MATERIALITY

HSE

(Health, Safety and Environment)

Our Policy

INPEX has issued an HSE Policy to help ensure the safety and health of all those involved in our business activities while we also strive for the conservation of local ecosystems and the global environment. To implement this Policy firmly, we have established the Corporate HSE Unit which consists of five groups: HSE System Group, Health & Safety Group, Process Safety Group, Security & Crisis Management Group, and Environment Group, at headquarters, to promote HSE management through a robust HSE management System.

• HSE Management System (HSEMS)

To ensure the successful implementation of the HSE Policy across the organization, we have been striving to prepare and execute various plans based on the HSEMS through the use of the PDCA methodology. The focus of our effort includes the preparation and revision of key HSE documents such as corporate manuals, standards and guidelines; establishment of HSE organizations; HSE technical support for Operational Organizations; HSE education and training; periodical HSE audit and reviews; and HSE communication activities including periodical HSE meetings in which we discuss and share lessons learned from incidents, publications of the HSE Monthly Report, HSE management site visits, and conferment of HSE Awards.

• Management of Health and Safety

We aim to eliminate incidents to ensure that all workers at our worksites return home safe and sound each day. We further aim to keep our employees in good health and take measures against any potential occupational illnesses and hygiene issues that they may face.

Takahiko Ikeda

Director, Senior Managing Executive Officer in charge of HSE

MESSAGE FROM THE DIRECTOR IN CHARGE OF HSE

With the aim of realizing sustainable energy development, which is part of our mission, we are required to behave according to high moral values as a member of society and to foster a corporate culture in which the utmost priority is placed on ensuring safety and conserving the environment. In order to maintain a stable energy supply, we need to deploy our business internationally in search of natural resources. In this pursuit, while we continue to comply with international norms and standards, we must also continue to nurture a corporate culture that will be received by the international community with open arms.

To help achieve our missions, the group-wide HSE Policy is in place to ensure operations in line with the HSE Management System (HSEMS) based on international standards. The Corporate HSE Committee consisting of the representative of each organization is to deliberate and endorse corporate rules and documents that structure the HSEMS. And the HSEMS Manual comprehensively identifies our HSE activities for fulfilling our commitment to the HSE Policy. All of which supports us in striving for continuous improvement of occupational safety and environmental conservation in our operations.

We have been implementing the Corporate HSE Third Phase Mid-term Plan (FY2016–2020) since fiscal 2016, with the aim of enhancing our HSE competency to the same level as that of the first tier group of independent International Oil Companies (IOCs)[1]. In fiscal 2018, we expanded HSE management scope and revised the related internal rules along with the Corporate HSE Objectives and Programs that were developed in line with the Mid-term Plan. By so doing, we will promote consistent HSE management, and improve HSE performance of all Group companies.

We believe it is our social responsibility, as a global company, to demonstrate to a wide range of stakeholders our commitment to the HSE Policy by pushing specific HSE activities. With unyielding determination to grow into a company worthy of admiration, we will continue to press forward with our HSE activities.

[1] International Oil Company

WEB HSE Policy

Prevention of Major Incidents

In order to prevent major incidents or disasters such as fires, explosions, or large oil spills, we ensure proper due diligence throughout each phase of the project life cycle: exploration, development, production, and abandonment.

Security and Crisis Management

We reinforce the management of overseas security as necessary by considering the recent security circumstances. We also prepare the necessary documents to respond to various types of emergencies, and conduct crisis management exercises to prepare for the worst-case scenario.

Minimizing Environmental Impact

We strive to minimize negative impacts on the environment and local communities by conducting environmental and social impact assessments before starting a project, monitoring those impacts through the project's lifecycle, and promoting environmental management based on the monitored results. In addition, in FY2018, we developed the Corporate Environmental Management Plan to manage our environmental activities and promote corporate-wide management based on the plan.

HSE Management System (HSEMS)

HSE Programs

We annually establish the Corporate HSE Objectives and Programs and measure progress to achieve the goals of our HSE Mid-term Plan.

In fiscal 2018, we revised the HSE Management System Manual and eight Corporate HSE Standards based on the Corporate HSE Objectives and Programs which was developed in accordance with the Corporate HSE Third Phase Mid-term Plan launched in fiscal 2016. On the firm ground of the fundamental principles: Leadership, Risk Management, Continuous Improvement, and Implementation; we expanded the HSE management scope to cover non-operated projects in addition to domestic subsidiaries, geothermal projects, and projects of shipbuilding and marine operations which were all incorporated in the previous year. In this way, we are committed to carrying out more effective and consistent HSE activities.

HSE Audits

Aiming to systematically evaluate compatibility and effectiveness of the HSEMS at our Operational Organizations and Headquarters Organizations from the viewpoint of assurance and governance, we conduct Corporate HSE audits and reviews. In fiscal 2018, we participated in fourteen HSE reviews and conducted three risk management-based Corporate HSE audits[2] in Japan and overseas sites.

HSE Training and Development

In fiscal 2018, we conducted approximately 80 hours of HSE education and training through e-learning, training sessions and exercises. Apart from these, we continue to provide domestic and overseas OJT opportunities for young engineers so that they can acquire practical skills of risk management and process safety management.

In addition, our HSE experts are encouraged to further develop their competency through OJT or participation in a training session offered by HSE specialized institutes, and are provided with a career development program for each competency stream as outlined in their individual job competency profile.

To realize the Corporate HSE Third Phase Mid-term Plan, we will continue to build up HSE education and training schemes focusing on their execution.

[2] Risk management-based Corporate HSE audits

A methodology for narrowing audit focus to areas with greater risks by considering risks inherent in the organization.

HSE Communication

Since fiscal 2008, the Annual HSE Meeting has been chaired by the President & CEO and attended by Corporate HSE Committee members and the top executives in charge of HSE at domestic and overseas Operational Organizations in order to raise HSE awareness. The HSE Meeting organized in fiscal 2018 was focused on discussions of HSE issues shared from each Operational Organization, follow-up reports on issues identified in the previous meeting, and our HSE way forward. The meeting also included a special session given by an external expert and it offered a good opportunity to deepen our knowledge for recent HSE issues the whole industry faces as well as measures suggested. In addition, we conduct HSE management site visits, to allow managers to demonstrate their commitment to HSE in a powerful and visible manner by seeing firsthand and understanding the risks associated with site work. This is to achieve Safety Number One, one of the INPEX Values. In fiscal 2018, the management site visits were carried out five times: for domestic and overseas operator project sites, non-operated project sites, and domestic subsidiaries. And site representatives conducted three site visit exchanges as well. With these activities, both management and field workers were able to exchange frank opinions and discuss HSE. We will continue to conduct management site visits in a proactive manner.

To share information with employees, the INPEX Corporate HSE Unit publishes the HSE Highlights newsletter and the HSE Monthly Reports to enlighten all employees about HSE and to prevent the recurrence of incidents. In addition, the Corporate HSE Unit posts the latest KPI data, HSE documents, meeting minutes of the Corporate HSE Committee, HSE training, incident information or HSE alerts, security information, as well as international HSE activities, including IOGP[3] reports on our intranet. All employees can access this HSE information at any time.

We constantly take part in external safety events, symposiums and activities contributing to the industry, as well as information exchange with IOCs, other sector companies and academic institutions including universities. In fiscal 2018, we gave three presentations including ones for an international conference and the National Industrial Safety and Health Convention in Yokohama, and joined seventeen HSE communication activities involving various companies and industrial or academic societies.

For the purpose of raising motivation and HSE awareness of organizations and individuals, and to improve corporate-wide HSE performance, we also bestow Corporate HSE Awards annually. In fiscal 2018, the HSE Excellence Award was postponed but eight awards in total were bestowed, with seven HSE Activity Award to three groups and four individuals and one HSE Special Awards to a group.

We will continue to enhance HSE communication, especially through the sharing of lessons learned from incidents both internally and externally and good preventive practices, in a more timely and explicit manner.

HSE Management Site Visit for ADNOC Offshore Project

On February 2, 2019, an HSE management site visit for a non-operated project was conducted; managers, including a member of the Corporate HSE Committee, visited the Lower Zakum Super Complex and Umm Al Dalkh Central Processing Complex of ADNOC Offshore Project in Abu Dhabi, UAE.

Participants confirmed the onsite HSE management and had an interactive and open dialogue with the HSE managers and site workers during the visit; meanwhile, the onsite HSE team shared their achievement of zero LTIF during fiscal 2018. The visit also served as a good opportunity to understand that onsite managers are promoting safe work through demonstration of leadership, for example, safety meetings are held to learn from Hiyari-Hatto (hazard observation) with the aim of improving safety culture.

The HSE Meeting Held at Headquarters

On January 22, 2019, the 12th HSE Meeting was held at Tokyo headquarters. Delegates from both domestic and overseas Operational Organizations and HSE management units gathered to share follow-up reports on issues identified in the previous meeting and our HSE way forward. The meeting also included a special session given by an external expert and it offered a good opportunity to deepen our knowledge for recent HSE issues the whole industry faces as well as measures suggested.

The 12th HSE Meeting

[3] International Association of Oil and Gas Producers (IOGP)

Management of Health and Safety

Aiming to Reduce Incidents

We place the highest priority on preventing workplace injuries to all people working on our projects, and are engaged in managing occupational safety risks through our HSE Management System and the INPEX 7 Safety Rules.

To support HSE performance improvement, a number of key performance indicators (KPIs) were established, from both management and the workforce alike, to benchmark and move us toward the goal of achieving the target for HSE performance that is within the top quartile of IOGP member companies.

For fiscal 2018, a target for LTIF was set as 0.12 and TRIR as 0.70 by aiming to be within the top 25% of IOGP member companies. The results for these KPIs were 0.23 and 1.85, respectively, hence both failed to meet the target.

We keep up our efforts to reduce the number of HSE incidents by having robust incident investigation and analysis, deploying a system to share lessons learned on a corporate-wide basis, as well as promoting the use of incident reporting software. With the aim of securing workplace safety while engaging in high risk activities, IOGP newly launched the Life-Saving Rules (LSR) in 2018 based on the analytical results of the incident data reported to IOGP from 2008 to 2017. We are planning to implement LSR from 2020, and we will continue our efforts to reduce the number of HSE incidents.

We will continue our unrelenting pursuit of raising HSE awareness and improving our HSE performance to be within the top 25% of IOGP member companies.

HSE Leadership and HSE Culture

INPEX has held the Forum on various themes with different meeting set-ups since 2016. In fiscal 2018, the 3rd HSE Forum was held at the Tokyo headquarters, and themed "Strengthen HSE Leadership and Culture". Delegates from both domestic and overseas Operational Organizations and HSE units gathered together to discuss ideas and actions in order to enhance HSE leadership and raising awareness for health and safety. We believe that promoting stronger HSE leadership and HSE culture will support achieving our goals for HSE, which would consequently contribute to increasing the valuee of the company.

Health Management of Employees

We strive to maintain and promote the health of all employees by providing periodical standard medical checks, flu vaccinations, and subsidy fees such as for complete medical examinations. We also inform employees who travel or live abroad of the medical risks associated with their respective countries, and share information about public health concerns such as malaria and the Zika virus with all employees.

Currently we are revising the health-related Corporate HSE Standard to assure identification and management of health risks associated with workplace and tasks.

Prevention of Major Incidents

Comprehensive Process Safety Management

Process Safety Management (PSM) is the disciplined framework managing the integrity of operating systems and the process of handling hazardous substances. It is typically achieved by using robust design principles, good engineering, and sound operating and maintenance practices.

As shown in the figure below, INPEX Process Safety Management consists of four focus areas and twenty elements. Each element has a detailed set of expectations. Within the PSM framework, we have adopted a voluntary Safety Case regime for INPEX-operated assets, and we conduct Asset Integrity/ Process Safety (AIPS) assurance reviews for all Operational Organizations to ensure risks are maintained to ALARP[4].

Process Safety KPI

We are collecting and reporting Tier 1 and Tier 2 Process Safety Events[5] in line with IOGP requirements. In fiscal 2018, one Tier 1 and six Tier 2 Process Safety Events were reported. Collecting, analyzing, and reporting process safety KPI contributes to the prevention of major disasters by improving the reliability of operations, avoiding complacency in Process Safety, and communicating process safety performance to relevant stakeholders.

Asset Integrity Management and Process Safety Assurance Review

Asset Integrity/Process Safety (AIPS) assurance is a structured series of reviews conducted by an independent team at appropriate points during each phase of the project. Benefits that can be expected from an AIPS assurance review are:

- Providing assurance to management and stakeholders that asset value (equipment) is being adequately protected
- Confirming that our AIPS requirements are being addressed
- Retain and share good AIPS practices and lessons learned from project to project

In addition, other assurance reviews such as Pre-Startup Safety Reviews and Operations Readiness Reviews are conducted at each phase of the project where appropriate.

In order to continuously improve AIPS practices, actions from AIPS Assurance Reviews are followed up periodically and given feedback.

Risk Management Process

HSE Risk Management activities include quarterly collection, analysis and reporting a Major Accident Event (MAE) and Top 10 HSE Risks from all our Operating Organizations via a centralized software system. This allows us to verify that all the Risks are managed by ALARP.

ACHIEVING PROCESS SAFETY EXCELLENCE

4 As Low As Reasonably Practicable (ALARP)

5 Tier 1 and Tier 2 Process Safety Events (PSE)

Process Safety Events are unplanned or uncontrolled releases of any material, including non-toxic and non-flammable materials. Classification as Tier 1 and Tier 2 relies on actual consequence of the release (expressed as injury to person, direct cost to the company, quantity of material released, etc.) and follows IOGP requirements.

Security and Crisis Management

Enhancement of Security Management

INPEX always collects security information concerning the areas in which employees are working, then evaluates and shares the information internally. The threat level of each region is periodically evaluated and updated. Based on these threat levels, we formulate policies for employees assigned to foreign countries and for overseas business travelers, and issue alerts to all employees to raise awareness.

With regard to terrorist attacks, which still occur sporadically across the world, security alerts are posted on our intranet. We also hold in-house seminars and exercises to promote understanding and improve our response capabilities.

In addition, we dispatch security experts from the headquarters to our activity areas for the purpose of security reviews to grasp the whole situation including the entire activity area, operational sites, travelling routes, and accommodations, and we implement risk mitigation measures.

In fiscal 2018, we significantly enhanced the physical security level of the Copa Macoya Plant in Venezuela and conducted on-site confirmation of security measures at Block 10 drilling site in Iraq.

Preparation for Emergency and Crisis Response

In the event of an emergency, various units of the Corporate and Operational Organizations collaborate. Based on outcomes from the past crisis exercise, we have been working to improve the Corporate Emergency Response Plan in preparation for an inland earthquake near Tokyo and the Corporate HSE Standard - Emergency Response. In addition, the equipment of the Crisis Management Team (headquarters and Technical Research Center) is being expanded further. We have also established a system and are strengthening our partnership with the East Japan Regional Office in Niigata which will act as the provisional Crisis Coordination Room for the Management Team in the event of functions at the headquarters being partially interrupted.

Emergency Response Exercise

Based on the annual HSE plan, the Operational Organizations in Japan and overseas conduct emergency response exercises both independently and collectively with the corporate headquarters for continuous improvement. Regarding the Ichthys LNG Project, in particular, we have been conducting exercises to be prepared for potential incidents at onshore and offshore facilities in Australia to commence production in a well-prepared manner. In fiscal 2019, four emergency response exercises will be conducted apart from desktop exercises. In fiscal 2018, Operational Organizations and corporate headquarters cooperatively conducted three level 3 crisis exercises, as follows, in preparation of a major incident:

- Earthquake exercise at the Naoetsu LNG Terminal
- Ichthys subsea production facility gas leak exercise
- Inland earthquake near Tokyo exercise

In terms of the fiscal 2019 plan, we will organize a level 3 exercise assuming disasters at the Ichthys LNG plant facility and a domestic operational site, respectively. Based on the lessons learned from training and exercises, we will work to improve our crisis response capability.

Response to Blowouts and Oil Spill Incidents

We need to be prepared for large-scale blowouts and oil spills at oil and natural gas development sites, and also for frequent small-scale spills from tanks and pipelines at production sites and refineries because these incidents may not only affect the safety, health, and wealth of local residents, but also local economic activities.

Based on the lessons learned from the emergency response actions of other companies, we are reinforcing our well accident management system in all aspects of prevention, containment, and responses, which are required to control assets such as wells, pipelines, and plants. To prevent incidents, rules and procedures are developed for consistent well management. To prepare against the malfunctioning of a subsea blowout preventer (BOP) in offshore drilling, we concluded an agreement with Wild Well Control, Inc., a supplier of capping equipment, for a device designed to switch on in the event of a blowout. We also have a contract with Oil Spill Response Limited (OSRL)[6], the world's largest provider of oil spill response services, as a part of our structure for responding to a large-scale oil spill, and constantly strive to acquire new knowledge about oil spill response technologies and procedures.

[6] Oil Spill Response Limited (OSRL)

Corporate Crisis Response Exercise

On June 5, 2018, the FY2018 1st Corporate Crisis Response Exercise was jointly conducted by the Corporate Crisis Management Team (C-CMT) and the Naoetsu LNG Terminal by assuming that a large-scale earthquake impacted on the Naoetsu LNG Terminal. It was conducted in a blind scenario for the first time; however, the involved teams responded smoothly to a series of events that escalated the severity, and relevant organizations were formed and activated according to the severity. Meanwhile, it also discovered opportunities for improvement such as a delay in release of information to external parties, inadequate information shared from the site to headquarters, or insufficient risk assessment for LNG leaks.


Scene from the exercise

Minimizing Environmental Impact

Environmental Management Initiatives

We are committed in the HSE Policy to "avert and minimize any negative impacts to all, including the health, the environment and community as we continue to maintain a social license to operate." To realize this declaration, we have targeted to strengthen environmental management as one of the FY2018 Corporate HSE Objectives promoted corporate-wide management.

Environmental target 1	Low-carbonization in operations
Environmental target 2	Environmental pollution prevention
Environmental target 3	Appropriate waste disposal and recycling
Environmental target 4	Biodiversity conservation
Environmental target 5	Effective Utilization of Water Resources

● Corporate Environmental Management Plan

We consistently aim to turn PDCA cycle applicable to the environmental aspects in our business when working on environmental management. To support this, we developed the Corporate Environmental Management Plan in fiscal 2018 through the integration of environmental activities and with the aim of promoting environmental management on a corporate-wide basis.

In this Corporate Environmental Management Plan, we set five Corporate environmental targets to support the Corporate HSE Policy and to address key environmental materiality for us including climate change[7], biodiversity conservation and water resource management with actions to achieve our target.

Along with the fiscal 2019 plan, we will turn PDCA in a more organized manner that begins with implementation of the plan, leads to review of the results and outcomes, and is followed by a review of the initial plan.

Environmental Management Working Group

The Environmental Management Working Group consisting of managers and members in charge of environmental management of domestic and overseas projects held quarterly meeting in April, July, October 2018 and March 2019. In fiscal 2018, the WG discussed the following subjects among others:

- Corporate environmental target and environmental KPI
- Corporate Environmental Management Plan

The meeting in October was held at the Nagaoka Field and Naoetsu LNG Terminal to provide environmental managers of overseas projects with an opportunity to see domestic operations and environmental management actions. We will continue to share good practice with each other and seek opportunities to discuss environmental materiality from multiple perspectives for further knowledge building.

7 Refer to "Climate Change" (P43 to 52) for detailed information

Environmental Pollution Prevention

Not only complying with the local environmental laws and regulations, we identify and assess environmental risks associated with the environmental aspects of each project, undertake voluntary measures addressing identified environmental risks, and then monitor and measure the effectiveness of these actions. Such actions in projects help us manage pollution prevention in our business.

● Environmental Compliance

We comply with environmental laws and regulations of the countries in which we operate. For every project, in line with the HSE Legal and Other Requirements Standard, we make a list of all applicable legal requirements and identify compliance obligations. Our domestic projects make a legal requirements list at each operational site, annually update it to reflect new enactments and revisions of relevant laws and regulations, and confirm the compliance status. We had a series of meetings related to HSE legal and other requirements management in fiscal 2018 and discussed the current situation and the way forward. Again in fiscal 2018, there was no environmental law violation.

● Preventing Air Pollution

We engage in mitigating emissions in the environment to meet relevant laws and regulations and, in particular, international regulatory trends. We monitor and manage NOx, SOx and VOC (Volatile Organic Compounds) emissions from our domestic and overseas businesses.

In the case of our domestic operations, we identify the emission sources such as venting of natural gas, crude oil storage tanks and loading to a truck or tanker; then, VOC emissions are reported to the government in accordance with the Law concerning Pollutant Release and Transfer Register (PRTR[8]). As for benzene, we check there is no impact on ambient air quality by benzene monitoring at the site boundaries.

VOC emissions in fiscal 2018 were 11,960 tons which was 20 times as high as the previous year. This surge is attributed to the rise in fuel consumption and gas flaring led by the Ichthys LNG Project that commenced production in 2018. NOx emissions in fiscal 2018 increased by 1,367 to 4,045 tons and SOx emissions increased by 1 to 11 tons, both year-on-year.

● Wastewater Management

Produced water is re-injected into reservoirs or discharged into public waters such as rivers or seas. Prior to discharge, however, the water quality has to comply with the relevant standards of each country, or with the IFC EHS Guidelines [9] in the absence of adequate standards. In fiscal 2018, approximately 67% of the total produced water (0.66 million m^3) was reinjected, while the remainder was discharged into rivers etc.

The Ichthys LNG offshore platform uses seawater as a coolant and the Naoetsu LNG Terminal uses as a heat exchanger for vaporizer. Mandatory checks of seawater temperature and residual chlorine assure that the marine environment will not be harmed, and that relevant laws and IFC EHS Guidelines are met before the seawater is discharged into the sea.

Appropriate Waste Disposal and Recycling

We actively promote measures on the basis of the 3Rs (reduce, reuse, and recycle) to minimize the use of natural resources, thereby reducing negative environmental impacts. Where recycling or reusing leftovers from our operations is difficult and waste generation cannot be avoided, we practice proper waste management through licensed waste service providers. Overseas projects manage the waste in accordance with their waste management plan including regulatory requirements, risk management, and audit implementation. Regarding domestic projects, we periodically visit the waste service providers for the purpose of annual inspection to monitor the status of waste treatment and disposal to ensure our waste is appropriately disposed.

The gross amount of waste generated in fiscal 2018 was approximately 2,600 tons. After recycling 1,100 tons, the final disposal amount was reduced to 1,500 tons.

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8 The Law concerning Pollutant Release and Transfer Register (PRTR)

9 EHS Guidelines

Environmental, Health, and Safety (EHS) Guidelines published by International Finance Corporation (IFC) in April 2007

Biodiversity Conservation

Provided that the degrees of impact on the ecosystem or biodiversity differ at each and every project phase, scale or location, necessary actions for the conservation are accordingly different. We identify potential biodiversity "Risk" and "Opportunity" which may be caused by our projects, and take necessary measures.

Since 2014, we have been sharing experiences, information and good practices across the industry through the Biodiversity and Ecosystem Services[10] Working Group that is collaboratively hosted by IOGP and IPIECA[11] .

● Overseas Activities to Conserve Biodiversity

Potential risks caused by a new overseas development project include adverse impacts affecting Environmentally Sensitive Areas (mangrove forests, coral reefs, wetlands etc.) and critical habitats of threatened species, and threats of biological invasions. We apply a mitigation hierarchy[12] in Environmental and Social Impact Assessment to avoid, reduce, restore or compensate those impacts as much as possible.

The Ichthys LNG Project is located in Darwin, where mangrove forests thrive along the coastal area and provide breeding and feeding grounds for fish and sea turtles. To protect the rich biodiversity, the Ichthys LNG Project conducts comprehensive monitoring of discharges, seawater quality, mangrove forest health, natural vegetation, and so forth. We have also extended our ecological efforts to the surrounding area by means of financial aid to the marine research project for dugongs in the Northern Territory.

The Abadi LNG Project will conduct an Environmental and Social Impact Assessment including biodiversity and ecosystem services survey in accordance with the local laws and IFC Performance Standards[13].

● Domestic Activities to Conserve Biodiversity

Biodiversity conservation activities at our long-standing projects have proactively reached out to the surrounding environment in addition to our efforts in our daily business operations. Biodiversity efforts in the daily business operation at the Naoetsu LNG Terminal include:

- Continuous monitoring of seawater temperature at the intake/discharge point
- Continuous monitoring of water quality of cooling water/discharge

To verify effectiveness of such measures and to grasp the current condition in the surrounding sea after the start of operation, the Naoetsu LNG Terminal carried out a marine biological survey to research plankton, benthos, fish eggs, as well as juvenile and intertidal biota in autumn and winter 2018. We will continue this survey in spring and summer 2019.

To improve biodiversity awareness for employees in Japan, the following activities took place:

- Lecture on biodiversity by an external expert
- Educational activities on biodiversity using environmental newsletter

Besides the above, INPEX proactively engages in activities to protect the surrounding biodiversity. INPEX Nagaoka Field Office, for example, organizes a forestation event and a nature study event for local children biannually in spring and autumn in the area known as "Kitsunedaira Donguri-no-mori" where we run operations nearby. In Kashiwazaki, we support a Satoyama initiative conducted at Kashiwazaki Yumenomori Park; the activity is led by a citizen group, Satoyama Environment Creation Network, and we have been participating in forestation and protecting endangered plants since 2005. And the Naoetsu LNG Terminal participates in

Marine biological survey around the Naoetsu LNG Terminal

Marine biological survey around the Naoetsu LNG Terminal

⑩ Ecosystem services
Ecological services are the benefits that people obtain from ecosystems. Examples include freshwater, timber, climate regulation, protection from natural hazards, erosion control, and recreation.

⑪ IPIECA
The global oil and gas industry association for environmental and social issues.

⑫ Mitigation hierarchy
Mitigation hierarchy is defined as i) Avoidance, ii) Minimization, iii) Rehabilitation/Restoration, iv) Offset.

⑬ IFC Performance Standards
Environmental and Social Performance Standards defined by International Finance Corporation (IFC)

the Joetsu Fishery Cooperative's reforestation activity to help fish living in the Kuwadori River. We are actively engaged in environmental conservation with other operational sites in Japan as well as the above.

Effective Utilization of Water Resources

Recognizing that water management is a key task for us, we have been working to reduce influences on water resources. We have been involved in IPIECA's Water Working Group since 2015 to understand international trends in water management and good practices for the oil and gas industry.

• Identification of High Water Stress Area

Our efforts in water management include a water stress[14] assessment to investigate water availability prior to the commencement of a project. We use "AQUEDUCT," a water risk mapping tool developed by World Resources Institute (WRI[15]), for the assessment. As of the end of March 2019, we are not operating in high water stress areas.

• Efficient Use of Water Resources

Our domestic projects use drinking water, industrial water and groundwater as coolants. Groundwater is also used as a coolant for power generation and snowmelt. We have adopted a circulating system for cooling water and installed a sensor equipped with an automatic shutoff system for snowmelt to reduce water consumption. Overseas, although we use a large volume of freshwater for pressure testing of storage tanks during pre-startup inspection at the Ichthys LNG Project, the water is used repeatedly for multiple tests to curb the total volume.

• Development of Water Treatment Technology

From fiscal 2015 to 2017, we conducted a pilot project at our Sotoasahikawa plant in Akita Prefecture in collaboration with Chiyoda Corporation and METAWATER, under the support of JOGMEC[16] to test the ceramic membrane filtration of produced water. This technology is expected, once established, to further reduce the environmental impacts of produced water discharges. Joint studies for commercial use of this technology with JOGMEC have started since fiscal 2018 and the pilot test is currently ongoing.

Participants at the biannual reforestation event

⑭ Water stress
Water resources that can be used per person, which is the index assessing the level of strictness for water supply.

⑮ World Resources Institutes

⑯ Japan Oil, Gas and Metals National Corporation (JOGMEC)