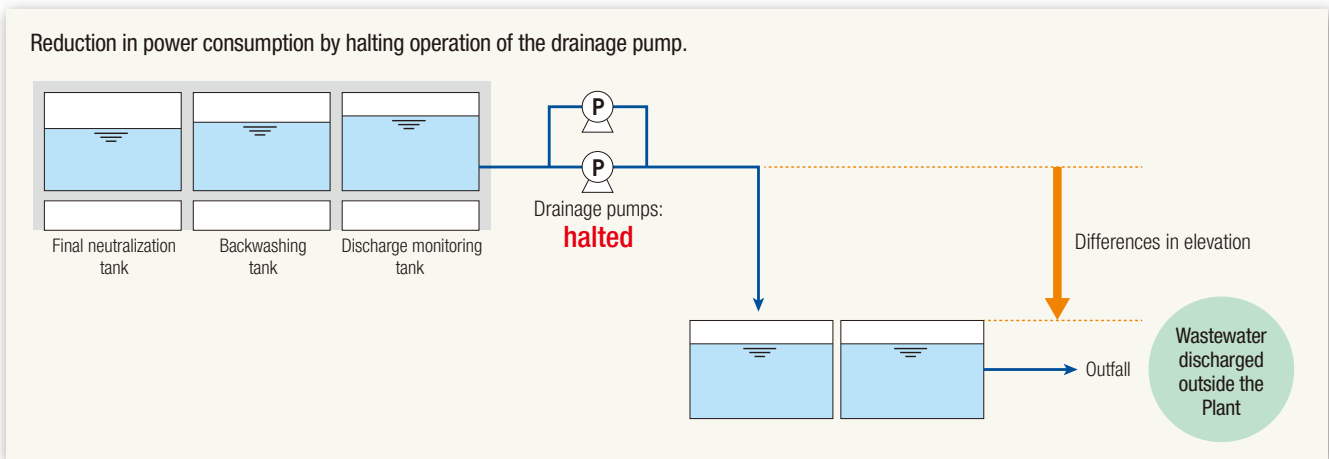


Nomi Plant

Reduction of CO₂ emissions by reduction in power consumption of discharge pumps

The Plant disposes wastewater to a river through effluent tanks of the wastewater treatment facility. Some effluent tanks, which are installed at the end of a row of tanks, are situated at lower ground level compared with the other tanks. In the past, we transferred wastewater from the effluent tanks placed at higher ground level to the last effluent tanks located at lower ground level by operating drainage pumps while monitoring the water level in the effluent tanks at lower ground level. Increase in the volume of recycled water has resulted in decrease in the volume of wastewater, which has lowered the water level in the effluent tanks. As a result, we are able to transfer water from the effluent tanks to the last effluent tanks located at lower level only by making use of the differences in elevation without operating the drainage pumps. We have reduced power consumption by completely stopping operation of the drainage pumps, which used to be kept in operation.

• **Content of Improvement**



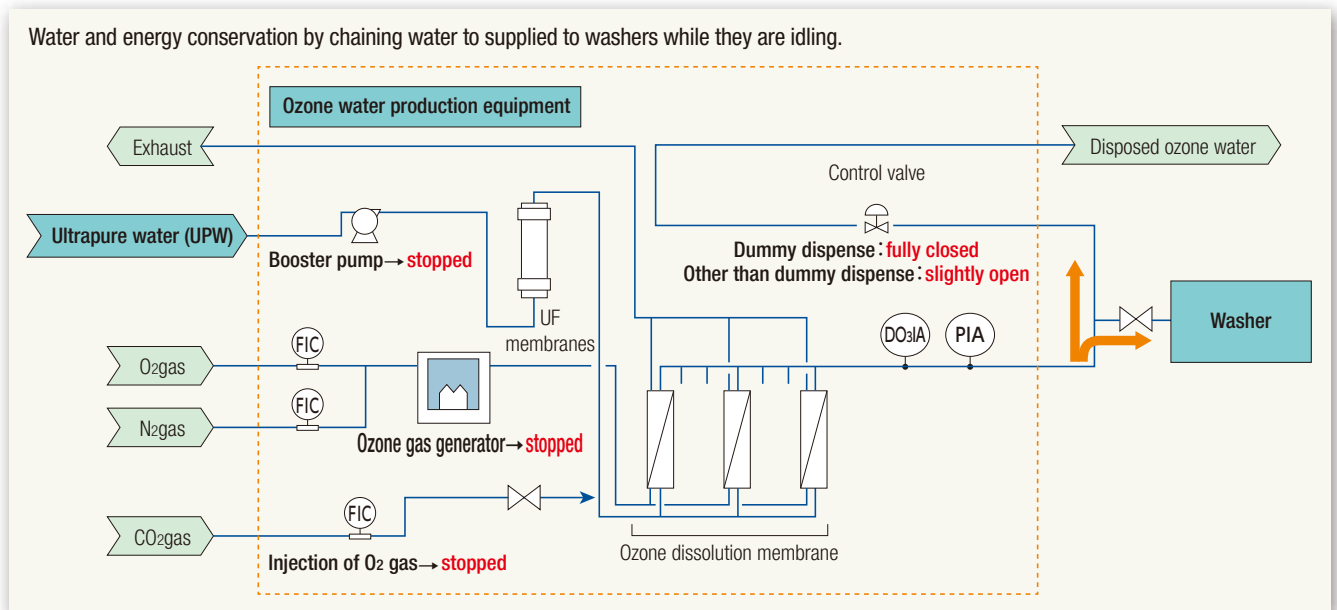
• **Effects (Expected reductions in electricity usage and CO₂ emissions)**

Reduced amount of electricity usage: 229.0MWh/year,
 Effect in monetary amount: 3,290.3 thousand yen/year,
 Effect in CO₂ emission reduction: 142.3 t-CO₂/year

Mobara Plant Water and energy conservation by changing water supplied to washers

For washers we use ozone water, which is ultrapure water with ozone gas dissolved. While ultrapure water and functional water other than ozone water was reused, ozone water had been disposed of without being reused in order to maintain its ozone concentration. With a purpose to conserve both water and energy by the maximum reduction in the volume of water to be used, we have changed ozone water to ultrapure water, which is supplied to washers while they are idling. The flow rate of dummy dispense in washers is reduced by halting the pump operation. In response to this, we increase the supply frequency.

•Content of Improvement



•Effects (Expected reductions in electricity usage and CO₂ emissions)

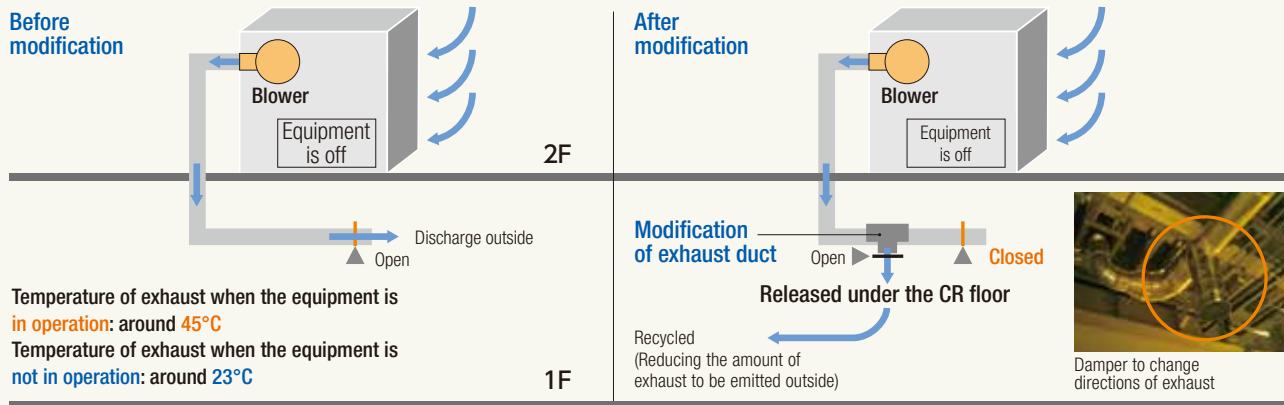
Reduced amount of water used: 16,614 m³/year,
 Reduced amount of electricity usage: 4,970 kWh/year,
 Effect in monetary amount: 1,929 thousand yen/year,
 Effect in CO₂ emission reduction: 2.4 t-CO₂/year

Higashiura Plant Energy conservation by recycling of exhaust from production equipment

Some production equipment is designed to receive air through blowers and discharge high-temperature exhaust (heat exhaust) outside. Some blowers continue running even when the equipment is not in operation. In this case, the air could be recycled in a cleanroom since it is not hot. In light of this, we modified the design of the equipment to release exhaust under the CR floor, rather than outside, when the equipment is turned off. As a result, both the amount of exhaust emitted outside and the amount of air supplied to the CR has been reduced. Accordingly, energy consumption has been reduced to operate (1) exhaust fan, (2) supply fan (outside air conditioners), and (3) boilers and refrigeration unit, which control temperature and humidity.

●Content of Improvement

“Modification of the exhaust duct” was carried out. The design of the equipment was modified in such a way that exhaust is released under the CR floor when the equipment is off, which has resulted in a reduction in the amount of exhaust to be emitted outside (it is possible to change the direction of exhaust to outside when the equipment is running.)



●Effects (Expected reductions in electricity usage and CO₂ emissions)

Effect in CO₂ emission reduction: 100.4 t-CO₂/year

Waste Management

In its Environmental Policy, JDI's approach to waste has involved promotion of the 3Rs (reduce, Reuse, and Recycle). Furthermore, pursuant to law we separate out specially-controlled industrial waste, industrial waste, and general waste and perform risk management for each of these.

Initiatives to Reduce Indirect Risks (illegal Dumping, Accidents, etc.) from Waste (All Plants)

To protect against recent social problems such as the illegal dumping of waste, JDI manages its waste pursuant to law as a waste emitter. We have also voluntarily established a management system and set standards for environmental considerations, safety and hygiene, etc. We visit the waste collection and transportation companies and intermediate treatment companies we deal with, and we call upon them for their cooperation to ensure that accidents and problems do not occur.

During the periodic monitoring visits, we use a checklist to confirm permitted scopes and licenses. We also confirm matters dealing with their waste disposal business, storage conditions, and management conditions with a checklist, and grade them as either passing or failing for each item before finally rating them with an overall score.

The waste collection and transportation companies and intermediate treatment companies we visited in FY2017 all received sufficiently favorable overall ratings for us to continue using them.

Image of JDI's Standards checklist



Confirmation examples for waste intermediate treatment companies



Waste storage site



Weighing machine



Incineration plant for industrial waste: illustration of workflow and exteriors of the plant



Unloading waste (1)



Unloading waste (2),



Permit

Tottori Plant Promotion of Appropriate Treatment of PCB Waste

●PCB Waste Treatment at Tottori Plant

The term “PCB waste” refers to polychlorinated biphenyls (PCB), oil containing this substance, and waste products that contain PCB or have PCB residue on them. In accordance with the “Law concerning Special Measures for Promotion of Proper Treatment of PCB Wastes,” companies that store PCB waste must report to the government annually on storage status and either dispose of the waste materials before the legally allotted deadlines or consign the disposal to PCB waste treatment bodies. JDI holds PCB waste at the Tottori and Mobara Plants. Let us state the ongoing status of the Tottori Plant.

The Tottori Plant stores 31 kg of high-concentration PCB waste (fluorescent lamps ballasts). We will report to the government on storage status of PCB waste and decide the disposal schedule in consultation with the Japan Environmental Storage & Safety Corporation (JESCO). Accordingly, we will dispose of the materials by March 31, 2022.



Storage status of high-concentration PCB waste



High-concentration PCB waste (fluorescent lamps ballasts)

Initiative for Promoting Renewable Energy

The popularization and spread of renewable energies throughout society is important from the perspectives of combatting global warming, diversifying energy sources, and creating new industries and jobs.

Our plants put in place solar power systems as an initiative to promote renewable energies.

Tottori Plant Renewable Energy Initiative

●Effectively Using Renewable Energy from Solar Power

As part of its efforts to prevent global warming, our Tottori Plant introduced a solar power system on the plant’s rooftop in 2001.

It started operation of the system as part of a joint study with the New Energy and Industrial Technology Development Organization (NEDO) to expand the adoption of solar power. The system has a maximum output of 150kW (with a total of 900 solar power generating panels) and generated 122 MWh of electricity in FY2017, thereby contributing to reductions of approximately 58 t-CO₂.



Solar power generating panels

Initiatives for Minimizing Environmental Risks

In order to minimize the risks of environmental pollution and the destruction of ecosystems, JDI continues to implement initiatives for wastewater and air emissions management, such as establishing our own voluntary standard values for these that are stricter than regulated values found in laws, ordinances, and local agreements. This time, we disclose data on management of water and air quality, noise, vibration, and odors from one plant. For data from other plants, please refer to the separate sheet on JDI Environmental Measurement 2018. What is more, the chemical substances we use in the production process have the potential for considerable negative impacts to human health and the global environment. As such, we soundly manage the chemical substances we use and make efforts to prohibit the use of substances that have the potential to considerably impact the environment, and to continuously eliminate or find substitutions for them, from the point of view of prevention.

Wastewater Management

When it comes to management of the wastewater we discharge into rivers and sewage systems, JDI has established voluntary standards for some items and substances out of 15 living environment items and 28 hazardous substances, based on agreements with local governments. These standards are at least 20% stricter than local government regulations. Regular measurements and on-site inspections by government officials reveal that no regulatory values and voluntary standards have been exceeded for any of the items. We will continue working to improve management of wastewater and facilities related to wastewater.

Main measurement data (Tottori Plant)

Item	BOD*1 (mg/L)	COD*2 (mg/L)	SS*3 (mg/L)	Hydrogen ion concentration (pH)	Normal hexane extractable material (mg/L)	Phenols (mg/L)	Phosphorus (mg/L)	Nitrogen (mg/L)	Nitrate nitrogen, nitrite nitrogen, and ammoniac nitrogen (mg/L)	Boron and its compounds (mg/L)	Fluorine and its compounds (mg/L)
Legal limit	600	–	600	5.0~9.0	5	5	–	–	380	10	8
JDI standards	450	–	300	6.0~8.7	2.5	2.5	–	–	190	5	5
Minimum value	100	–	8	6.9	<1.0	<0.1	–	–	3.1	<0.2	1.1
Average	176	–	17	7.1	<1.0	<0.1	–	–	6.2	<0.2	1.6
Maximum value	280	–	29	7.3	<1.0	<0.1	–	–	10.3	<0.2	1.9

*1 Biochemical Oxygen Demand

*2 Chemical Oxygen Demand

*3 Suspended Solids

Odor Management

JDI regularly measures and manages odors in line with the Offensive Odor Control Law and prefectural ordinances.

Measurement data (Ishikawa Plant)

Item	Substance	Unit	Legal limit	JDI standard	Actual	Substance	Unit	Legal limit	JDI standard	Actual	Substance	Unit	Legal limit	JDI standard	Actual
Limit No. 1 (boundary of site)	Ammonia	ppm	2	1	<0.1	Methyl mercaptan	ppm	0.004	0.0012	<0.0001	Hydrogen sulfide	ppm	0.06	0.018	<0.0001
	Methyl Sulfide	ppm	0.05	0.01	<0.0001	Methyl disulfide	ppm	0.03	0.009	<0.0001	Trimethylamine	ppm	0.02	0.006	<0.002
	Propionic acid	ppm	0.07	0.03	<0.0007	N-butyric acid	ppm	0.002	0.001	<0.0002	N-valerate	ppm	0.002	0.0009	<0.0002
	Isovaleric acid	ppm	0.004	0.001	<0.0002	Acetaldehyde	ppm	0.1	0.03	<0.01	Propionic Aldehyde	ppm	0.1	0.03	<0.0007
	N-butyl Aldehyde	ppm	0.03	0.009	<0.0004	Isobutyl Aldehyde	ppm	0.07	0.021	<0.0005	N-bareru Aldehyde	ppm	0.02	0.006	<0.0004
	Isobareru Aldehyde	ppm	0.006	0.0018	<0.0004	Isobutanol	ppm	4	1.2	<0.1	Ethyl acetate	ppm	7	2.1	<0.3
	Methyl isobutyl Ketone	ppm	3	0.9	<0.1	Toluene	ppm	30	9	<1	Styrene	ppm	0.8	0.24	<0.04
	Xylene	ppm	2	0.6	<0.1	-			-						
Limit No. 3 (sewage outlet)	Methyl mercaptan	mg/L	0.003	0.003	<0.0004	Hydrogen sulfide	mg/L	0.02	0.02	<0.001	Methyl Sulfide	mg/L	0.07	0.07	<0.003
	Methyl disulfide	mg/L	0.09	0.09	<0.01	-			-						

Air Emissions Management

In JDI manufacturing plants, facilities specified by the Air Pollution Control Act, such as boilers, gas turbines, and absorption cooling machines, are installed and under operation. Regular measurements and on-site inspections by government officials reveal that no regulatory values or voluntary standards have been exceeded for any of the items. We will continue working to improve air emissions management and the facilities related to this.

Measurement data (Mobara Plant)

Target facility	Number	Particulate matter ^{*4} (g/Nm ³)			Nitrogen oxides ^{*5} (vol ppm)		
		Legal limit	JDI standard	Actual	Legal limit	JDI standard	Actual
Once-through boiler	20	-	-	-	150	120	26

*4: "Particulate matter" refers to soot and other solid particulate matter resulting from combustion.

*5: "Nitrogen oxides" is a generic term that refers to compounds that arise from a combination of nitrogen atoms (N) and oxygen atoms (O).

Noise and Vibration Management

JDI operates facilities (compressors, blowers, refrigeration units) that are designated by the Noise Regulation Act and the Vibration Regulation Act. The table below shows noise and vibration measurements taken at the edge of a plant site with those facilities. Regular measurements reveal that no regulatory values or voluntary standards have been exceeded for any of the items.

Measurement data (Higashiura Plant)

Unit: dB

Category	Time period		Legal limit	JDI standard	Actual (maximums)
Noise	Morning	06:00~08:00	55	55	55
	Daytime	08:00~19:00	60	60	54
	Evening	19:00~22:00	55	55	54
	Night	22:00~06:00	50	50	50
Vibration	Daytime	07:00~22:00	60	40	24
	Night	22:00~07:00	55	40	26

Management of Chemical Substances

At JDI, we perform chemical substance management by broadly classifying these into the chemical substances used in our manufacturing processes, as well as the chemical substances contained in our products. An overview of chemical substance management in manufacturing processes at our domestic sites, as well as our management for chemical substances contained in products, is given below. Our overseas manufacturing subsidiaries also perform similar operations.

(1) Management of Chemical Substances from Manufacturing Site

We assign chemical substances that we use into three categories – Prohibited, Reduction, or General – considering their impact on humans and the environment, as well as international treaties and the regulations of each country. Based on this, we regulate their use. Also, we have defined our 38 highest-ranked substances by emissions volume as priority controlled chemical substances and have set forth reduction items for them in our environmental targets, through which we promote reduction activities.

Currently, prior to use new chemical substances, the division is required to submit an application for chemical substances that it would like to use in the manufacturing processes at our plants with attaching an SDS^{*1} through our Chemical Substance Usage Application system. With this system, the relevant divisions check on factors like the substance's hazardousness, if it can be substituted with other substances, regulations, and safety aspects. Only approved substances can then be used.

Each approved chemical substance is registered in the chemical substance management system, and each is managed appropriately based on its chemical identity (CAS number^{*2}). There are currently about 2,000 substances registered. Each month, we acquire the information such as the quantities of greenhouse gases, substances subject to notification under PRTR^{*3}, and substances corresponding to regulations and local ordinances in each region that are used, emitted, and transported, and undertake appropriate management. Currently, we carry out notifications on seven substances based on the PRTR system. The major difference from the previous year was the amount of 2-aminoethanol transported. This was due to the timing of industrial waste collection and transportation.

Table of Substances Subject to PRTR Notification

Unit: kg

Chemical substances	Quantity discharged				Quantity transferred			
	To air		To public water bodies		Sewer		Off-site	
	FY2016	FY2017	FY2016	FY2017	FY2016	FY2017	FY2016	FY2017
acetic acid 2-methoxyethyl	1,979	1,570	0	0	0	0	0	0
2-Aminoethanol	150.2	152	1,693	1,743	0	0	340	2,700
Hydrogen fluoride and its water-soluble salts	1,723.1	1,767.8	0	0	0	0	1,600	1,900
Boron and its compounds	0	0	240	0	0	0	14	0
Indium and its compounds	0	0	68	28	0	0	639.6	136
Molybdenum and its compounds	0	0	620	865	0	0	2,200	3,504
Ferric chloride	0	0	0	0	0	0	0	0

Since the actual quantities discharged into soil and disposed in landfill for the concerned sites were zero, these were not recorded.

*1: Safety Data Sheet

*2: Chemical Abstracts Service (a worldwide ID system in which a unique number is assigned to each chemical substance)

*3: The Pollutant Release and Transfer Register is a system in which the quantities of chemical substances designated as hazardous that are discharged into the environment (air, water, soil) or transferred out of business sites contained in waste must be determined by the business itself, which must also notify this to the national government

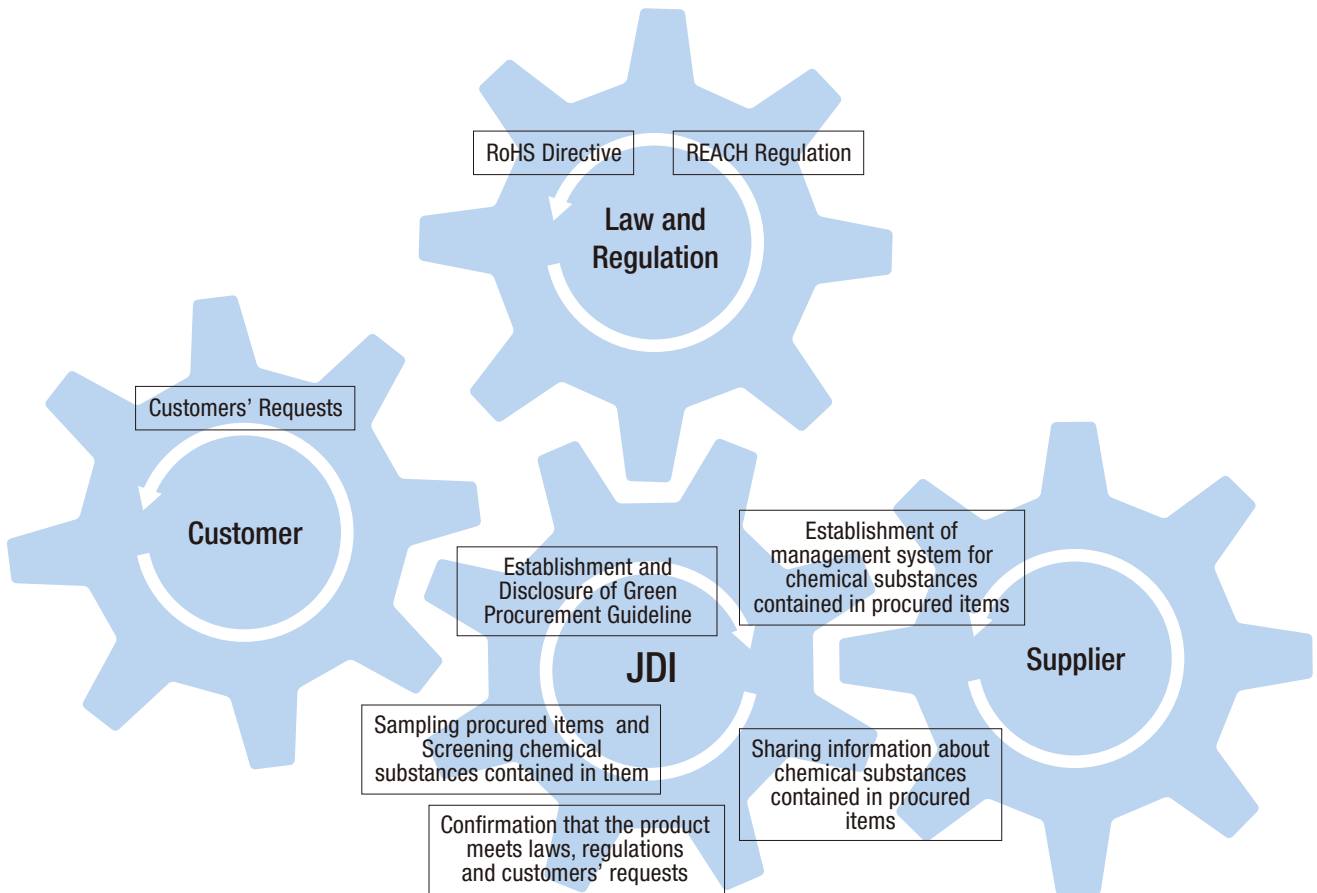
(2) Management for Chemical Substance Contained in Product

We establish the Green Procurement Guideline based not only on the RoHS Directive and the REACH Regulation in the European Union as well as other laws and regulations, but also on requests of our customers.

Cooperating together with our suppliers, we manage chemical substances contained in procured items such as parts and material, related to our products.

Before shipping them for our customers, we examine chemical substances contained in our products.

Therefore, we minimize risks which could result in environmental pollution and destruction of ecosystem.



Product Harmonized with the Environment

We believe environmental impact on our products affects that on goods to put on the market with our products. Through Life-cycle assessment, we are developing and producing products harmonized with the environment. Furthermore, we are working together with our customers for the global environment.

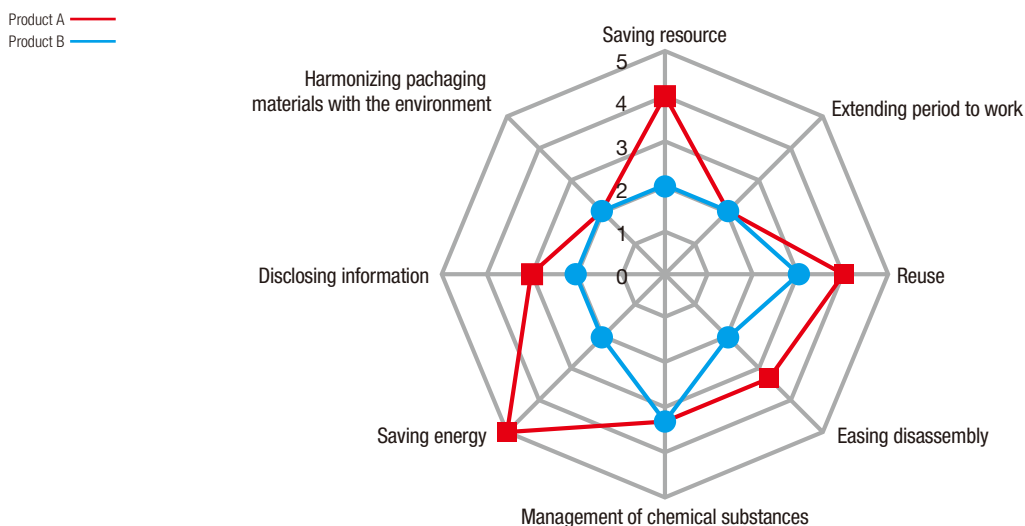
Eco-Product

We consider the environmental impact of our products through Life-cycle assessment, therefore each of the eight assessment items of our products is graded at the development stage. Products that accumulate sufficiently high grades are honored with “Eco-product”. In FY2017, all of our products have been honoured with the Eco-product. We have worked to reduce the inclusive environmental impact of our products. We will continue to hand over only one earth to our descendants.

Eight Assessment Items

	Assessment item	What to assess
1	Saving resource	Does it reduce size and weight? Dose it reduce any loss in production?
2	Extending period to work	Does it extend period to work?
3	Reuse	Does it prepare to recycle?
4	Easing disassembly	Does it ease to disassemble?
5	Management of chemical substances	Does it reduce chemical substances polluted to the environment?
6	Saving energy	Does it save energy to work?
7	Disclosing information	Is there any framework to disclose information with it?
8	Harmonizing pachaging materials with the environment	Is there any framework to save resource, reuse and manage chemical substances with packaging materials?

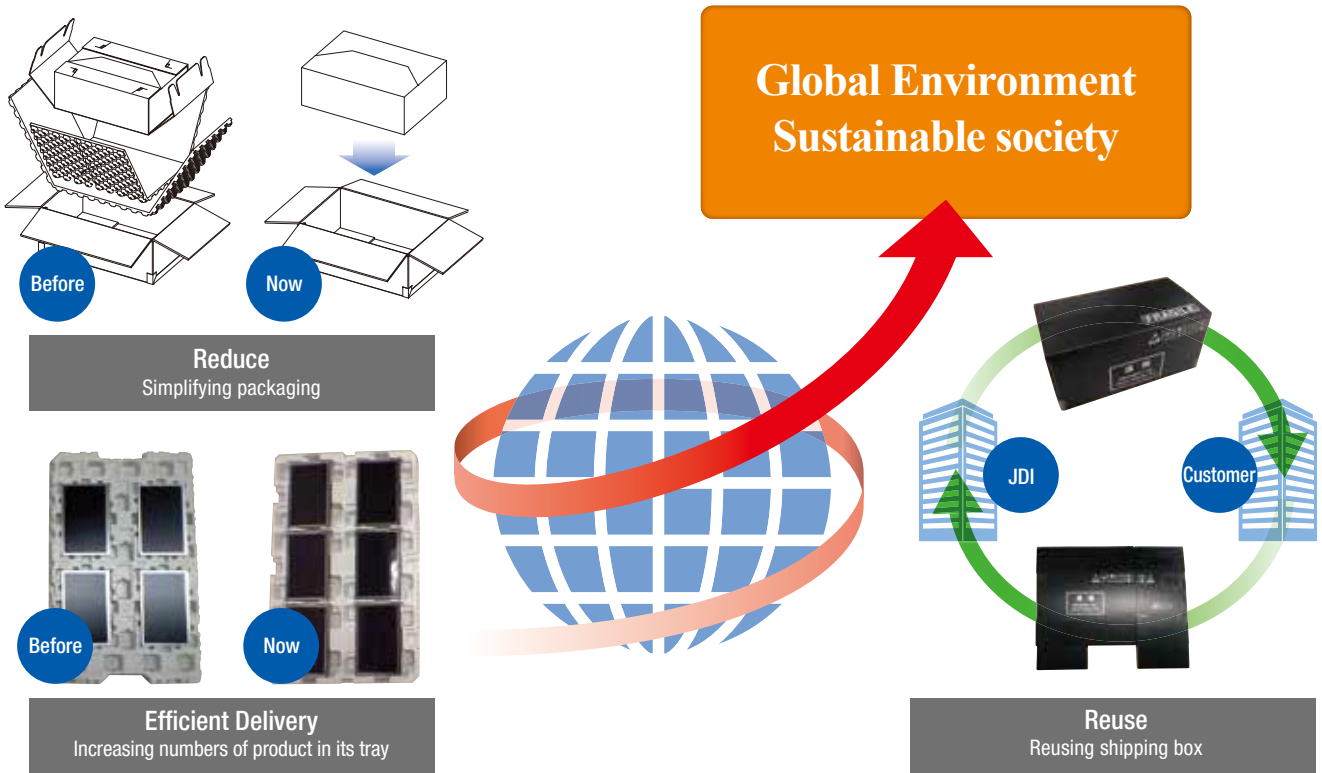
Assessment of Eco-product



Working Together with Our Customers for the Global Environment

We improve efficient delivery of our products to our customers to prevent the global warming. And we repeatedly reuse shipping boxes for our products. Furthermore we simplify packaging to reduce waste.

Working together with our customers, we continue to conserve the global environment and contribute the sustainable society.



Ecosystem Conservation Activities

JDI works for the conservation of ecosystems through greening activities at our plants and nature recovery activities in surrounding areas. We will introduce the initiatives of our Nomi Plant and Mobara Plant.

Activities at Nomi Plant

The Nomi Plant has created a biotope in the premises with an aim to live in harmony with nature in the surroundings. This time we conducted a survey to assess effects and impacts of the biotope to flora and fauna.

Survey contents

Flora and Fauna Survey in the Biotope (Survey period: October 20, 2017 – December 31, 2017)

(1) Flora Survey

By direct observation, plants' growth was assessed, and their names recorded. It was confirmed that the population was maintained.

(2) Insect Survey

The types of insects living in the biotope were surveyed by capturing some of them. Their names were recorded. It was confirmed that the population was maintained.

(3) Survey on Aquatic life

The types of fishes and aquatic insects living in the biotope were surveyed by capturing some of them. It was confirmed that the population was maintained.

The survey identified three types of plants and four types of insects in the biotope, which are listed in the red list (list of endangered wild species) prepared by the Ministry of Environment or designated as rare and endangered species by Ishikawa Prefecture.

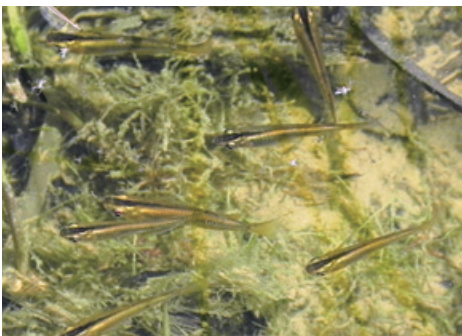
We will continue water quality management on wastewater from the Plant and regular cleanup activities. We will work for conservation of the natural environment through maintaining ecosystems that are unified with our natural surroundings.



Biotope



Loach



Japanese rice fish



Diving beetle

Activities at Mobara Plant

At the Mobara Plant, we have a man-made firefly creek called Hotaru-gawa Creek, and a man-made pond called Koi Pond, with koi living in it. Fireflies dwell in the creek, and to maintain a healthy environment for them, we carry out cleanup activities around the creek and the koi pond and perform other conservation activities such as monitoring and maintaining water quality.

We performed cleanup activities around the creek and the koi pond in April. We regularly clean water supply facilities for the firefly creek and carry out water quality improvement measures, resulting in stabilization of water quality (clear and odorless). We can see koi and Japanese rice fish swimming in the pond.



Cleanup of the koi pond



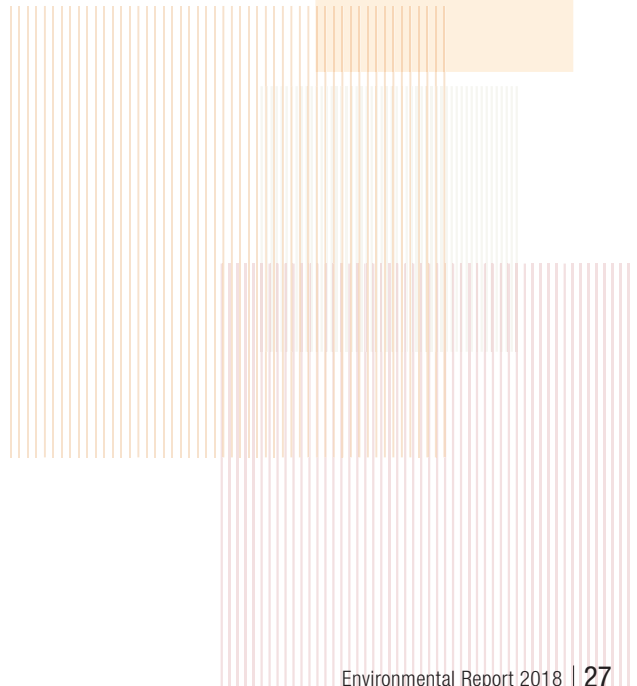
The firefly creek after cleanup



Firefly in the firefly creek



Koi in the koi pond



Communication

Activities undertaken by Domestic Sites

Activities by the Ishikawa, Nomi, and Hakusan Plants

The annual “Kawakita Clean Campaign & Tedori River Clean-up Blitz” are activities held within the wide area of Kawakita town, covering 20 km of roadsides and riverbanks.

In FY2017, this annual activity was held for the 21st time. On May 27, a total of 436 JDI employees, family members, employees of subcontractor firms, and people from other companies in nearby areas participated. They collected 150 kg of trash. Children, who participated with their parents, planted flowerbeds and planters with flower seedings.



Cleanup activities & flower planting

The Hakusan Plant takes part in the cleanup activities organized by the Hokubu Industrial Park, which are held twice a year. On October 12, approximately 100 people took part in the cleanup along sidewalks around the Factory for 60 minutes before work. They collected fallen leaves and other debris, which were packed in 90 liter trash bags. At the end, a total of 45 bags of trash were collected.



Cleanup activities.

Environmental Education at nearby Nursery Schools

The Ishikawa Plant organizes environmental education at three nearby nursery schools. Through our “Look for “the Mottainai (Wastefulness)” in life quiz, we helped children to understand the importance of not leaving leftovers on one’s plate and ways to cut down on garbage.

While showing children a note pad and a shopping bag made from cookie boxes and wrapping paper of candies, we called on them to make one together.



Environmental education at nursery school

Activities at Higashiura Plant

The “Higashiura Natural Environment Learning Forest,” operated by Aichi Prefecture, is located next to the Higashiura Plant. Our plant participates in the events (transplanting and harvesting paddy rice) to support the forest on a regular basis. We participated in transplanting on June 3 and harvesting on November 3. We harvested full-grown paddy crops which we had transplanted.



ransplanting rice



Harvesting rice

Activities at Tottori Plant

As the regional contribution for eastern Tottori area, the Tottori Plant has been participating in the Tottori Sand Dunes cleanup twice a year, spring and fall. A total of 122 JDI employees and their family members participated and gathered wooden and plastic scraps and empty cans that had been washed up on the sea shore.

We will keep actively participating in clean-up activities.



Clean-up activity in the Tottori Sand Dunes

Activities Undertaken by Overseas Subsidiaries

We have three overseas manufacturing subsidiaries. They mainly assemble liquid crystal panels and manufacture liquid crystal parts. Each company has acquired ISO 14001 certification, and they promote to continue improvements for environmental aspects. Their primary environmental burdens come from the electricity and water used in production, as well as their waste.

All of the companies promote reductions of their environmental burdens, and work on preventing global warming (reducing CO₂) and effectively using resources (reusing water resources and reducing the amount of waste generated) as priority issues. We work to communicate with the companies by holding regular meetings to confirm and to ascertain the progress of each company.

The following article introduces the activities of Nanox Philippines Inc. (NXP).

Company Profile

Company name	Nanox Philippines Inc.
Address	Civil Aviation Complex, Near Clark South Interchange, Clark Freeport Zone, Clarkfield, Pampanga 2023, Philippines
Start of business	June 15, 1999
Representative	Misao Shimizu
Business content	To manufacture LCD display
Number of Employees	5,941 (as of end of April 2018)



Factory appearance

Activities at NXP

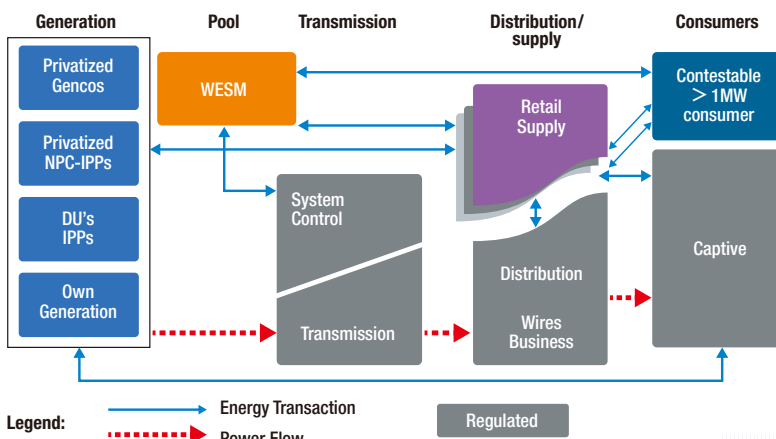
Environmental Plans and Results of FY2017

	Initiatives	Target	Result	Assessment
1	Use of renewable energy (hydropower generation) that has low CO ₂ emissions coefficient	CO ₂ emissions to be reduced by 10%	CO ₂ emissions reduced by 72.6%	○
2	3R approach for reducing the amount of waste to be disposed in landfill. Principle to recycle all recyclable materials	Waste emissions to be reduced by 3%	Waste emissions reduced by 12.8%	○

Examples of FY2017 Environmental Conservation Activities

(1) Reduction of CO₂ emissions

With regard to electricity supply, we had had a contract with an energy supplier that used a combination of coal and gas oil as an energy source. Last year we signed a contract with a retail energy supplier (RES) that uses a hydroelectric power plant as an energy source. The CO₂ emissions coefficient of the new supplier is lower than that of the previous supplier. As a result, the annual CO₂ emissions decreased from 14,807 tons in FY2016 to 8.01 tons in FY2017.



Hydropower station appearance

● It is integrating power plants, National Grid Corporation of the Philippines (NGCP), power suppliers, and consumers into the Wholesale Electricity Spot Market (WESM). Consumers select a power plant.
 ● CO₂ emissions coefficient of SN Abotit Power (SNAP) is 0.000003 t/kWh.

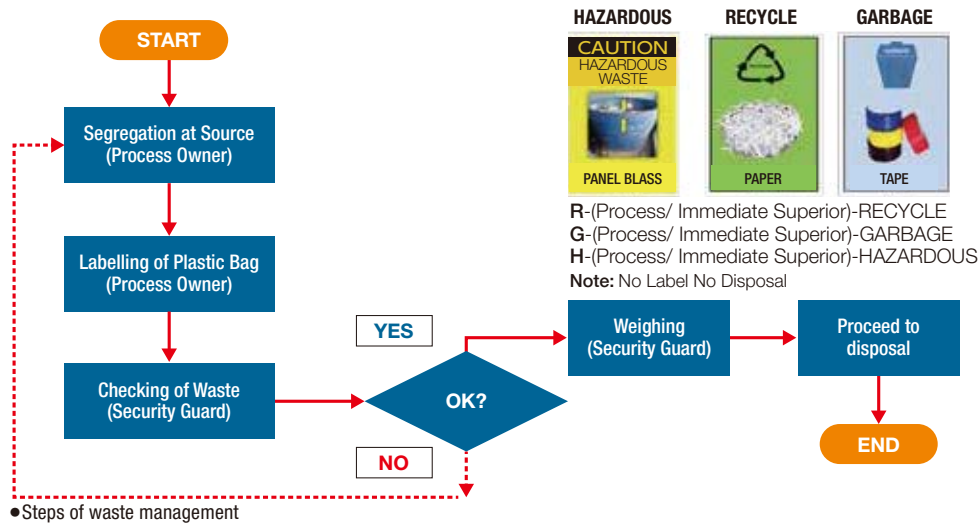
(2) “3R” approach for reducing the amount of waste to be disposed in landfill

Examples of “Reduce, Reuse, and Recycle” activities are shown below.

(a) Project on document management

- * Reduce paper size of form sheets or checklists and use both sides of paper
- * Sale of used paper to a recycling company

(b) Wipes that was used in production processes are washed and reused.



(3) All recyclable materials to be recycled

First, all waste materials are collected at the disposal site to be separated; one part to be disposed and the other part to be recycled. After they are sorted, all recyclable materials are sent to a recycling company. To facilitate the proper separation of waste, we have installed trash bins by type of waste in all production areas. This project has successfully reduced the amount of waste to be disposed in landfill by 121 kg.

(4) Environmental and social contribution activities

In collaboration with the Department of Environment and Natural Resources (DENR), NXP has been engaged in a forestry conservation activity, “Adopt Forest Program.” Last year we participated in the reforestation activity from November 15 to November 17 in Sapang Unakku village, Porac town, Pampanga region. We planted 300 fruit trees and 300 trees to be used for timber in the area designated as a conservation area. We are going to plant more than 2,000 trees for the coming four years.

Every year we regularly participate in recycling activities organized by the Environmental Management Bureau and Environmental Protection Agency (EPA). In November 2017, we sold used lead batteries with 10,795 Philippine Pesos (equivalent to 28,067 yen) as one of their activities. The profit was donated to a volunteer organization “Battery Monitoring Project,” which promotes an environmentally friendly system for recycling and disposal of lead batteries.



Planting trees

Communication with Customer and End-User

We bilaterally communicate with our customers and end-users as well as other stakeholders. We would like to report SID Display Week 2018 and Join in 5G partnership.

SID Display Week 2018

We took part in SID Display Week 2018, held at Los Angeles Convention Center, California U.S.A in May 2018.

We have revealed our display products installed in a futuristic automotive mock-up and JDI's only one FULL ACTIVE™ as well as display products with high resolution for VR, or virtual reality applications and light field display products, realizing natural-looking images without any special 3D glasses to many visitors.

Our technical strength is to create integrated circuits from LTPS, or low-temperature polycrystalline silicon. We have achieved high definition, low power consumption and seamless design using this technology, creating new devices such as displays and sensors.

We will pursue innovative solution services with them.



FULL ACTIVE™ is a trademark of Japan Display Inc.



Join in 5G partnership

JDI cooperates with 5G, or 5th-Generation Wireless Systems, partnership conducted by NTT DOCOMO Inc., Japan's largest telecommunications company.

5G partnership drives every trial of application services with 5G. 5G features high throughput of ten giga bits per second and low latency of one millisecond along with low power consumption and low costs.

JDI participated in 5G Field Trial Project* in March 2018. We demonstrated digital signage services for outdoor usage with our low power consumption display. We formed 4K resolution with our four tiling display, transmitted some pictures with high resolution from a 5G base station, and successfully got real pictures with 4K resolution under ambient light. We believe it would lead to the creation of some new devices cable less, portable all places with seamless connection and energy-saving.

Joining in 5G partnership triggered communication with partners in various industries, and collaboration for creating innovative devices for ultra-high-speed, large capacity and low power consumption. Through these activities, JDI aims to contribute to the conservation of the global environment and sustainable society.



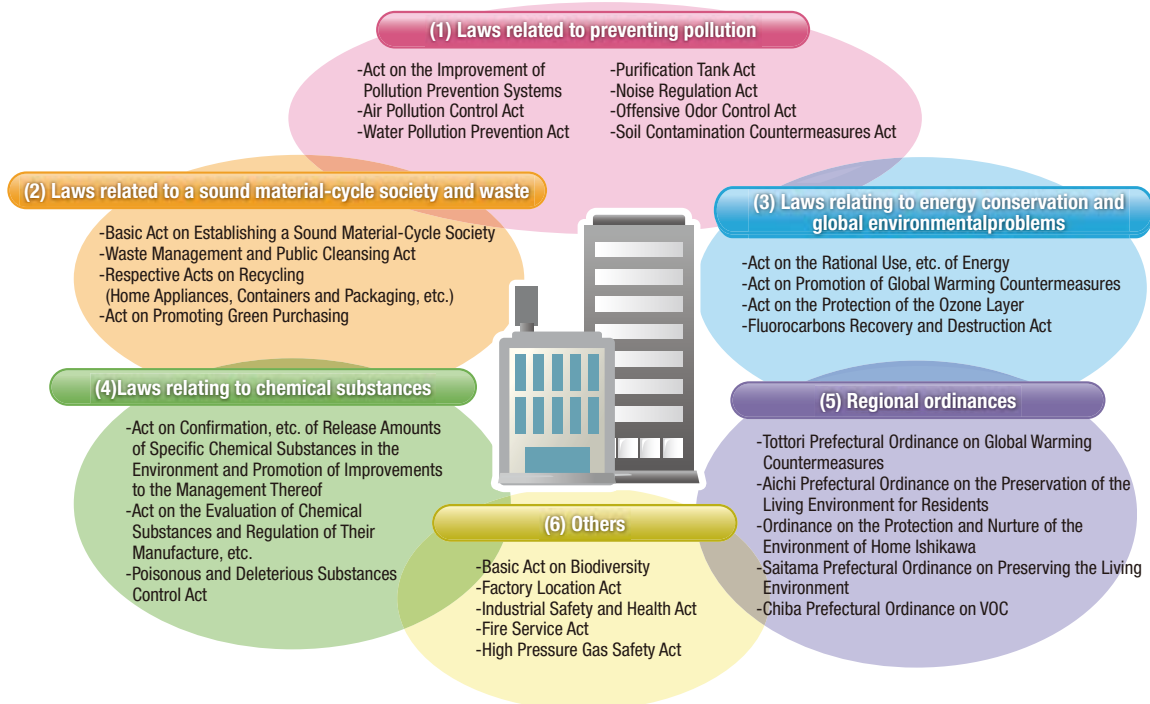
* 5G Field Trial Project

This trial was conducted by NTT DOCOMO under a project commissioned by Japan's Ministry of Internal Affairs and Communications to examine the technical specifications for 5th generation mobile communication systems that can realize a data communication speed exceeding 10 Gbps in densely populated areas.

Legal Compliance

Compliance is one of the most fundamental challenges when it comes to companies fulfilling their social responsibility. We make utmost efforts in compliance with environmental laws of both Japan and overseas while managing and pre-emptively preventing the discharge of environmental pollutants into the soil, groundwater, and atmosphere.

Major laws related to the environment in Japan are indicated below.



Environmental Accounting

We carry out environmental accounting so that investments and expenses related to environmental conservation, as well as their results, are tallied up to give us a reference point for decision-making. We have chosen items to be recorded in consideration of their importance in reference to the Ministry of Environment's Environmental Accounting Guideline. Environmental conservation costs and effects for FY2017 are shown in the table below. With regard to environmental conservation costs, their expenses included outlays for outsourcing, waste treatment, consumable materials, environmental analysis and measurement, and repairs.

Regarding environmental conservation effects (physical unit), both energy-derived CO₂ emissions and waste emissions improved from year-earlier levels, due in part to effects of our Environmental Policy. Sales of recovered valuables were affected by fluctuations in market prices for some materials and changes in specifications. As a result, the monetary amount of sales increased.

Summary of Environmental Conservation Costs in Japan

Unit: 1 million yen

Major category	Item	Details	Investment	Expenses
Environmental conservation costs ^{*1} (costs within business areas)	Pollution prevention cost	Costs for preventing air pollution, water pollution, soil pollution, noise, foul odors, and more	256	4,212
	Global environmental conservation cost	Costs for preventing global warming, conserving energy, preventing the depletion of the ozone layer, and more	3	151
	Resource recycling costs	Costs for the efficient utilization of resources, as well as the recycling, treatment and disposal of industrial waste and general waste	0	1,384
	Total		259	5,747

*1: Analysis and measurement costs related to the environment are also included in the costs within business areas.

Summary of Environmental Conservation Effects in Japan

Major category	Category	Item	Effects	Unit
Environmental conservation effects (physical unit)	Environmental conservation effects related to environmental burdens and waste ^{*2}	Emissions of energy-derived CO ₂	58	million t-CO ₂
		Emissions of waste, etc.	6,959	t
Economic benefits associated with environmental conservation activities	Operating revenue related to environmental burdens and waste	Revenue from the sale of valuables	74	1 million yen

*2: In order to consider the changes in the production output, values were derived using the following formula, which was established by referring to the Environmental Accounting Guideline.
 Effects = emissions from the previous fiscal year x (glass substrate area from the fiscal year in question / glass substrate area from the previous fiscal year) - emissions from the fiscal year in question

Environmental accounting is applied to the six plants of Tottori, Higashiura, Ishikawa, Nomi, Hakusan, and Mobara.

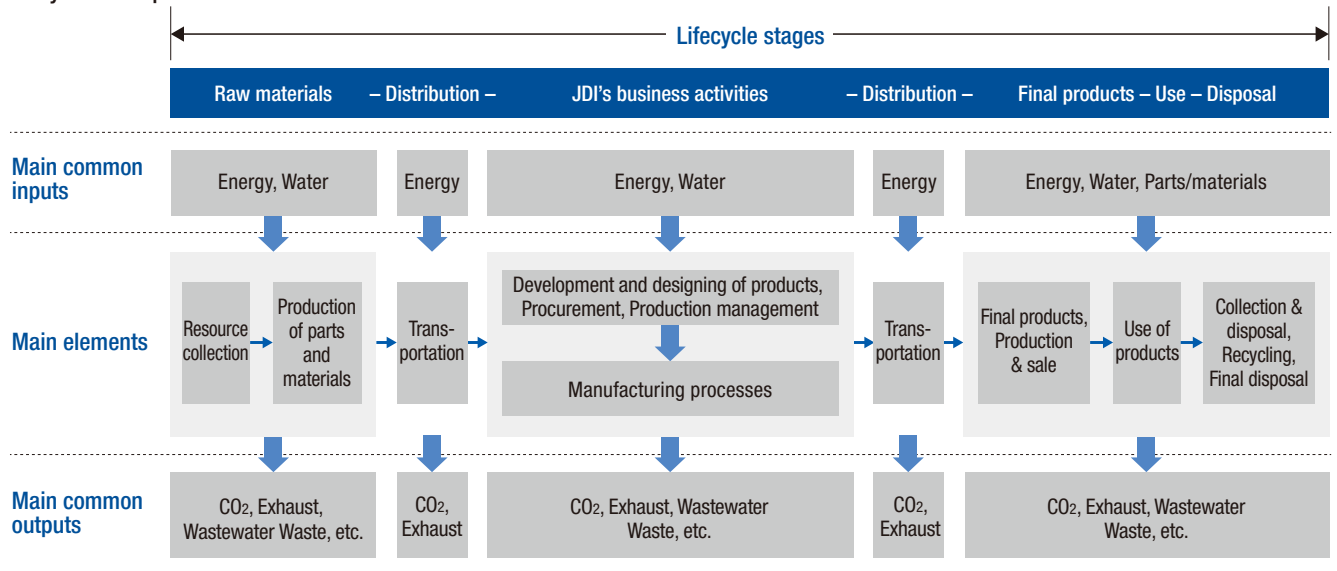
For Sustainable Society

In response to adoption of the “Paris Agreement,” the Japanese government has set the medium-term target^{*1} for reduction of greenhouse gas emissions in Japan. JDI will contribute to the achievement of this target through improvement of business processes as well as development of Eco-products. To this end, we will be engaged in continual improvement of the environmental management system and promotion of the Scope 3^{*2} throughout the product life cycle.

^{*1} Japan has set the goal; that is, to reduce greenhouse gas emissions in FY2030 by 26% from FY 2013 levels.

^{*2} It is called “Supply chain emissions” which is calculated based on the amount of CO₂ emitted through the entire process of supply chain; material procurement, manufacturing, distribution, sale, and disposal. Scope 1 and 2 emissions are emissions directly and indirectly emitted by companies, while Scope 3 emissions include all emissions that are not categorized under Scope 1 and 2 emissions.

Lifecycle of our products



Continual improvement through environmental management system



Activities to reduce CO₂ emissions, etc.



Afterword

This environmental report is issued by Japan Display, Inc. continuing on from last year.

We think it important to appropriately disclose information to and communicate with all of our stakeholders. This report was compiled with the goal of conveying our activities for the realization of a sustainable society in an easy to understand manner. In editing the report, we have included the data and details of activities taken by overseas manufacturing subsidiaries. We also expressed ideas by incorporating as many figures and photographs as possible, and we introduce each of our activities through their own page layout.

We plan to issue this regularly once each year while working to make the report even easier to read in the future.

Japanese version is also available from our website (<http://www.j-display.com/Environment/report.html>), and we would be pleased if people were to view this as well. If there are any comments, advice, and so forth, please contact us via our website below so that we can use them as references for the future.

Please use the URLs below to access our website and contact us using these forms.

Enquiries about products, etc. <https://www.webcoms.jp/jdi/eng/form.php>

Enquiries from shareholders and investors <https://www.webcoms.jp/jdi/ir/eng/form.php>

Target Period: April 2017 – March 2018 Some activities outside of the above period are also included.

Month Issued: August 2018

Assumed Readers: This report is aimed at a diverse range of stakeholders that includes our customers, shareholders, investors, suppliers, everyone in our local communities, and more.

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