

## Environmental Performance

Idemitsu works to reduce the environmental impact of its business activities while undertaking progressive initiatives for environmental conservation to contribute to the creation of a society in which the economy and the environment are in harmony.

### Basic Policy

We place priority on conserving the environment across all our business domains, operations and actions and seek to promote the following:

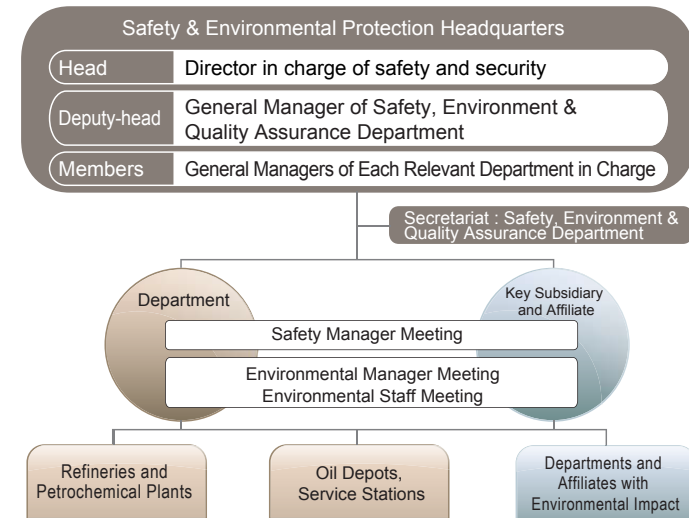
1. Pollution prevention and environmental conservation
2. Rigorous implementation of compliance
3. Establishment and achievement of environmental targets
4. Development and widespread use of environmental technologies and products
5. Improvement of energy use efficiency and effective resource utilization
6. Reduction of impact on biodiversity
7. Enhancement of environmental management systems

## Environmental Management

### Headquarters

The Idemitsu Group has established the Safety & Environmental Protection Headquarters, with the role of secretariat assigned to the Safety, Environment & Quality Assurance Department, aimed at strengthening the environmental conservation activities of the entire Group. As in the case of safety and security management, the head of the Safety & Environmental Protection Headquarters tours worksites to provide safety and environmental instructions and its secretariat implements safety and environment-related audits. Idemitsu also deploys environmental conservation managers and environmental staff in each department to promote autonomous environmental conservation activities.

## Promotion Framework for Safety and Environment



## Environmental Management Systems

The Idemitsu Group stipulates basic policies for environmental conservation in the General Principles of Global Environment. Based on these policies, the Safety & Environmental Protection Headquarters promotes ongoing environmental conservation activities. Also, the Idemitsu Group's domestic and overseas business sites where the environmental risk is significant have obtained ISO 14001\*1 certification and are building and operating environmental management systems that conform to these standards.

### ISO 14001 Certified Worksites

Japan : Domestic Group worksites with certification: 29.0%

Worldwide : Overseas Group worksites with certification: 17.0%

\*1 ISO 14001: An environmental management system standard created by the International Organization for Standardization.

## Environmental Management at Our Refineries and Petrochemical Plants

Because refineries and petrochemical plants handle large volumes of hazardous materials, the occurrence of an explosion, fire, oil spill or other accident could negatively impact the surrounding environment. Accordingly, our refineries and petrochemical plants have established Safety & Environmental Sections within each worksite, and the Group's internal business units are working together to better ensure safety and security and protect the environment.

## Environmental Management in Offshore Oilfield Development

The Idemitsu Group is carrying out petroleum exploration and production operations off the coast of Vietnam as a sole operator. Since 2006, the Company has implemented its own Safety, Health and Environmental Management System (SHEMS), which, based on the Idemitsu Group's accumulated rules, manuals and know-how related to safety, industrial health and the environment, serves as an integrated platform for management. We require that contractors adopt SHEMS as a prerequisite for concluding contracts. We continually strive to improve the system and update it accordingly (last overhaul: 2012). In addition, we are enhancing our measures to ensure safe operations. In June 2016, we conducted a safety and environmental audit of the Ho Chi Minh City Operation Office and exploratory drilling operations, and in March 2017, we conducted a safety assessment of the basic design of the production equipment in the development business.

Resource development, oil and gas, [safety and environmental initiatives](#)

## Environmental Management at Coal Mines

Idemitsu Australia Resources (IAR), which is one of the coal business's bases and is based in Brisbane, Australia, is working to solve local social problems from a long-term perspective through its commitment to the following management-level policies.

- Environmental Management Policy
- Energy Management Policy
- Cultural Asset Policy
- Stakeholder Engagement Policy

As for specific activities, IAR is working in collaboration with the local Aboriginal population to identify and preserve historical and other cultural assets before excavation begins. In addition, as part of its recovery efforts after excavation ends, IAR has thus far planted more than 200,000 endemic plants after reburying rocks and replacing contaminated soil.

In addition to the above efforts, following discussions with the local government regarding the need to maintain biodiversity, IAR acquired around 11,000 ha of land over the two-year period between 2015 and 2016 and is protecting the animals and plants that the site provides habitat to.

## Environmental Management in International Waters

Idemitsu Tanker Co., Ltd., which operates oceangoing tankers, has established various regulations for safe navigation and marine pollution prevention in accordance with the ISM Code,<sup>\*2</sup> ISO 14001 and ISO 9001<sup>\*3</sup> management systems.

**There were zero major accidents, including collisions and fires, in fiscal 2016.**

<sup>\*2</sup> International Safety Management (ISM) Code: An international standard incorporated into the International Convention for the Safety of Life at Sea (SOLAS), designed to augment the safety management of ships.

<sup>\*3</sup> ISO 9001: A quality management system standard of the International Organization for Standardization.

→ [Idemitsu Tanker Environment / Safety measures](#)

## Environmental Education

Aiming to increase the environmental awareness of all employees, the Idemitsu Group provides environmental education through various means, including training courses for new and newly assigned employees and workshops at workplaces. Moreover, we invite children from nearby elementary schools to visit our refineries, petrochemical plants and laboratories for environmental education and also offer classes at these schools.



An environmental education class being held at the Chiba Refinery and Petrochemical Plant, which was reorganized into the Chiba Complex in October 2017 (July 12, 2016)



A class being held at an elementary school in Tomakomai, Hokkaido Prefecture (October 25, 2016)

[Tours, Workshops and School Classes](#)

Environmental Impact (FY2016)

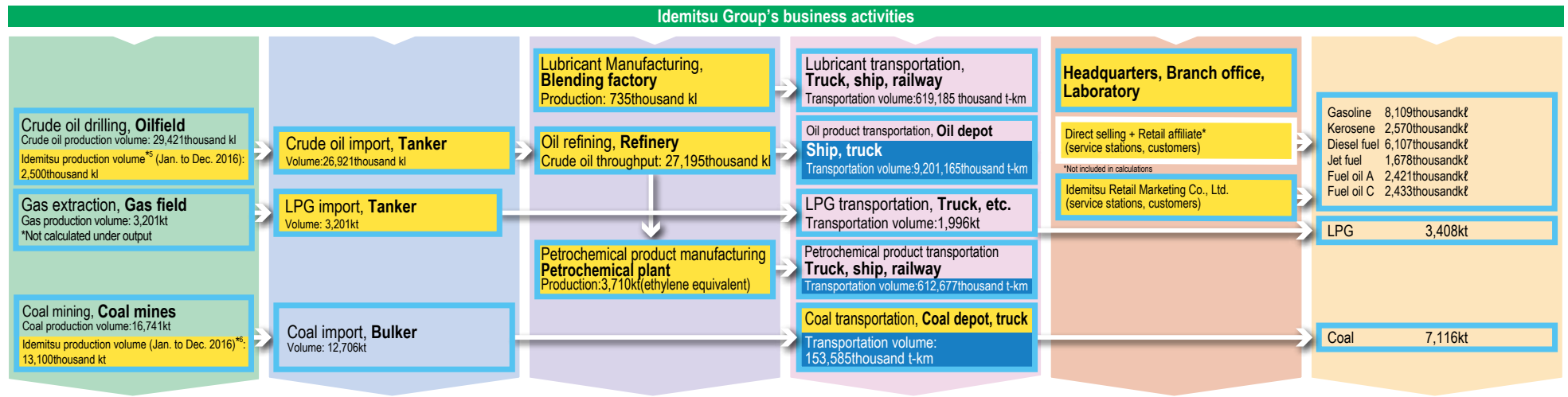
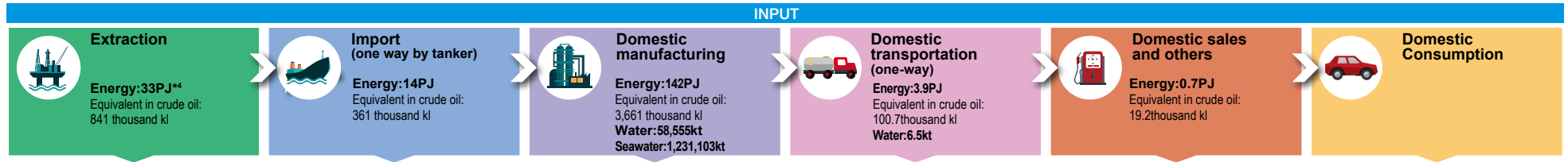
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Independent Practitioner's Assurance

Next

◆ PJ is an abbreviation for peta joule (10<sup>15</sup> joule)

◆ Actual emission amount given for CO<sub>2</sub> figures (Unadjusted emission amount that does not reflect Kyoto mechanism credits or domestic certified emission reduction credits under the Act on Promotion of Global Warming Countermeasures)



OUTPUT											
CO <sub>2</sub>	1,904kt	CO <sub>2</sub>	1,002kt	CO <sub>2</sub>	7,329kt	CO <sub>2</sub>	275kt	CO <sub>2</sub>	39kt	CO <sub>2</sub>	87,715kt
<b>Greenhouse Gas Emissions by GHG Protocol Scope</b>											
Scope 1	334kt	Scope 1	241kt	Scope 1	7,004kt	Scope 1	0kt	Scope 1	0kt	Scope 1	0kt
Scope 2	84kt	Scope 2	0t	Scope 2	325kt	Scope 2	0kt	Scope 2	39kt	Scope 2	0kt
Scope 3	1,486kt	Scope 3	760kt	Scope 3	— kt	Scope 3	275kt	Scope 3	— kt	Scope 3	87,715kt
<b>Total</b>	<b>1,904kt</b>	<b>Total</b>	<b>1,002kt</b>	<b>Total</b>	<b>7,329kt</b>	<b>Total</b>	<b>275kt</b>	<b>Total</b>	<b>39kt</b>	<b>Total</b>	<b>87,715kt</b>
SO <sub>x</sub>	22,164t	SO <sub>x</sub>	18,984t	SO <sub>x</sub>	7,058t	SO <sub>x</sub>	2,828t			SO <sub>x</sub>	85,402t
NO <sub>x</sub>	6,296t	NO <sub>x</sub>	28,098t	NO <sub>x</sub>	6,565t	NO <sub>x</sub>	3,394t				
				Soot/dust	285t						
				Wastewater	1,287,635kt	Wastewater	3.0kt				
				COD	96t						
				Total nitrogen (TN)	91t						
				Total phosphorus (TP)	1.1t						
				Final disposal (landfill)	643t	Final disposal (landfill)	8t				

\*4 Energy used for extraction operations: Calculated using energy consumption and environmental emissions (weighted average) data for crude oil production provided in Table 2.1-7 of a report entitled the Preparation of Life Cycle Inventory (LCI) of Petrochemical Products Including the Transportation Stage published by the Japan Petroleum Energy Center, a general incorporated foundation.

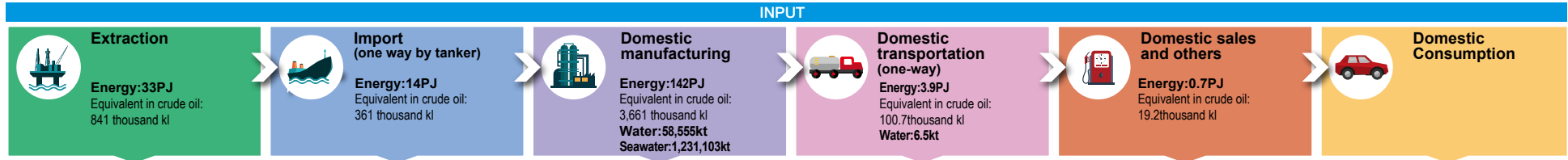
\*5 Idemitsu oil production volume: Total volume of crude oil produced at the North Sea and other oilfields in which Idemitsu holds working interests. Not exported to Japan.

\*6 Idemitsu coal production volume: Total volume of coal produced at mines in Australia in which Idemitsu holds working interests. Only a portion is exported to Japan.

Environmental Impact (FY2016) 2/2

Independent Practitioner's Assurance

- ◆ PJ is an abbreviation for peta joule (10<sup>15</sup> joule)
- ◆ Actual emission amount given for CO<sub>2</sub> figures (Unadjusted emission amount that does not reflect Kyoto mechanism credits or domestic certified emission reduction credits under the Act on Promotion of Global Warming Countermeasures)



**Idemitsu Group's business activities**

**OUTPUT**

	CO <sub>2</sub> 1,904kt	CO <sub>2</sub> 1,002kt	CO <sub>2</sub> 7,329kt	CO <sub>2</sub> 275kt	CO <sub>2</sub> 39kt	CO <sub>2</sub> 87,715kt
<b>Greenhouse Gas Emissions by GHG Protocol Scope</b>						
Scope 1	334kt	241kt	7,004kt	0kt	0kt	0kt
Scope 2	84kt	0t	325kt	0kt	39kt	0kt
Scope 3	1,486kt	760kt	— kt	275kt	— kt	87,715kt
<b>Total</b>	<b>1,904kt</b>	<b>1,002kt</b>	<b>7,329kt</b>	<b>275kt</b>	<b>39kt</b>	<b>87,715kt</b>
SO <sub>x</sub>	22,164t	18,984t	7,058t	2,828t		85,402t
NO <sub>x</sub>	6,296t	28,098t	6,565t	3,394t		
			Soot/dust 285t			
			Wastewater 1,287,635kt	Wastewater 3.0kt		
			COD 96t			
			Total nitrogen (TN) 91t			
			Total phosphorus (TP) 1.1t			
			Final disposal (landfill) 643t	Final disposal (landfill) 8t		

Basis for Output Calculations

<p>The environmental impact of resource extraction (exclusive of crude oil and coal operations) at Idemitsu-owned mines is calculated based on a report entitled "Preparation of Life Cycle Inventory (LCI) of Petrochemical Products Including the Transportation Stage" ("the LCI report") published by the Japan Petroleum Energy Center. Figures for Idemitsu-owned coal mines based on fuel consumption volumes. Because there is no report to use as reference for LP gas, it is omitted from these figures.</p>	<p>Figures for crude oil and LP gas are calculated based on LCI data for VLCCs and VLGCs aggregated by Idemitsu Tanker Co., Ltd. Figures for coal are based on the LCI report.</p>	<p>Figures for gases other than CO<sub>2</sub> are those reported to government authorities and are based on measurements taken at refineries, petrochemical plants, lubricant blend factories and petrochemical subsidiaries.</p>	<p>Figures are calculated based on data included in regular reports on consignment operations.</p>	<p>Figures are those reported to government authorities by workplaces in charge of operations related to domestic sales (logistics, management and research divisions) and Idemitsu Retail Marketing Co., Ltd.</p>	<p>Figures are for emissions based on calculations that assume the combustion of petroleum and petrochemicals sold by Idemitsu for use as fuel.</p>
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Categorization under the GHG Protocol

<b>Scope 1</b>	<p>Because the LCI report does not give specific coefficients for each scope, all emissions from Idemitsu-owned oil fields are calculated as Scope 1.</p>	<p>Figures are for emissions attributable to transportation on vessels owned and operated or regularly chartered by Idemitsu Tanker Co., Ltd.</p>	<p>Figures are for emissions arising from combustion and other raw materials processing at Group production sites.</p>		
<b>Scope 2</b>	<p>Figures are for emissions attributable to the production of energy supplied to the Group for the purpose of coal production at Idemitsu-owned coal mines.</p>	<p>No electricity or steam is supplied by external sources to vessels owned and operated or regularly chartered by Idemitsu Tanker Co., Ltd.</p>	<p>Figures include only those pertaining to the production of electricity and steam supplied from external sources. Other amounts are included in Scope 1 calculations.</p>	<p>Figures are based on electricity usage at workplaces in charge of operations related to domestic sales (logistics, management and research divisions) and Idemitsu Retail Marketing Co., Ltd.</p>	
<b>Scope 3</b>	<p>Emissions are estimates pertaining to products produced in oil fields and mines owned by other companies and subsequently imported by Idemitsu.</p>	<p>Emissions attributable to transportation using vessels chartered from other companies.</p>	<p>Figures do not include amounts resulting from the production of electricity or steam at refineries and petrochemical plants that is sold to neighboring non-Group facilities.</p>	<p>All domestic transportation is contracted to transport and shipping companies.</p>	<p>Service stations managed by retail outlets are not included.</p>

## Group Businesses' Greenhouse Gas Emissions Volume Categorized by GHG Protocol Scope (thousand tons)

	Upstream	The Idemitsu Group					Downstream	Total
	Extraction	Imports (one-way transportation by tanker)	Domestic manufacturing	Domestic transportation (one-way)	Domestic sales, and others	Subtotal	Domestic consumption	
Scope1	334	241	7,004	0	0	7,245	0	7,579
Scope2	84	0	325	0	39	364	0	448
Scope3	1,486	760	-	275	-	1,035	87,715	90,236
Total	1,904	1,002	7,329	275	39	8,644	87,715	98,262

Note: Figures are rounded off and therefore may not exactly match the totals shown.

### < Basis for Output Calculations >

#### Extraction

The environmental impact of resource extraction (exclusive of crude oil and coal operations) at Idemitsu-owned mines is calculated based on a report entitled "Preparation of Life Cycle Inventory (LCI) of Petrochemical Products Including the Transportation Stage" ("the LCI report") published by the Japan Petroleum Energy Center. Figures for Idemitsu-owned coal mines based on fuel consumption volumes. Because there is no report to use as reference for LP gas, it is omitted from these figures.

#### Imports (one-way by tanker)

Figures for crude oil and LP gas are calculated based on LCI data for VLCCs and VLGCs aggregated by Idemitsu Tanker Co., Ltd. Figures for coal are based on the LCI report.

#### Domestic manufacturing

Figures for gases other than CO<sub>2</sub> are those reported to government authorities and are based on measurements taken at refineries, petrochemical plants, lubricant blend factories and petrochemical subsidiaries.

#### Domestic transportation (one-way)

Figures are calculated based on data included in regular reports on consignment operations.

#### Domestic sales and others

Figures are those reported to government authorities by workplaces in charge of operations related to domestic sales (logistics, management and research divisions) and Idemitsu Retail Marketing Co., Ltd.

#### Domestic consumption

Figures are for emissions based on calculations that assume the combustion of petroleum and petrochemicals sold by Idemitsu for use as fuel.

### < Categorization under the GHG Protocol >

**Scope 1** (Direct emissions of CO<sub>2</sub> generated by emission sources owned or controlled by the Group)

#### Extraction

Because the LCI report does not give specific coefficients for each scope, all emissions from Idemitsu-owned oil fields are calculated as Scope 1.

#### Imports (one way by tanker)

Figures are for emissions attributable to transportation on vessels owned and operated or regularly chartered by Idemitsu Tanker Co., Ltd.

#### Domestic manufacturing

Figures are for emissions arising from combustion and other raw materials processing at Group production sites.

**Scope 2** (Indirect emissions of CO<sub>2</sub> generated during the use of heat, steam, or electricity supplied by a separate operator.)

#### Extraction

Figures are for emissions attributable to the production of energy supplied to the Group for the purpose of coal production at Idemitsu-owned coal mines.

#### Imports (one-way by tanker)

No electricity or steam is supplied by external sources to vessels owned and operated or regularly chartered by Idemitsu Tanker Co., Ltd.

#### Domestic manufacturing

Figures include only those pertaining to the production of electricity and steam supplied from external sources. Other amounts are included in Scope 1 calculations.

#### Domestic sales and others

Figures are based on electricity usage at workplaces in charge of operations related to domestic sales (logistics, management and research divisions) and Idemitsu Retail Marketing Co., Ltd.

**Scope 3** (Indirect CO<sub>2</sub> emissions other than those from Scope 2)

#### Extraction

Emissions are estimates pertaining to products produced in oil fields and mines owned by other companies and subsequently imported by Idemitsu.

#### Imports (one-way by tanker)

Emissions attributable to transportation using vessels chartered from other companies.

#### Domestic manufacturing

Figures do not include amounts resulting from the production of electricity or steam at refineries and petrochemical plants that is sold to neighboring non-Group facilities.

#### Domestic transportation (one-way)

All domestic transportation is contracted to transport and shipping companies.

#### Domestic sales and others

Service stations managed by retail outlets are not included.

#### Domestic consumption

Figures are for emissions resulting from the combustion as fuel of products sold. Lubricants and petrochemicals not used as fuel are not included.