

MHI ESG DATA 2016

Corporate Governance

1-1-1	Corporate governance policy	<p>Independence policy, target</p> <p>Article 34 and Appendix 2 of the Corporate Governance Guidelines of Mitsubishi Heavy Industries, Ltd. articulate Independence Criteria for Outside Directors.</p> <p>Article 20 of the Corporate Governance Guideline of Mitsubishi Heavy Industries, Ltd. clearly address our goal: "MHI shall endeavor to make the number of independent Outside Directors who meet MHI's independence criteria ... constitute one third or more of all members of the Board of Directors."</p> <p>(Reference) Corporate Governance Guidelines of Mitsubishi Heavy Industries, Ltd. http://www.mhi-global.com/company/aboutmhi/governance/pdf/corporate_governance.pdf</p>																																																																																							
1-1-2	Corporate governance structure	<table border="1"> <tr> <td>Number of directors</td> <td>Total</td> <td>11</td> </tr> <tr> <td></td> <td>Executive directors</td> <td>3</td> </tr> <tr> <td></td> <td>Non-executive directors</td> <td>8</td> </tr> <tr> <td></td> <td>Independent directors</td> <td>5</td> </tr> <tr> <td></td> <td>Female directors</td> <td>1</td> </tr> <tr> <td></td> <td>Non-Japanese directors</td> <td>1</td> </tr> <tr> <td>Separation of role of Chairman and CEO</td> <td colspan="2">Separate</td> </tr> </table>	Number of directors	Total	11		Executive directors	3		Non-executive directors	8		Independent directors	5		Female directors	1		Non-Japanese directors	1	Separation of role of Chairman and CEO	Separate																																																																			
Number of directors	Total	11																																																																																							
	Executive directors	3																																																																																							
	Non-executive directors	8																																																																																							
	Independent directors	5																																																																																							
	Female directors	1																																																																																							
	Non-Japanese directors	1																																																																																							
Separation of role of Chairman and CEO	Separate																																																																																								
1-1-3	Functions and committees	<table border="1"> <tr> <td colspan="3">Audit</td> </tr> <tr> <td></td> <td colspan="2">Audit and Supervisory Committee</td> </tr> <tr> <td>Member</td> <td colspan="2">Audit and Supervisory Committee Members, 5 peoples</td> </tr> <tr> <td>Number of times</td> <td colspan="2">About 15 times a year</td> </tr> <tr> <td colspan="3">Compliance</td> </tr> <tr> <td></td> <td colspan="2">Compliance committee</td> </tr> <tr> <td>Member</td> <td colspan="2">Chairman is Executive vice president, General Council, mad composed of 22members.</td> </tr> <tr> <td>Number of times</td> <td colspan="2">2 times a year</td> </tr> <tr> <td colspan="3">Selection and nomination</td> </tr> <tr> <td></td> <td colspan="2">Committee of Selection and Nomination of board members and top management and Committee of Remuneration of board members and top management</td> </tr> <tr> <td>Member</td> <td colspan="2">Outside directors(5 peoples) and President</td> </tr> <tr> <td>Number of times</td> <td colspan="2">2 times a year</td> </tr> <tr> <td colspan="3">Sustainability</td> </tr> <tr> <td></td> <td colspan="2">CSR Committee</td> </tr> <tr> <td>Member</td> <td colspan="2">Chairman is Executive vice president, CFO, and composed of 4 members.</td> </tr> <tr> <td>Number of times</td> <td colspan="2">2 times a year</td> </tr> <tr> <td colspan="3">Human Rights</td> </tr> <tr> <td></td> <td colspan="2">Committee for Raising Awareness of Human Rights</td> </tr> <tr> <td>Member</td> <td colspan="2">Chairman is Executive vice president, in charge of HR, and composed of 22 members.</td> </tr> <tr> <td>Number of times</td> <td colspan="2">Held in each time as necessary</td> </tr> <tr> <td colspan="3">Environment</td> </tr> <tr> <td></td> <td colspan="2">Environment committee</td> </tr> <tr> <td>Member</td> <td colspan="2">Chairman is Senior General Manager of Technology Strategy Office and composed of 27 members.</td> </tr> <tr> <td>Number of times</td> <td colspan="2">2 times a year</td> </tr> <tr> <td colspan="3">Others-relate to governance</td> </tr> <tr> <td></td> <td colspan="2">International trade control committee</td> </tr> <tr> <td>Member</td> <td colspan="2">Chairman is Executive vice president, General Council, and composed of 13 members.</td> </tr> <tr> <td>Number of times</td> <td colspan="2">2 times a year</td> </tr> <tr> <td colspan="3">Others-relate to governance</td> </tr> </table>	Audit				Audit and Supervisory Committee		Member	Audit and Supervisory Committee Members, 5 peoples		Number of times	About 15 times a year		Compliance				Compliance committee		Member	Chairman is Executive vice president, General Council, mad composed of 22members.		Number of times	2 times a year		Selection and nomination				Committee of Selection and Nomination of board members and top management and Committee of Remuneration of board members and top management		Member	Outside directors(5 peoples) and President		Number of times	2 times a year		Sustainability				CSR Committee		Member	Chairman is Executive vice president, CFO, and composed of 4 members.		Number of times	2 times a year		Human Rights				Committee for Raising Awareness of Human Rights		Member	Chairman is Executive vice president, in charge of HR, and composed of 22 members.		Number of times	Held in each time as necessary		Environment				Environment committee		Member	Chairman is Senior General Manager of Technology Strategy Office and composed of 27 members.		Number of times	2 times a year		Others-relate to governance				International trade control committee		Member	Chairman is Executive vice president, General Council, and composed of 13 members.		Number of times	2 times a year		Others-relate to governance		
Audit																																																																																									
	Audit and Supervisory Committee																																																																																								
Member	Audit and Supervisory Committee Members, 5 peoples																																																																																								
Number of times	About 15 times a year																																																																																								
Compliance																																																																																									
	Compliance committee																																																																																								
Member	Chairman is Executive vice president, General Council, mad composed of 22members.																																																																																								
Number of times	2 times a year																																																																																								
Selection and nomination																																																																																									
	Committee of Selection and Nomination of board members and top management and Committee of Remuneration of board members and top management																																																																																								
Member	Outside directors(5 peoples) and President																																																																																								
Number of times	2 times a year																																																																																								
Sustainability																																																																																									
	CSR Committee																																																																																								
Member	Chairman is Executive vice president, CFO, and composed of 4 members.																																																																																								
Number of times	2 times a year																																																																																								
Human Rights																																																																																									
	Committee for Raising Awareness of Human Rights																																																																																								
Member	Chairman is Executive vice president, in charge of HR, and composed of 22 members.																																																																																								
Number of times	Held in each time as necessary																																																																																								
Environment																																																																																									
	Environment committee																																																																																								
Member	Chairman is Senior General Manager of Technology Strategy Office and composed of 27 members.																																																																																								
Number of times	2 times a year																																																																																								
Others-relate to governance																																																																																									
	International trade control committee																																																																																								
Member	Chairman is Executive vice president, General Council, and composed of 13 members.																																																																																								
Number of times	2 times a year																																																																																								
Others-relate to governance																																																																																									

		unit		
1-1-4	Effectiveness of the board of directors	Board meeting attendance	%	97
		Term of directors	year	1
		Board effectiveness	<p>MHI has been engaged in multiple measures for enhancement of corporate governance. Taking advantage of enactment of Corporate Governance Code, we have introduced an annual assessment of Board of Directors (MHI Corporate Governance Guideline, Article 31) aiming at ensuring further effectiveness of Board of Directors by verifying its functional efficiency as an entity and being fully accountable for stakeholders, by conducting holistic assessment and analysis of the Board meeting.</p> <p>In 2015 MHI transitioned to a company with an Audit and Supervisory Committee, an evaluation system of the Board of Directors was implemented, in order to assess and analyze its effectiveness, such as whether they are fully discussing appropriate agenda based on their rolls and expertise, or whether sufficient support systems are available for the Board members to fully deliberate subject matters, under the policy of clear division of supervisory and execution functions and strengthening the Board of Directors' oversight function by limiting their focus just on supervision of executive functions. Under CAO/CRO (GC under current system) serving as secretariat, the assessment was conducted through the process:</p> <ul style="list-style-type: none"> • Self Assessment by all Directors including Outside Directors based on questionnaires • Discussing results of the self assessment at the Board meeting • Meeting of independent Outside Directors and the president to assess and analyze overall effectiveness of the Board of Directors, and thoroughly hearing from Outside Directors. • Result of the assessment is reported and resolved at the Board of Directors based on the self assessment, the discussions and the hearing. <p>As a result of the assessment based on the process above mentioned, overall effectiveness of the Board of Directors in 2015 was ensured with no major concern.</p> <p>On the other hand, the Board of Directors recognize and discuss the following, as issues to be addressed in 2016 in order to constantly improve effectiveness of the Board entity.</p> <p>1. Major issues in 2016</p> <p>(1) Reconfirming issues that should be delivered in the Board of Directors and further deliberating roles of the Board of Directors in MHI, as a company with Audit and Supervisory Committee.</p> <p>(2) Provision the Board meeting materials more in advance, for improving efficiency of presentation at the meeting and deepening discussion as well as improving overall time efficiency of total hours spent for the Board of Directors throughout the year.</p> <p>(3) Improvement of how to provide information to Outside Directors.</p> <p>2. Action for the future</p> <p>(1) In the Board of Directors in 2016, we will set an opportunity to discuss 'how the Board of Directors should be' as well as 'how agenda should be selected' as a company with Audit and Supervisory Committee. The outcome of the discussion will be reflected in planning and implementation of measures aiming at excellence of supervisory function of the Board of Directors.</p> <p>(2) The materials for the Board of Directors should be distributed at latest one week prior to the date of the meeting, advising to each Board members to examine/prepare for the meeting, in order to improve efficiency and depth of the meeting. Also concentration of agenda in the Board of Directors held once in a month should be avoided, for ensuring enough discussion time for each agenda.</p> <p>(3) Information infrastructure will be implemented so that the Outside Directors can access to basic management information, including financial information, at any time</p>	

		Position	Number	Unit	Total	Base compensation	Performance-linked compensation	Stock options
1-1-5	Compensation of directors	Director(excluding outside directors)	7	millions of yen	642	295	164	182
		Statutory auditors(excluding outside statutory directors)	2	millions of yen	128	128	-	-
		Outside directors and statutory auditors	5	millions of yen	57	57	-	-
(Reference)	MHI report 2016 P46 Director and Statutory Auditor Compensation http://www.mhi-global.com/finance/library/annual/pdf/report_2015.pdf							

*Period is from the end of the 90th Ordinary General Meeting of Shareholders (June26, 2016), after transition to a Company with a Audit and Supervisory Committee, to March 31, 2017.

*Table above includes one director retired this fiscal year, and list in the item "Director (excluding outside directors)".

measurement metrics for variable compensation		
Internal Financial Success Metrics	The compensation is calculated based on the business performance that he/she is in charge.	
External Financial Success Metrics	The compensation is determined based on the consolidated financial performance of the company.	

Variable compensation linked to long-term performance
ratio: 21%
Stock option

		Name	Position	Unit	Total	Base compensation	Performance-linked compensation	Stock options
Individual compensation*		Hideaki Omiya	Director	millions of yen	158	78	45	34
		Shunichi Miyayaga	Director	millions of yen	158	78	45	34
		Atsushi Maekawa	Director	millions of yen	112	53	30	28
		Yoichi Kujirai	Director	millions of yen	117	58	30	28
(Reference)	Annual Securities Report (FY2015) P66 http://www.mhi.co.jp/finance/library/financial/pdf/2015/h27_04_all.pdf							

*Officers more than 100 million yen in total sum

		Unit	
Mean Compensation of all employees and CEO compensation			
CEO compensation	millions of yen		200
Mean employee compensation	millions of yen		8.0
Ratio	time		25

1-1-6	Management ownership requirements	<p>Management ownership requirements</p> <p>MHI has specific stock ownership requirements for executives, but there is no limit set for the number of stocks they can own. The sock holdings of each of the executives are disclosed in the annual security report.</p>
-------	-----------------------------------	---

1-1-7	Commitment to initiatives	<p>Commitment to initiatives</p> <p>UN Global Compact</p> <p>Global Reporting Initiative</p> <p>ISO26000</p>
-------	---------------------------	--

Risk Management

1-2-1	Risk governance	Chief executive	<p><Risk Management> Business risk management head, Chief financial officer, Chief technological officer.(*) (*).Depend on the nature of risks <Risk Monitoring> Management audit department head</p>
		Independence of risk management function	<ul style="list-style-type: none"> •Under the direct control of CEO, independent department properly manage risks depending on the nature of risks. •Assess risks, implement necessary preventive and/or mitigation measures, audit its effectiveness and validity by internal audit, and report to Board of Directors and Audit and Supervisory Committee. •Preparing for occurring significant risks, keep the structure for reporting important information immediately to CEO, at the time of crisis. •Business Risk Management Division, directly reporting to the President and being independent from business lines, assesses business risks and implement necessary preventive and/or mitigation measures.

1-2-2	Risk awareness	Key risks	<p>MHI defines 9 categories and 17 items as key risks</p> <ol style="list-style-type: none"> 1. Economy <ul style="list-style-type: none"> -Economic Climate: Risks associated with changing domestic/overseas macro economy and financial market 2. Environment <ul style="list-style-type: none"> -Natural Disaster: Business continuity risks associated with wind storm, earthquake, lightning strike, flood and fire 3. Society <ul style="list-style-type: none"> -Pandemic of Infectious Disease: Business continuity risks associated with infectious disease pandemic 4. Technology <ul style="list-style-type: none"> -Information Security: Risks of loss/leak of confidential information 5. Governance <ul style="list-style-type: none"> -Law / Regulation: Risks of administrative disposition/compensation for damage associated with breach of laws/regulations; risks associated with new establishment/revision of laws/regulations -Environmental Regulation: Risks of administrative disposition/compensation for damage associated with breach of environmental regulations; risks associated with new establishment/revision of environmental regulations 6. Human Resources <ul style="list-style-type: none"> -Recruitment: Risks associated with hiring and development of talented personnel 7. Supply Chain <ul style="list-style-type: none"> -Material Procurement: Material price risks; supply risks; quality risks; trade credit risks -Affiliated Companies: Risks associated with business and performance of affiliated companies 8. Business(Strategy, Operation) <ul style="list-style-type: none"> -Export / Overseas Business: Business execution risks; partner risks; customer credit risks; competitor risks -M&A, Alliance: Business risks of acquired/partner company; risks associated with synergy -Product Competitiveness: Risks associated with advantage in quality, performance, reliability and price -Product Quality: Risks of defect or fault in performance, delivery time and safety -Intellectual Property: Risks of intellectual property right infringement associated with use of intellectual property; risks associated with leveraging and integration of intellectual property. 9. Finance <ul style="list-style-type: none"> -Funding: Interest rate risks; liquidity risks; credit risks -Exchange Rate Fluctuation: Risks of instability in revenue, cost, assets and liability associated with exchange rate fluctuation -Retirement Benefit Expense and Debt: Asset management risks; national bond (interest rate) risks
-------	----------------	-----------	---

1-2-3	Risk assessment	Risk assessment measures	<p>MHI defines 9 categories and 17 items as key risks. (See attachment). Based on probability of occurrence and severity of impact, overall risk exposure is assessed by management. Based on that, department/personnel is assigned to individual risks to address preventive measures and properly respond to identified risks at the time. Progress of key risk situation is reported and deliberated in the Executive Committee and Board of Directors.</p>
-------	-----------------	--------------------------	---

1-2-4 Emerging risk

Long-term risk (1)	Global Compliance Risk: Along with expansion of business scale and globalization, compliance risks at different countries and region also increase.
Potential business impact of the risk	Incompliance can result in significant impact for business continuity and corporate reputation.
Mitigating actions	We prevent the risks by managing the risks specific to individual regions, as well as thoroughly implementing clearly defined activity guidelines and rules consistent around the world.

Long-term risk (2)	Business accomplishment risk: Business accomplishment risk accompanied by enhancement of global competitiveness is currently identified as one of the critical risks that may seriously impact business performance and financial status of the company in middle and long term. Specifically, the risk is arise in large projects of MRJ business, oversea nuclear power plant business and expansion of new field of business.
Potential business impact of the risk	Impact to profitability and financial base is concerned, for these are backbone of our competitiveness, that is substantial for sustainable growth of the MHI Group
Mitigating actions	We promote further systematization and integration of the risk management and operation in overall MHI Group, while also promoting various risk prevention and mitigation measures by reviewing decision-making authority, introduction of global insurance and IoT/AI.

1-2-5 Risk culture

Training	Education and training programs are implemented targeting both general employees and executives, in order to instill importance of business risk management and enhance sensitivity to the risks.
Feedback process	Researching on risk management practices in overseas competitors; assessment of risk management at MHI to identify issues to be improved; and transforming management/business system while enhancing risk handling capacity of personnel.

Compliance

1-3-1	Compliance policy	Compliance policy	MHI advanced "Compliance Principle" set out in 2001 to "MHI Group Global Code of Conduct" in May 2015. As a global company, MHI employs thousands of individuals from different backgrounds, nationalities and cultures. This diversity of talent and perspectives is one of our greatest assets. At the same time, however, MHI as a company must operate with a single corporate culture that enables it to compete successfully in the global market while maintaining our reputation as a company of high integrity and ethics. The Code of Conduct describes how MHI employees should conduct themselves.						
		Coverage	MHI Group						
		(Reference)	MHI Group Global Code of Conduct http://www.mhi-global.com/company/aboutmhi/policy/conduct.html						
1-3-2	Compliance structure	Chief executive	Takashi Funato, Executive vice president, General Counsel						
		Whistle-blowing system	External hotline was established in December 2011 in addition to the internal hotline. This was followed by the sequential establishment of Harassment Contact Hotlines inside and outside of the company starting in January 2012 as a measure to respond to "power harassment" (workplace bullying & harassment), which is becoming an increasingly serious social issue.						
1-3-3	Compliance situation	Training	unit	2011	2012	2013	2014	2015	coverage
		attendance	%	96.8	95.1	96.6	97.6	97.9	group
		number of attendance		32,333	34,972	75,871	82,292	75,303	group
		Number of whistle-blowing				240	185	131	group
		Compliance awareness survey	Since fiscal 2004, every year the Compliance Committee conducts a compliance awareness survey. MHI considered expanding the survey scope to all MHI employees from the current 30 percent of employees (based on random sampling), and decided to conduct an expanded survey of all employees since fiscal 2013 as part of e-learning compliance sessions. The results showed that 98 percent of employees are aware of compliance, while the indicators "heightened awareness due to participation in training," and "recognition of the MHI Compliance Principles," set new highs, suggesting that compliance actions are yielding positive results and that compliance awareness among employees is steadily growing.						
		Reporting on breaches	There was no significant breach last year.						

1-3-4 Anti-corruption

Anti-corruption Policy	<p>MHI strives for fairness in its global commercial transactions by strictly observing the anti-bribery laws of all countries, including Japan's Unfair Competition Prevention Act, which prohibits the giving of illicit benefits by Japanese citizens to overseas government officials. MHI established the Guidelines for the Prevention of Bribery Involving Foreign Civil Servants in 2005 to define rules of conduct based on the Unfair Competition Prevention Act. In addition, the Anti-Bribery Rules and Anti-Bribery Procedural Guidelines based on these guidelines were created in February 2012 in order to respond to the enactment of British Bribery Act 2010 of July 2011 and strengthened regulations in various countries.</p> <p>Following on from the previous fiscal year, we continued to monitor both MHI and the Group's domestic and overseas companies in fiscal 2014, to confirm the status of the establishment and management of their anti-bribery systems. When necessary, we implemented guidance on how to improve these systems. We are also promoting anti-bribery education at both MHI and the Group's domestic and overseas companies.</p> <p>Furthermore, through the MHI Group Global Code of Conduct established in May 2015, we are thoroughly engaged in preventing bribery toward all Group directors and employees.</p>
Coverage	MHI Group
(Reference)	MHI Group Global Code of Conduct http://www.mhi-global.com/company/aboutmhi/policy/conduct.html

Employee training	<p>In 2015 training was conducted throughout MHI and MHI's domestic group companies in order to publicize the MHI Group Global Code of Conduct, which includes prohibition of bribery, as best we can. The anti-bribery education continues to be promoted since 2014 in MHI and our group companies in both domestic and overseas.</p>
-------------------	---

1-3-5 Fair competition

Fair competition policy	<p>MHI have been engaged in prevention of breaching competition law, and prohibition of breaching the law has been thoroughly communicated through a message from top management, 'Code of conduct pertaining to communication/contact with competitors' and other relevant rules/materials. In May 2015, MHI Group Global Code of Conduct was established and prohibition of any anti-competition practice is clearly informed to all executive officers and employees.</p>
Coverage	MHI Group
(Reference)	MHI Group Global Code of Conduct http://www.mhi-global.com/company/aboutmhi/policy/conduct.html

Employee training	<p>With respect to correcting order-receiving activities, in fiscal 2013 MHI entered into a plea agreement with the U.S. Department of Justice concerning the U.S. antitrust laws in connection with the sales of compressors and condensers for automotive air conditioning systems. To date, MHI has continued every effort to raise compliance awareness and to prevent recurrence. Specifically, to ensure thorough legal compliance in MHI and its group companies in Japan and overseas, MHI has reinforced compliance trainings, including antitrust training sessions with educational videos and lectures by lawyers and e-learning programs.</p>
-------------------	--

Customer Relationship Management

1-4-1 Customer satisfaction

Customer satisfaction survey

Since customer characteristics and business practices are quite different in each of our business, MHI does not conduct a uniform standardized customer satisfaction survey across the board. Each business unit utilizes their own optimized measurement method for Customer Relationship Management. For example, Energy & Environment Business Domain, which accounts for 40% of our sales, is deploying a web based questionnaire system specifically targeting overseas customers, with whom frequent face to face communication is not possible. The system collects and analyses customers' comments on quality, price, responsiveness of MHI contact, and the results is applied for product quality and customer service improvement. Also for domestic customers, VOC information is collected through frequent face to face communications. The VOC is classified into 5 categories (product performance, customer care, 'manufacturer's capability', 'price' and 'response speed') to identify strength and weakness to follow a cycle of improvement in areas such as technology development and job efficiency. We feedback the results of these surveys and progress of measures taken for improvement in the User Meeting for customers.

1-4-2 Online strategy

Online strategy

【Energy & Environment】

We provide online surveillance of product operation and evaluation of predictors or potential signals of troubles, also operational status reporting for some customers. (e.g. electric power system)

【Air-Conditioning & Refrigeration】

We provide remote monitoring service through internet to some products, like power system, turbo chiller refrigeration machine and heat pump water heaters. This service include trouble sign diagnosis and generating an operational status report. Analyzing the cumulated operational status data, we also make a proposal to our customers further energy saving.

【Engine】

We remotely monitor the status of engine generating system via internet to find warning signs of trouble, and prevent it. Operational details those reflects its current activity is reported to our clients.

Innovation Management

				unit	2011	2012	2013	2014	2015	coverage
1-5-1	R&D situation	R&D expense	Total	billions of yen	1,214	1,200	1,385	1,455	1,506	group
			% of sales	%	4.3	4.3	4.1	3.6	3.7	group
		employees of R&D position		FTEs	1300%	1300%	1300%	1300%	1300%	group

1-5-2	Open innovation case(1)	Open innovation case(1)								
		<p>■ Case R&D collaborations with business partners: We conducted a demonstration test of CO2 recovery unit for the power plant in collaboration with Southern Company, a major power company in US.</p> <p>■ Benefit -Shorter R&D period is contributing to practical use, popularization and improvement of the reliability of the large size CO2 recovery unit. -Collaboration with the power company enables us to utilize power plant operator's resources, such as know-how, personnel and technology more efficiently. -Contribution to preventing global warming: by disseminating CO2 recovery unit, reduction of CO2 emission by 14% is expected by 2050.</p>								
		Open innovation case(2)								
1-5-2	Open innovation case(2)	Open innovation case(2)								
		<p>■ Case R&D collaborations with universities: We have continuously engaged in R&D activities with university research institutions, such as Cambridge University in the United Kingdom and Massachusetts Institute of Technology in the United States, for joint development of a flow analysis tool required for product design assessment and execution of element experiments for new technology validation.</p> <p>■ Benefit -Fruit of the joint R&D are utilized for improving efficiency of large scale gas turbine power plants. -We can leverage talented resources and technologies in the basic research areas. -Reduction of CO2 emission and fuel use can be expected, as consequence of efficiency improvement in power generation.</p>								
		Open innovation case(3)								
1-5-2	Open innovation case(3)	Open innovation case(3)								
		<p>■ Case R&D collaborations with universities and business partners: In collaboration with Kyushu University, Chiba Institute of Technology, Taisei Corporation, and Okamura Corporation, organic EL certificate was developed for office space. We verify its impact to environment and human being.</p> <p>■ Benefit -The organic EL light is effective to create "comfortable, low illuminance space" and "has the potential to bring about positive effects for intelligent productivity", that allowed us to make smooth progress from research phase to demonstration phase. -Human resources/technologies in basic research fields and resources owned by business in specific areas can be fully leveraged. -Dissemination of the organic EL light will contribute to office energy use.</p>								

1-5-3	Process innovation	Process innovation								
		<p>■ Case Value chain innovation activity: we are continuously working on process streamlining and improvement in all domains, contributing to shortening work hours and reducing cost.</p>								

1-5-4	Environmental innovation	Environmental innovation								
		<p>■ Case High efficiency thermal power generation system: the product of power generation system is in nature striving for environmental innovation for energy saving through achieving higher efficiency. Aiming at the top global company in the area of thermal power generation, we are engaged in finding solutions for the global environmental challenges, such as energy shortage and global warming.</p>								

Supply Chain Management

1-6-1	Supply chain structure	<table border="1"> <tr> <td>Spend analysis</td> <td>We exercised spend analysis, and manage number of the suppliers and purchasing cost according to procurement item category.</td> </tr> </table>	Spend analysis	We exercised spend analysis, and manage number of the suppliers and purchasing cost according to procurement item category.		
Spend analysis	We exercised spend analysis, and manage number of the suppliers and purchasing cost according to procurement item category.					
1-6-2	Critical suppliers	<table border="1"> <tr> <td>Critical suppliers</td> <td>Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.</td> </tr> </table>	Critical suppliers	Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.		
Critical suppliers	Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.					
1-6-3	Supply chain policy	<table border="1"> <tr> <td>Supply chain policy</td> <td>In June 2010, MHI drew up the MHI Group Supply Chain CSR Promotion Guidelines, and provided MHI's business partners with information about CSR activities and programs that are designed to promote a consistent approach to CSR throughout the supply chain. The Guidelines are divided into five points that include comprehensive compliance and promotion of corporate ethics, and assurance of product safety and quality, cost, delivery schedule (QCD), enhanced technological development capabilities, and considerations regarding human rights and workplace safety. Business partners are expected to embrace the MHI Guidelines, which are discussed at dedicated presentations and are also available on the company website.</td> </tr> <tr> <td>Coverage (Reference)</td> <td>All of tier1 suppliers Promoting CSR Procurement http://www.mhi-global.com/company/csr/esg/social/business-partners/business-partners03.html</td> </tr> </table>	Supply chain policy	In June 2010, MHI drew up the MHI Group Supply Chain CSR Promotion Guidelines, and provided MHI's business partners with information about CSR activities and programs that are designed to promote a consistent approach to CSR throughout the supply chain. The Guidelines are divided into five points that include comprehensive compliance and promotion of corporate ethics, and assurance of product safety and quality, cost, delivery schedule (QCD), enhanced technological development capabilities, and considerations regarding human rights and workplace safety. Business partners are expected to embrace the MHI Guidelines, which are discussed at dedicated presentations and are also available on the company website.	Coverage (Reference)	All of tier1 suppliers Promoting CSR Procurement http://www.mhi-global.com/company/csr/esg/social/business-partners/business-partners03.html
Supply chain policy	In June 2010, MHI drew up the MHI Group Supply Chain CSR Promotion Guidelines, and provided MHI's business partners with information about CSR activities and programs that are designed to promote a consistent approach to CSR throughout the supply chain. The Guidelines are divided into five points that include comprehensive compliance and promotion of corporate ethics, and assurance of product safety and quality, cost, delivery schedule (QCD), enhanced technological development capabilities, and considerations regarding human rights and workplace safety. Business partners are expected to embrace the MHI Guidelines, which are discussed at dedicated presentations and are also available on the company website.					
Coverage (Reference)	All of tier1 suppliers Promoting CSR Procurement http://www.mhi-global.com/company/csr/esg/social/business-partners/business-partners03.html					
1-6-4	Supply chain monitoring	<table border="1"> <tr> <td>Supply chain monitoring</td> <td>In addition to the key supplier assessment system, we have introduced a business partner assessment system in 2012, aiming at optimizing supply chain and further enhancement of the collaboration with business partners. Targeting key partners in business domain, we assess 5 categories (quality, price, delivery time, technology, management (including ESG)) in the light of integrated company policies. Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.</td> </tr> </table>	Supply chain monitoring	In addition to the key supplier assessment system, we have introduced a business partner assessment system in 2012, aiming at optimizing supply chain and further enhancement of the collaboration with business partners. Targeting key partners in business domain, we assess 5 categories (quality, price, delivery time, technology, management (including ESG)) in the light of integrated company policies. Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.		
Supply chain monitoring	In addition to the key supplier assessment system, we have introduced a business partner assessment system in 2012, aiming at optimizing supply chain and further enhancement of the collaboration with business partners. Targeting key partners in business domain, we assess 5 categories (quality, price, delivery time, technology, management (including ESG)) in the light of integrated company policies. Every year we conduct a supplier chain assessment, in terms of quality, price, time for delivery and management (including ESG). This assessment allows us to classify the suppliers in 5 levels (A-E), by which we recognize those suppliers evaluated as A and B levels are the ones we should continue business with; those in C and D levels need improvement; and those in E level are the ones we should discontinue business. And in fact, we continue business in the following year with those A or B suppliers, and C and D suppliers who are able to demonstrate expected improvement, as key suppliers.					
1-6-5	Environmental impact from transportation	<table border="1"> <tr> <td>Environmental impact from transportation</td> <td>MHI, which handles cargo transportation of over 30 million ton-km per year, is a "specified signer" according to the revised Act Concerning the Rational Use of Energy. For that reason, MHI is implementing an action plan towards energy conservation during transportation, such as by promoting modal shifts at works and improving load ratios. MHI is also working to streamline this plan, energy consumption, and consumption measured in basic units for energy. Energy consumption (measured in basic units for energy) in fiscal 2014 was 43.9 units, a 1.1 percent decrease from the amount of 45 units in the benchmark year of fiscal 2010.</td> </tr> </table>	Environmental impact from transportation	MHI, which handles cargo transportation of over 30 million ton-km per year, is a "specified signer" according to the revised Act Concerning the Rational Use of Energy. For that reason, MHI is implementing an action plan towards energy conservation during transportation, such as by promoting modal shifts at works and improving load ratios. MHI is also working to streamline this plan, energy consumption, and consumption measured in basic units for energy. Energy consumption (measured in basic units for energy) in fiscal 2014 was 43.9 units, a 1.1 percent decrease from the amount of 45 units in the benchmark year of fiscal 2010.		
Environmental impact from transportation	MHI, which handles cargo transportation of over 30 million ton-km per year, is a "specified signer" according to the revised Act Concerning the Rational Use of Energy. For that reason, MHI is implementing an action plan towards energy conservation during transportation, such as by promoting modal shifts at works and improving load ratios. MHI is also working to streamline this plan, energy consumption, and consumption measured in basic units for energy. Energy consumption (measured in basic units for energy) in fiscal 2014 was 43.9 units, a 1.1 percent decrease from the amount of 45 units in the benchmark year of fiscal 2010.					
1-6-6	Conflict minerals	<table border="1"> <tr> <td>Basic Policy Concerning Conflict Minerals</td> <td>Armed groups engaged in conflicts in the Democratic Republic of the Congo and neighboring countries have committed serious human rights abuses and acts of environmental destruction. This issue has caught the world's attention. Some of the proceeds from the minerals produced in this region (tin, tantalum, tungsten, and gold, hereinafter "conflict minerals") are thought to be a source of funding for these armed groups. MHI Group has no intention of abetting human rights abuses or environmental destruction by procuring raw materials, parts or products which contain the conflict minerals. We will continue to work with our customers, business partners, industry groups and others in efforts to avoid benefiting the armed groups.</td> </tr> <tr> <td>(Reference)</td> <td>Basic Policy Concerning Conflict Minerals http://www.mhi-global.com/company/procurement/csr/index.html</td> </tr> </table>	Basic Policy Concerning Conflict Minerals	Armed groups engaged in conflicts in the Democratic Republic of the Congo and neighboring countries have committed serious human rights abuses and acts of environmental destruction. This issue has caught the world's attention. Some of the proceeds from the minerals produced in this region (tin, tantalum, tungsten, and gold, hereinafter "conflict minerals") are thought to be a source of funding for these armed groups. MHI Group has no intention of abetting human rights abuses or environmental destruction by procuring raw materials, parts or products which contain the conflict minerals. We will continue to work with our customers, business partners, industry groups and others in efforts to avoid benefiting the armed groups.	(Reference)	Basic Policy Concerning Conflict Minerals http://www.mhi-global.com/company/procurement/csr/index.html
Basic Policy Concerning Conflict Minerals	Armed groups engaged in conflicts in the Democratic Republic of the Congo and neighboring countries have committed serious human rights abuses and acts of environmental destruction. This issue has caught the world's attention. Some of the proceeds from the minerals produced in this region (tin, tantalum, tungsten, and gold, hereinafter "conflict minerals") are thought to be a source of funding for these armed groups. MHI Group has no intention of abetting human rights abuses or environmental destruction by procuring raw materials, parts or products which contain the conflict minerals. We will continue to work with our customers, business partners, industry groups and others in efforts to avoid benefiting the armed groups.					
(Reference)	Basic Policy Concerning Conflict Minerals http://www.mhi-global.com/company/procurement/csr/index.html					

Strategy for Emerging Markets

1-7-1	R&D in emerging markets	<p>R&D in emerging markets</p> <p>There are totally 6 Global R&D Centers in Europe, Asia, USA, including Singapore, promoting opportunities for building relationship with overseas customers and research institutions, and creating business opportunity, in order to capture global market needs and discover seeds of most advanced technology. However, we are not directly involved in R&D activities in emerging/developing countries: our R&D activity is basically conducted in domestic research facilities.</p> <p>R&D design or engineering centers located in emerging markets country Singapore years since the opening 2 years</p>
1-7-2	Product adaptation for emerging markets	<p>Product adaptation case</p> <p>【Energy & Environment】 Small and medium size gas turbine: In emerging countries where power grid infrastructure is still rather poor, there is a strong demand of small size distributed power sources. H-25 (HP: 28-42MW)(*), a small to medium size gas turbine, is a compact but highly efficient quality product fitting to the needs of emerging markets, and has been enjoying strong demand. In FY2014, there were order from China, Myanmar, India, Turkmenistan in FY2014, and Belarus in FY2015. (*) For reference, normally a large gas turbine for power generation has HP200-300MW and above, mostly for use in developed markets.</p> <p>【Machinery, Equipment & Infrastructure】 We developed a compact 1.5kW home air conditioner model for emerging markets in South-East Asia (compared to another model with 2.2kW for developed countries) to meet the needs of “keeping cool only for bedtime comfort”. The model which places small electricity burden to the infrastructure fits to the use in an area with unreliable electricity.</p>
1-7-3	Improving productivity	<p>Conforming global standards</p> <p>Globally apply various policies and criteria within the Group. More specifically: -Promotion to acquire ISO 14001, ISO9001 for environment and quality management -Adoption of the corporate policies and rules for CSR and compliance -Regular internal audit and guidance accordingly</p> <p>Technology introduction</p> <p>By transferring sophisticated manufacturing technology as is, such as machine work and assembly in Japanese factory, we have been achieving both high quality production capability and cost competitiveness. This approach taken in various business and products in which quality is essential. Also technology of our primary thermal power plant products, such as gas turbine, steam turbines, boilers, Flue Gas Desulfurization (FGD) plants and Selective Catalyst Reduction (SCR), has been introduced by providing license to manufacturers in China, Korea, India, etc..</p> <p>Improving labor productivity</p> <p>For maintaining high quality standard of Japan, a small group operation has been implemented; for developing skilled workers, Japanese engineer educators have been dispatched and overseas trainees have been accepted in Japanese sites. In the Vietnam aircraft manufacturer has established an in-house manufacturing technology school where Japanese instructors instruct and educate the Vietnamese employees for their talent development. On-site OJT is also provided, for facilitating early acquisition of the skills. OJT opportunity in Japan (Ooe Factory) is also provided for the Vietnamese employees, aiming at skill acquisition through mutual exchange of employees.</p> <p>Reviewing procurement agreements or inventory levels</p> <p>【Commercial Aviation & Transportation Systems】 Inventory level is monitored periodically with predefined threshold and frequency. 【Machinery, Equipment & Infrastructure】 To keep its inventory levels low at our distributors in emerging markets, we periodically check their inventory status, and analyze the demand situation in the country.</p>
1-7-4	Knowledge transfer	<p>Transfer of knowledge, skills, technology from headquarters to its emerging market operations</p> <p>Under the Medium-Term Business Plan, MHI is trying to establish a global platform, aiming at standardizing technical information, information system, procurement and human resource management, including emerging markets.</p>

Environmental reporting

2-1-1	Coverage and assurance	<p>Coverage</p> <p>In principle, scope of the financial and non-financial information disclosure of MHI Group includes Mitsubishi Heavy Industries Ltd. and consolidated subsidiaries. When some non-financial information applies to either only MHI Ltd. or specific scope of business at our subsidiaries, such specific scope is defined separately. Non-financial information subject to disclosure accounts for 50-75% in average. MHI Ltd. and 49 domestic group companies are certified by the third party Bureau Veritas Japan in terms of our Green House Gas emission in FY 2014 (As of July, 2016).</p>
-------	------------------------	--

2-1-2	Referenced guidelines	<p>References guidelines</p> <p>Global Reporting Initiative "Sustainability reporting guideline G4" The International Integrated Reporting Council "Integrated reporting framework" The Ministry of Environment "Environmental reporting guidelines FY2012 version" ISO26000 Guidance on Social Responsibility</p>
-------	-----------------------	--

2-1-3	Environmental KPIs	<table border="1"> <tr> <td>KPI(1)</td> <td>Target</td> <td>Reduce the unit energy consumption in FY2017 by 3% compared to FY2014.</td> </tr> <tr> <td>Reduction in energy consumption</td> <td></td> <td></td> </tr> <tr> <td>KPI(2)</td> <td>Target</td> <td>Reduce the unit water consumption in FY2017 by 3 % compared to FY2014.</td> </tr> <tr> <td>Reduction in water usage</td> <td></td> <td></td> </tr> <tr> <td>KPI(3)</td> <td>Target</td> <td>Reduce the unit atmospheric emission of VOC in FY2017 by 3 % compared to FY2014.</td> </tr> <tr> <td>Reduction in emissions of chemical substances</td> <td></td> <td></td> </tr> <tr> <td>KPI(4)</td> <td>Target</td> <td>Ensure that the landfill disposal ratio of the entire group companies in Japan is less than 0.6 % in FY2017.</td> </tr> <tr> <td>Reduction in waste generation</td> <td></td> <td></td> </tr> </table>	KPI(1)	Target	Reduce the unit energy consumption in FY2017 by 3% compared to FY2014.	Reduction in energy consumption			KPI(2)	Target	Reduce the unit water consumption in FY2017 by 3 % compared to FY2014.	Reduction in water usage			KPI(3)	Target	Reduce the unit atmospheric emission of VOC in FY2017 by 3 % compared to FY2014.	Reduction in emissions of chemical substances			KPI(4)	Target	Ensure that the landfill disposal ratio of the entire group companies in Japan is less than 0.6 % in FY2017.	Reduction in waste generation		
KPI(1)	Target	Reduce the unit energy consumption in FY2017 by 3% compared to FY2014.																								
Reduction in energy consumption																										
KPI(2)	Target	Reduce the unit water consumption in FY2017 by 3 % compared to FY2014.																								
Reduction in water usage																										
KPI(3)	Target	Reduce the unit atmospheric emission of VOC in FY2017 by 3 % compared to FY2014.																								
Reduction in emissions of chemical substances																										
KPI(4)	Target	Ensure that the landfill disposal ratio of the entire group companies in Japan is less than 0.6 % in FY2017.																								
Reduction in waste generation																										

		unit	2011	2012	2013	2014	2015	coverage
KPI(1)		Japan:						
Reduction in energy consumption	Performance	Overseas				11.01:6.12	10.79:6.02	*
KPI(2)		Japan:						
Reduction in water usage	Performance	Overseas				0.29:0.08	0.27:0.07	*
KPI(3)		Japan:						
Reduction in emissions of chemical substances	Performance	Japan				41.09	54.72	*
KPI(4)		Japan:						
Reduction in waste generation	Performance	Japan				0.35	1.34	**

*Scope of target or "Third MHI Group Environmental Targets (FY2015-FY2017, benchmark year: FY2014)"
 **Scope of target or "Third MHI Group Environmental Targets (FY2015-FY2017)"

Environmental Management

2-2-1	Environmental policy	Environment Policy	As clearly laid out in provision 1 of its creed—"We strongly believe that the customer comes first and that we are obligated to be an innovative partner to society."—MHI believes its primary purpose is to contribute to society through its R&D, manufacturing and other business activities. Accordingly, in the performance of its business activities the company shall embrace the awareness that it is an integral member of society and, in all aspects of its business activities, it will strive to reduce burden on the environment and shall devote its comprehensive technological capabilities to the development of technologies and products that will protect the environment, as its way of contributing to the development of a sustainable society.
		Coverage (Reference)	MHI Group Basic Policy on Environmental Matters, Action Guidelines http://www.mhi-global.com/company/csr/esg/environment/management/management02.html

2-2-2	Environmental management system	Chief executive	Seiji Izumisawa, Senior Vice President, Technology Strategy Office
		Committee	Environmental committee

				unit
ISO14001 certification				
	MHI		%	100.0 * Integrated companywide certification
	Group company	Domestic	%	67.1 * 51/76 companies
	Group company	Overseas	%	19.2 * 33/162 companies

				unit
Other certification				
	EcoAction 21		%	3.9 * 3/76 domestic group company
	K-EMS (Certification by City of Kobe)		%	3.9 * 3/76 domestic group company
	M-EMS (MHI original environmental managen		%	5.3 * 4/76 domestic group company

Environmental audit	MHI conducts companywide internal environmental audits at works, plants and districts in Japan to ensure compliance with environmental laws and regulations and to conduct physical, on-site verification of operational conditions. Audits are performed by teams of auditors from works, plants and districts other than the works, plants and districts being audited. Results on environmental performance and improvements are reported to the Environmental Committee, through which they are shared with the rest of the company. The audits confirmed that issues identified by previous audits were being addressed and steps were being taken to improve the level of management.
---------------------	---

Reporting on breaches	There was no significant breach last year.
-----------------------	--

Environmental Management

2-2-3	Environmental management in each sites	<p>Environmental management in each sites</p> <p>MHI has prepared and uses an ISO-based manual for each works, plants and districts, encompassing such issues as risk identification methods, daily management procedures and contingency plans. At each works, plants and districts, emergency response drills are carried out to confirm the effectiveness of response procedures for emergencies such as oil spills and earthquakes.</p> <p>In the event of any crisis, the company's in-house crisis management information system is prepared to quickly convey information to the President.</p>
-------	--	--

2-2-4	Environmental action	<p>Fostering environmental awareness</p> <p>At MHI, each works and plants formulates its own environmental education curriculum based on e-learning and other methods to provide environmental education to employees.</p> <p>In addition to the internal environmental auditor training program organized by our Head Office, specialized training that deals with daily management procedures and handling emergencies also takes place for employees doing painting tasks and handling dangerous materials.</p>
-------	----------------------	--

2-2-5	Environmental action	<p>Activities for environmental Preservation</p> <p><u>Supporting conservation survey for loggerhead turtle in danger of extinction</u></p> <p><u>Promoting forest conservation and non-native species removal activities</u></p> <p>(Reference) Initiatives to Preserve Biodiversity http://www.mhi-global.com/company/csr/esg/environment/management/management04.html</p>
-------	----------------------	--

2-2-6	Environmental accounting	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Environmental Accounting in FY2015</th> <th>Cost</th> <th>Investment</th> <th>Economic benefit</th> </tr> </thead> <tbody> <tr> <td>1.Production activities</td> <td>million yen</td> <td>4420.2</td> <td>2918.1</td> <td>637.5</td> </tr> <tr> <td> ①Pollution control</td> <td>million yen</td> <td>1425.7</td> <td>819.6</td> <td>-</td> </tr> <tr> <td> ②Global environmental preservation</td> <td>million yen</td> <td>534.8</td> <td>1904.7</td> <td>56.6</td> </tr> <tr> <td> ③Recycling</td> <td>million yen</td> <td>2459.7</td> <td>193.8</td> <td>580.8</td> </tr> <tr> <td>2.Upstream and downstream costs</td> <td>million yen</td> <td>3.1</td> <td>-</td> <td>-</td> </tr> <tr> <td>3.Management activities</td> <td>million yen</td> <td>1105</td> <td>14.5</td> <td>-</td> </tr> <tr> <td>4.R & D</td> <td>million yen</td> <td>6339.7</td> <td>1668.6</td> <td>-</td> </tr> <tr> <td>5.Public and social activities</td> <td>million yen</td> <td>209</td> <td>-</td> <td>-</td> </tr> <tr> <td>6.Environmental remediation</td> <td>million yen</td> <td>284.7</td> <td>362.5</td> <td>-</td> </tr> <tr> <td>Total</td> <td>million yen</td> <td>12361.7</td> <td>4963.7</td> <td>637.4</td> </tr> </tbody> </table>	Environmental Accounting in FY2015		Cost	Investment	Economic benefit	1.Production activities	million yen	4420.2	2918.1	637.5	①Pollution control	million yen	1425.7	819.6	-	②Global environmental preservation	million yen	534.8	1904.7	56.6	③Recycling	million yen	2459.7	193.8	580.8	2.Upstream and downstream costs	million yen	3.1	-	-	3.Management activities	million yen	1105	14.5	-	4.R & D	million yen	6339.7	1668.6	-	5.Public and social activities	million yen	209	-	-	6.Environmental remediation	million yen	284.7	362.5	-	Total	million yen	12361.7	4963.7	637.4
Environmental Accounting in FY2015		Cost	Investment	Economic benefit																																																					
1.Production activities	million yen	4420.2	2918.1	637.5																																																					
①Pollution control	million yen	1425.7	819.6	-																																																					
②Global environmental preservation	million yen	534.8	1904.7	56.6																																																					
③Recycling	million yen	2459.7	193.8	580.8																																																					
2.Upstream and downstream costs	million yen	3.1	-	-																																																					
3.Management activities	million yen	1105	14.5	-																																																					
4.R & D	million yen	6339.7	1668.6	-																																																					
5.Public and social activities	million yen	209	-	-																																																					
6.Environmental remediation	million yen	284.7	362.5	-																																																					
Total	million yen	12361.7	4963.7	637.4																																																					

Product Stewardship

2-3-1	Product stewardship policy	<p>Product stewardship policy Our policy of product stewardship is addressed in the Environment Action Guidelines item 3 and 4.</p> <p>(Reference) Environmental Action Guidelines http://www.mhi-global.com/company/csr/esg/environment/management/management02.html</p> <p>Chief executive Seiji Izumisawa, Senior Vice President, Technology Strategy Office</p>
2-3-2	Life cycle assessment	<p>Life cycle stages included LCA Every year we calculate amount of CO2 reduction attained by the use of our representative products. The reduction achieved in FY2015 was about 46 million ton, in comparison with the level of 1990.</p> <p>(Reference) CO2 Reductions with MHI Group Product Usage (FY2014) http://www.mhi-global.com/company/csr/esg/environment/globalwarming/globalwarming05.html</p>
2-3-3	Environmental criteria of products	<p>Assessment of environmental impact MHI formally established "Basic Policies of Manufacturing Product Adoptable to Environment" (not disclosed) in 2005, as one of the standards for producing and manufacturing guidelines common across the company, based on which we have been pursuing developing and delivering new products and technologies useful for mitigating environmental impact. Namely, all the items listed above have been already embedded in product development, business processes and proposal to and agreement with our customers.</p> <p>Environmental criteria of products We confirm applicability and select the environment elements listed as follows, based on a product characteristics or purpose of product development/improvement. (i) Elements related to: new energy, alternative energy, energy saving, weight reduction, durability enhancement, and use of less hazardous material and/or use of alternative resource. (ii) Elements related to: waste management including recycling, and other environmental improvement. (iii) Elements of potential cause of: offensive odor, noise, and vibration at the time of product use or manufacturing. (iv) Elements potentially affecting air, water quality, soil, and underground water at time of product use or manufacturing.</p>
2-3-4	Environmental product declaration	<p>Environmental product declaration Since majority of our products are industrial products for B to B, we need confirmation with each customer regarding precise details required for product tests, provisions and contracts, by going beyond the general Environmental Product Declaration in order to ensure the environmental standards and performance to be met. As for a product for general public (B to C), we have air conditioner, that is fully compatible with Energy Saving Labelling Program authorized by Ministry of Economy, Trade and Industry (METI) and meeting the energy-saving standard 100%.</p> <p>% of revenue Less than 5%</p>
2-3-5	Collection and recycling of used products	<p>Collection and recycling of used products Since majority of our products are industrial products for B to B, general product take back program is not implemented. As for a product for general public (B to C), we have air conditioner which is subject to Japanese Law for Recycling of Specified Kinds of Home Appliances, thereby we collect it in accordance with the law.</p> <p>% of revenue Less than 5%</p>

Climate Change

2-4-1	Climate change governance	Chief executive	Seiji Izumisawa, Senior Vice President, Technology Strategy Office
		Committee	Environmental committee
		Risk management measures	Climate change risks relevant to entire MHI Group, such as risks associated with environmental regulations of Green House Gas emission, are addressed and taken care by Environmental Committee and Management Audit Department under the corporate governance framework and in collaboration with other departments, depending on level of materiality and characteristics of the risks.
		CDP submission	We have submitted a CDP response from FY2014, and the evaluation of 2015 was 69E.
2-4-2	Climate change risks	Climate change risks	<ul style="list-style-type: none"> • We face a risk of production delays stemming from the impact of suspended operations at MHI Group or supplier factory facilities that have been affected by weather anomalies, typhoons, torrential rains, droughts, or other manifestations of climate change in countries worldwide. • Regulation-related risks and opportunities are the factors with the biggest impact on MHI Group. For example, regulations aimed at curbing CO2 emissions have the effect of intensifying competition for improved fuel economy and efficiency in the fields of machinery and industrial plants, two of our mainstay areas of business. By contrast, regulations that impose restrictions on CO2 emissions from power generating plants have a significant impact on our business strategy because we anticipate they will lead to growth in orders for nuclear power plants and high-efficiency gas turbines, which consume less fuel per unit of power generated.
2-4-3	Climate change opportunities	Climate change opportunities	<ul style="list-style-type: none"> • In a move aimed at reinforcing regulatory frameworks and implementing regulations on CO2 emissions from thermal power generating plants, on August 3, 2015, US President Barack Obama announced steps to revise the Clean Air Act and launch the Clean Power Plan with a set of new Carbon Pollution Standards. The MHI Group has developed and begun supplying generating plants powered by high-efficiency gas turbines as well as systems for the recovery of CO2 from power plant exhaust gases, and considers emissions regulations overseas to be a significant business opportunity. • To cope with new regulations on refrigerants, the MHI Group is investing in the development of high-performance, low-GWP refrigerants that will facilitate reductions in CO2 emissions.
2-4-4	Climate change products	Products and Technologies that Reduce Environmental Impact	MHI is working to create a low-carbon society across a broad spectrum of fields, including large-scale power generation technologies such as highly efficient thermal power generation plants and nuclear power plants; power generation systems that utilize wind, geothermal, and other renewable energies; ships and transportation systems for improving the efficiency of the transportation sector; and high energy-saving air-conditioning systems that use heat pump technology. CO2 reductions from the fiscal 1990 level through the use of MHI's products in fiscal 2015 came to about 46 million tons.
		(Reference)	Products and Technologies that Reduce Environmental Impact http://www.mhi-global.com/company/csr/esg/environment/environmental-impact/environmental-impact01.html

Water Risk

2-5-1	Water risk governance	Chief executive	Seiji Izumisawa, Senior Vice President, Technology Strategy Office		
		Committee	Environmental committee		
2-5-2	Water risk management	Management of water usage	None of the MHI's factories are located in water stress areas. Since water is not a key ingredient of our products, and our production processes does not require large volume of water, our position in risk management for water resource is not so proactive in this aspect, but data of water use is collected from entire MHI Group and used for promoting water saving.		
		Management of water quality	Waste water is managed and treated in accordance with relevant laws and regulations.		
		Management of change of law, regulation, tax, water price	Domestically once information of any regulation change or revision is obtained, we take appropriate action promptly as necessary. To overseas factories belong to Group companies, we are recommending them to capture data related to their water use.		
		Conflict to stakeholders	MHI Group's factories are located in water stress areas and there is no conflict of interest in water resource with our stakeholders. However we are contributing to water resources conservation of local communities. For example, our factory in Sagami-hara in Kanagawa prefecture (Japan) is participating in community volunteer activity for protecting forest as water source.		
2-5-3	Water quality management	plants / sites sensitive in terms of water quality			
		Takasago Machinery	Location	Hyogo, Japan	
			Main water quality parameter	COD(Chemical Oxygen Demand), T-N (Total Nitrogen), T-P (Total Phosphorus)	
		Kobe Shipyard & Machinery Works	Location	Hyogo, Japan	
	Main water quality parameter	COD(Chemical Oxygen Demand), T-N (Total Nitrogen), T-P (Total Phosphorus)			
	Hiroshima Machinery	Location	Hiroshima, Japan		
		Main water quality parameter	COD(Chemical Oxygen Demand), T-N (Total Nitrogen), T-P (Total Phosphorus)		
2-5-5	Water Used During Products' Life Cycle	Products contribute to reduction of water use	For example, desalination plants for converting sea water into plane water are often built in combination with power plants constructed in Saudi Arabia, where water resource is limited. Combining our products from wide range of areas, we have been delivering solution for the issues of water resources.		

Biodiversity

2-6-1 Biodiversity impact

<p>Key business facility located in an area with rich biodiversity</p> <p>Tanegashima island in Kagoshima prefecture, where a key facility of the MHI's Space Business is located, is recognized one of the major spawning fields of loggerhead turtles (<i>Caretta caretta</i>), identified as Vulnerable species on the International Union for Conservation of Nature and Natural Resources red list and globally concerned its extinction. Because of that, from 2015 we are collaborating with an international environment NGO for individual identification research of the loggerhead turtles.</p>
<p>Potential impacts to biodiversity in consequence of business activities and use of products</p> <p>CO2 reduction by offshore wind turbine proposal of energy optimization with an introduction of the energy management system; and CO2 collecting device fuel gas CO2 capture Process.</p>

GHG Emissions

			unit	2011	2012	2013	2014	2015	
2-7-1	GHG Emissions (Scope1)	Direct greenhouse gas emissions(Scope1)	Performance	ton	160,169	155,349	151,200	238,803	185,951
			Coverage	%	77	72	70	90	92
			Assurance					domestic only	
<hr/>									
2-7-2	GHG Emissions (Scope2)	Indirect greenhouse gas emissions(Scope2)	Performance	ton	277,066	270,021	557,700	650,965	606,087
			Coverage	%	77	72	70	90	92
			Assurance					domestic only	

Energy Consumption

			unit	2011	2012	2013	2014	2015
2-8-1	Energy consumption	Energy consumption	MWh	1,498,831	1,474,095	1,707,017	2,521,425	2,044,132
		Performance Coverage Assurance	%	77	72	70	90	92
							domestic only	
<hr/>								
2-8-2	Electricity purchased	Electricity purchased	MWh	766,802	731,045	989,670	1,043,459	1,106,660
		Performance Coverage Assurance	%	77	72	70	90	92
							domestic only	
<hr/>								
2-8-3	Renewable energy	Green power purchased	MWh	1,000	1,000	1,000	1,000	1,000
		Performance						

Waste / Pollution

				unit	2011	2012	2013	2014	2015
2-9-1	Waste generation	Waste generation	Waste generation	t	129,000	131,661	123,195	138,000	139,000
			Recycle rate	%	90	88	88	86	87
			Coverage	%	77	72	61	39	36

*Excluding infectious waste, disposed PCB and asbestos

				unit	2011	2012	2013	2014	2015
2-9-2	Hazardous waste generation	Hazardous waste generation	Performance*	t			2,800	3,651	3,909
			Coverage	%			61	39	36

*Toxic waste that requires specific control, infectious waste, disposed PCB and asbestos

				unit	2011	2012	2013	2014	2015
2-9-3	VOC emissions	VOC emissions	Performance	t	2,962	2,801	1,831	1,184	1,546
			Coverage	%	77	72	61	39	36

Respect for Human Rights

3-2-1	Human rights policy	Human rights policy	The Mitsubishi Heavy Industries group endeavors to fulfill its responsibilities for the protection of human rights in order to continue truly contributing to social progress in accordance with the MHI creed. We act in line with the "Guiding Principles on Business and Human Rights" adopted by the U.N. Human Rights Council and endeavor never to act in ways that elicit or facilitate human rights violations by others or other negative actions or effects.		
		Coverage	MHI Group		
		(Reference)	MHI Basic Policy on Human Rights	http://www.mhi-global.com/company/csr/policy/ourpolicies/humanrights.html	
			MHI Group Global Code of Conduct	http://www.mhi-global.com/company/aboutmhi/policy/conduct.html	
3-2-2	Management structure related human rights	Chief executive	Mutsuo Hiroe, Executive vice president, in charge of HR		
		Committee	Committee for Raising Awareness of Human Rights		
		Training	Human rights awareness training is held each year for new employees and newly appointed managerial staff, such as managers and deputy managers. This training handles themes related to human rights issues and harassment, including fundamental knowledge and points to be aware of. In fiscal 2014, approximately 320 new recruits and 1,500 newly appointed managers and supervisors participated in human rights awareness training. In order to prevent "power harassment" (workplace bullying and harassment), we continued to hold an e-Learning course that was introduced in fiscal 2010, and have also been working to educate the rest of the MHI Group since fiscal 2011.		
3-2-3	Grievance mechanism	Grievance mechanism	External hotline was established in December 2011 in addition to the internal hotline. This was followed by the sequential establishment of Harassment Contact Hotlines inside and outside of the company starting in January 2012 as a measure to respond to "power harassment" (workplace bullying & harassment), which is becoming an increasingly serious social issue.		
		Coverage	Employees (including contract employees) of MHI and all Group companies, and business clients		

Labor practice

		unit	2011	2012	2013	2014	2015	coverage	
3-3-1 Diversity and Equal opportunity	Number of employees Total (At the end of the fiscal year)		32,494	31,111	22,147	21,117	19,357	MHI	
		Male	29,638	28,276	20,013	19,069	17,414	MHI	
		%	91.2	90.9	90.4	90.3	90.0	MHI	
		Female	2,856	2,835	2,134	2,048	1,943	MHI	
		%	8.8	9.1	9.6	9.7	10.0	MHI	
	Executive			55	52	51	55	59	MHI
		Male		55	52	50	54	58	MHI
		%		1.0	1.0	1.0	1.0	1.0	MHI
		Female		0	0	1	1	1	MHI
		%		0.0	0.0	0.0	0.0	0.0	MHI
	Manager			4,566	5,054	5,170	4,057	4,108	MHI
Male			4,520	4,993	5,094	3,990	4,029	MHI	
%			0.99	0.99	0.99	0.98	0.98	MHI	
	Female		46	61	76	67	79	MHI	
	%		0.0	0.0	0.0	0.0	0.0	MHI	
differently-abled people			826	845	835	641	644	MHI	
	%		2.00	2.09	2.14	2.17	2.22	MHI	

		unit	2011	2012	2013	2014	2015	coverage
3-3-2 Freedom of Association	Employees covered by collective bargaining agreements	%	99.9	99.9	99.9	99.9	99.9	MHI
	Number of labor-management consultations		31	34	38	36	44	MHI

		unit	2011	2012	2013	2014	2015	coverage
3-3-3 Layoffs	Number of employees laid off		0	0	0	0	0	MHI
	Number of labor-management consultations about layoffs		0	0	0	0	0	MHI

3-3-4 Occupational Health and Safety	Health and safety policy	MHI embraces a basic policy for employee safety and health founded on the following three commitments: (1) Always hold fast to the conviction that life is precious, and carry out measures that prioritize safety and are appropriate to each position and location; (2) Devote every effort to safety in creating outstanding products that contribute to the development of society; (3) Maintain awareness that sound health is the basis upon which all else depends, and ensure that all employees have comfortable workplaces that enable them to be sound in body. Based on these principles, we operate an occupational health and safety management system throughout the company to create safe, pleasant workplaces.						
	Scope of Policy	MHI Group						
	(Reference)	http://www.mhi-global.com/company/policy/safety_health.html						

		unit	2011	2012	2013	2014	2015	coverage
Fatalities	Employees		1	0	2	0	0	MHI
	Contractors		1	1	1	0	0	MHI
LTIFR	Employees		0.17	0.06	0.16	0.09	0.11	MHI
	Contractors		0.44	0.21	0.32	0.19	0.45	MHI
OIFR	Employees		0.04	0.01	0.05	0.05	0.04	MHI
Number of Industrial accidents			53	33	57	29	34	MHI
Working hour	millions of hours		128	126	124	104	108	MHI

Certification of Occupational Health and Safety	Research and Innovation Center in Yokohama district and chemical/social infrastructure local construction divisions acquired OHSAS18001 certificate and are operating occupational health and safety management system aiming at constantly improving the system.						
---	---	--	--	--	--	--	--

Training	In order to reduce the risk of occupational accidents, MHI makes improvements based on the results of risk assessments implemented at each works. These assessments are related to tasks and equipment, and are mainly focused on the safety and manufacturing sectors. We are also implementing safety education for entry-level employees and other people. This education utilizes visual learning materials and hands-on equipment that makes it possible to actually experience accident simulations. This hands-on equipment has been installed at nine works including the Nagasaki Shipyard & Machinery Works and Kobe Shipyard & Machinery Works. Furthermore, in the future MHI will continue to make systematic efforts to improve equipment and update outmoded facilities in order to create safe, comfortable workplaces.						
----------	---	--	--	--	--	--	--

3-3-5 Health Management	Health and safety policy	Policy of Safety and Health http://www.mhi-global.com/company/policy/safety_health.html						
	Chief executive	Each head of business domains						
	Health promoting program	Actions are taking place based on the occupational health and safety management plan, including targets such as days of absence from work due to illness. •Promotion of using health management promotion tool (KEMPO) in collaboration with a health insurance union •Initiative for improving completion rate of participating in specific health guidance, from initial interview till the end of guidance. •Various health promotion plan and execution in local areas using a health distribution map						

Human Capital Development

3-4-1 Human capital management

Focus area on human capital management
Amid its efforts to accelerate globalization and revise its business model, MHI recognizes that diversity in human resources is core to its business activities. Accordingly, we are reinforcing diversity management, centering on recruiting and cultivating global human resources and providing opportunities for female employees.

Human capital performance indicators
Number of hours spent in trainings per employees 65hours(FY2015/MHI)
Training cost per employees 57kilos of yen(FY2015/MHI)

3-4-2 Human capital development

Program (1)	Global management training: Education program for employees of potential overseas assignment candidates, learning management skills at overseas group companies and acquiring general MBA level knowledge.
■ Benefits	Acquisition of business skills and knowledge/understanding of intercultural management facilitate he/she to achieve a result in early stage of their career as a global manager.
Attendance	40 employees

Program (2)	Younger employee overseas assignment: Young employees are sent to overseas group company or overseas partner company for two months.
■ Benefits	Through improvement of global responsiveness and fostering awareness as a global human resource in early stage of their career, he/she will be able to contribute to execute the global strategy of the entire organization.
Attendance	12 employees

	unit	2011	2012	2013	2014	2015	coverage	
3-4-3 Training and development inputs	Total training cost	millions of yen	1,270	1,350	1,000	1,080	1,100	MHI
	Training cost per employees	kilos of yen	39	43	45	51	57	MHI
	Number of hours spent in trainings per employees	hours	43	38	55	59	65	MHI

3-4-4 Human capital KPIs

KPIs-quantitative	After finishing the English education program, effectiveness of the program is quantitatively measured by TOEIC and other English tests score of all the participants, namely, coverage is 100% of the English program participants
-------------------	---

Measuring benefits	Questionnaire survey after the training program
--------------------	---

Talent Attraction and Retention

		unit	2011	2012	2013	2014	2015	coverage	
3-5-1	Employee performance appraisal	Management by objectives	%	57	57	58	57	58	MHI
		Multidimensional performance appraisal	%	43	43	42	43	42	MHI

			unit	2011	2012	2013	2014	2015	coverage	
3-5-2	Employment	New hired	Total		985	635	452	319	399	MHI
			Male		905	574	408	301	374	MHI
				%	91.9	90.4	90.3	94.4	93.7	
			Female		80	61	44	18	25	MHI
				%	8.1	9.6	9.7	5.6	6.3	
			Total turn over rate	%	5.1	5.7	4.3	4.0	5.6	MHI
			Voluntary turn over rate	%	0.6	0.7	0.5	0.6	0.7	MHI
			Average employment periods	year	16.2	16.0	16.1	16.3	16.1	MHI
	Average hiring cost per employees	millions of yen				0.7	0.7	MHI		

			unit	2011	2012	2013	2014	2015	coverage	
3-5-3	Work-life balance	Number of employees using programs that focus on work-life balance								
		Childcare leave		236	265	226	205	219	MHI	
			Male	13	16	10	17	20	MHI	
		Childcare workshift		460	502	441	456	465	MHI	
			Male	44	53	60	61	72	MHI	
		Family-care leave		13	4	9	5	5	MHI	
			Family-care work shift		9	11	8	13	14	MHI
		Returning to work after childcare leave	%	97.4	100.0	98.2	94.3	98.2	MHI	
		Remaining in work after childcare leave	%	97.1	96.4	99.1	95.5	96.0	MHI	
		% of employees taking annual paid leave	%	76.5	74.5	75.0	75.5	76.8	MHI	

Social contribution

3-6-1 Social contribution policy and focus areas

Social contribution policy	MHI Group used the opportunity of the publication of the Social and Environmental Report in 2004 to formulate the basic concepts for social contribution, stated as "We are obligated to be an innovative partner to society" and "We place importance on relationships with local communities based on mutual trust." The MHI policy for social contribution activities was released in 2007 based on extensive discussion and debate regarding the nature of public expectations as well as feedback from external sources. Various programs are being carried out in each region of Japan in accordance with the policy.
Coverage	MHI Group
(Reference)	MHI Group policy for social contribution http://www.mhi-global.com/company/csr/esg/social/socialcontribution/society02.html
Focus area (1)	Upbringing of the next generation ■ Relevance to business MHI regards scientific technology is a source of growth, therefore children's loss of interests in and capacity of understanding science and reluctance to socialize as major, etc., may become challenges for company's human resource development in the future.
Focus area (2)	Local contribution ■ Relevance to business MHI executes business all over the world, therefore it is critical aspect for business continuity to live in harmony and establish high confidence with every local communities where we operate.
Focus area (3)	Environment ■ Relevance to business MHI business is global and encompassing developing/emerging economies, so that environmental consideration in business operation is critical for our business continuity.

3-6-2 Social contribution input

Social contribution input	Total amount	unit	2011	2012	2013	2014	2015	coverage
		millions of yen	2,096	1,480	1,478	1,899		MHI
Category	Academic research		164	177	143	428		
	Education		596	503	494	596		
	Community		180	153	125	135		
	Sports		133	173	149	177		
	Others		1,023	474	566	563		
Type of input	Cash contributions			749	373	770		
	In-kind giving			181	617	639		
	Employee volunteer			497	489	491		
	Management overheads			7	0	0		
ratio of contribution input to ordinary income		%	2.39	1.00	0.81	0.69		MHI

3-6-3 Social contribution benefit

KPIs-Focus area(1)	Number of taking place	unit	2011	2012	2013	2014	2015	coverage
Cumulative total number of the science class participants.	Number of participants				8936	4,864		Group
KPIs-Focus area(2)	Number of assistance		2	1	2	1	2	Group
Records of natural disaster affected area assistance programs	Contributed amounts	millions of yen	725	29	33	10	5.9	
KPIs-Focus area(3)	Number of taking place						4	Group
Records of know-how transfer programs of managing urban inc	Number of participants						734	
Benefits on business	<ul style="list-style-type: none"> • Experience of teaching in the science class facilitates employees to develop their presentation and communication capacity and motivates them. • Early recovery of HHI Group critical business region through assistance for natural disaster affected area. • Enhancing opportunity for MHI' s environmental products order intake, along with raising an environmental awareness in the emerging economies. 							