



Independent Assurance Report

To the Board of Directors of Panasonic Corporation

We were engaged by Panasonic Corporation (the "Company") to undertake a limited assurance engagement of the environmental performance indicators listed in the table below for the period from April 1, 2015 to March 31, 2016 (the "Indicators") included in its Sustainability Data Book 2016 (the "Data Book") for the fiscal year ended March 31, 2016.

Table: The Indicators subject to the independent assurance and corresponding page numbers in the Data book

Indicators	Pages	Indicators	Pages
Size of indirect contribution in reducing CO ₂ emissions	32	Total GHG Emissions (CO ₂ -equivalent) in Production Activities (Scope 1 emissions)	40
CO ₂ emissions from the use of our major products	33	Total GHG Emissions (CO ₂ -equivalent) in Production Activities (Scope 2 emissions)	40
Size of Contribution in Reducing CO ₂ Emissions through Energy-saving Products	33	CO ₂ Emissions from Non-manufacturing Sites (self-owned office buildings in Japan)	41
Size of Contribution in Reducing CO ₂ Emissions through Energy-creating Products	34	CO ₂ Emissions from domestic transportation within Japan	42
CO ₂ Emissions in Production Activities	37	Amount of Total Wastes Including Revenue-generating Waste	56
Size of Contribution in Reducing CO ₂ Emissions through Production Activities	38	Water Consumption in Production Activities	58
Emissions (CO ₂ -equivalent) of GHGs Other than CO ₂ from Energy Use in Production Activities	40	Release/Transfer of Substances Requiring Management (Total)	65

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Data Book, which are derived, among others, from the G4 Sustainability Reporting Guidelines of the Global Reporting Initiative and Environmental Reporting Guidelines of Japan's Ministry of the Environment.

Our Responsibility

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

- Interviewing with the Company's responsible personnel to obtain an understanding of its policy for the preparation of the Data Book and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical reviews of the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and also recalculating the Indicators.
- Visiting to three of the Company's production sites selected on the basis of a risk analysis.
- Evaluating the overall statement in which the Indicators are expressed.

Conclusion

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

Our Independence and Quality Control

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

KPMG AZSA Sustainability Co., Ltd.

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Osaka, Japan

July 27th, 2016

Panasonic Group Sustainability Data Book 2016

Standards for Calculating Main Environmental Performance Indicators

Reporting period

April 1, 2015 - March 31, 2016

Scope of this report

Product-related: All products developed during the reporting period

Factory-related: Manufacturing sites in and outside Japan that have established Environmental Management Systems

Others: Scope according to individual initiatives.

Standards

Item	Indicator	Calculation method
Reducing CO ₂ Emissions	Size of contribution in reducing CO ₂ emissions through energy-creating products	Solar panel: Total power-generating capacity of panels shipped during the current fiscal year (kW) x 20 (years) x Power generation of model per unit (1,204 kWh/kW) x CO ₂ emission factor (0.360 kg-CO ₂ /kWh) Fuel cell: Power generation of the current fiscal year model per unit (1,870 kWh/year) x 10 (years) x Total shipping quantity of the current fiscal year x CO ₂ emission factor (0.410 kg-CO ₂ /kWh)
	Size of direct contribution in reducing CO ₂ emissions through energy-saving products	(Annual power consumption of FY2006 base model - Annual power consumption of the current fiscal year model) x Product life x Shipping quantity of the current fiscal year x CO ₂ emission factor
	Size of indirect contribution in reducing CO ₂ emissions through products	Size of contribution in reducing CO ₂ emissions through "air conditioning load reduction effects from improved insulation performance in Panasonic housing," "energy-saving effects from products by other companies equipped with Panasonic energy-saving compressors and motors" ^{*1} , "improved fuel economy effects from electric vehicles (EVs), plug-in hybrid vehicles (PHVs) ^{*2} , and hybrid vehicles (HVs) equipped with Panasonic automotive batteries," and "energy-saving effect of products by other manufacturers that use Panasonic vacuum insulation material (FY2016 only)." ^{*1} (Annual power consumption of FY2006 base model compressors and motors - Annual power consumption of the current fiscal year model compressors and motors) x Estimated life of products by other companies x Shipping quantity of the current fiscal year x CO ₂ emission factor ^{*2} Estimated quantity of EVs, PHVs, and HVs equipped with Panasonic automotive batteries x Product life x Estimated annual running distance x improved fuel economy effects. Improved fuel economy effects are estimated based on Japan Automobile Research Institute and information released by car manufacturers.
	CO ₂ emissions from the use of major products	Lifetime CO ₂ emissions from major products ^{*1} with large amounts of energy use. Lifetime CO ₂ emissions = Annual power consumption of a model sold ^{*2} x Sales quantity x product life ^{*3} x CO ₂ emission factor ^{*1} Household air conditioners, commercial air conditioners, fluorescent lamps, LED lamps, household refrigerators, commercial refrigerators, LCD TVs, washing/drying machines, fully-automatic washing machines, clothes dryers, dish washer and dryers, IH cooking heaters, EcoCute, bathroom ventilator-driers, humidifiers, dehumidifiers, air purifiers, extractor fans, vending machines, electronic rice cookers, microwave ovens, warm-water washing toilets, clothing irons, hair dryers, under-rug heaters, vacuum cleaners, electric thermal pots, extractor hoods, telephones, security cameras, projectors, etc. ^{*2} For each product category, the model that was sold in the largest quantity in the region was selected. ^{*3} Number of years during which spare parts for the product are available (defined by Panasonic).
	Size of contribution in reducing CO ₂ emissions through production activities	(FY2006 CO ₂ emissions per basic unit - CO ₂ emissions per basic unit of the current fiscal year) x Production of the current fiscal year
	CO ₂ emissions in production activities	CO ₂ emissions from the use of fuel + CO ₂ emissions associated with purchased electricity and heat
	CO ₂ emissions per basic unit in production activities	Calculated with the weighted average of the improvement rate for CO ₂ emissions per basic unit of nominal production (= CO ₂ emissions / nominal production) for each factory. The amount of CO ₂ emissions for each factory based on the assumption that there was no improvement is used for weighting.
	Emissions of GHGs other than CO ₂ in production activities	GHGs specified in the Fourth Assessment Report (2007) of the Intergovernmental Panel on Climate Change (IPCC) were calculated and converted into CO ₂ emissions using the Global Warming Potentials referred to in this Report.
	Scope 1 CO ₂ emissions	CO ₂ emissions from the use of fuel + Emissions of GHGs other than CO ₂
	Scope 2 CO ₂ emissions	CO ₂ emissions associated with purchased electricity and heat
	CO ₂ emissions from non-manufacturing sites	CO ₂ emissions from the use of fuel + CO ₂ emissions associated with purchased electricity and heat. The sites covered by this calculation are non-manufacturing sites (owned by Panasonic) with 100 or more employees in each fiscal year.
	CO ₂ emissions from the use of fuel	Used CO ₂ emission factors provided in the Guideline for Calculation of Greenhouse Gas Emissions (version 2.2) published by the Japanese Ministry of the Environment
	CO ₂ emission associated with purchased electricity and heat	<Japan> CO ₂ emission factor for electricity purchased every fiscal year in Japan is fixed at 0.410 (kg-CO ₂ /kWh). <Outside Japan> Used numerical values for respective countries listed in the Calculation Tools in the GHG Protocol website by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). The 2002 numerical values listed in the "Electricity-Heat SteamPurchase_tool1.0_final" are used as fixed values for all fiscal years
	Energy consumption in transportation	Applied the concept specified in the Energy Conservation Law Guidebook for Consigners edited by the Agency for Natural Resources and Energy, Japan. (Applicable scope: transportation during which cargo is owned by the Panasonic Group) Energy consumption in international logistics is also tabulated by adopting the concept specified in the guidebook.
CO ₂ emissions in transportation	Based on the energy consumption and other data calculated in the process specified above, the corresponding value was calculated in accordance with the Guideline for Calculation of Greenhouse Gas Emissions (version 2.2) published by the Japanese Ministry of the Environment.	

Item	Indicator	Calculation method
Resources Recycling	Total resources used	Amount of resources directly used in production activities of a product. Total resources used is calculated in the following two methods: (1) Method of calculating by identifying the amount of purchased materials (including sub-materials). (2) Method of calculating by identifying amount of: shipped products + sub-materials + waste*. *The figure used for amount of waste is that disclosed in the Sustainability Data Book 2016 as waste or valuable items.
	Total recycled resources used	Sum of both intentionally and socially recycled resources - Intentionally recycled resources: Refer to: recycled resource materials where Panasonic independently manages the cycle of generation, collection, and recycling; recycled resource materials where Panasonic intentionally specifies and procures the resources; and biological materials such as controlled wood/bamboo and plant-oriented materials. - Socially recycled resources: Refer to: resources where its recycling system is generally present in the society regardless of Panasonic's intentions, for instance metals, paper and cardboards. For the purpose of calculation, the concentration of each recycled resources material is set according to a unique investigation by Panasonic.
	Recycled resource utilization ratio	Recycled resources used / Total resources used
	Recycled weight of four kinds of home appliances in Japan	Applies to the recycling defined in the Home Appliance Recycling Law in Japan, and refers to the weight of components and materials of separated products which can be used by oneself, or made into a state available for sale or free of charge.
	Amount of used products covered by the WEEE Directive collected in Europe	Weight of collected products per collection system x Panasonic's weight-based share of products put on the market within the applicable collection system.
	Amount of used electronic products collected in the USA	Amount of equipment collected in accordance with state laws and through voluntary measures.
	Amount of total wastes including revenue-generating waste from factories	Total amount of generated industrial and general waste and revenue-generating waste.
Revenue-generating waste	Waste that can be sold to recycling or disposal companies for profit.	
Factory waste recycling rate	Amount of resources recycled / (Amount of resources recycled + Amount of landfill) (The recycled amount does not include thermal recycling. The final disposal amount takes account of residue left after incineration).	
Water	Amount of water consumption in production activities	Total water consumed for production (total amount of consumed municipal water, industrial water, river/lake water, and groundwater).
Chemical Substances	Substances requiring management	Based on the Chemical Substances Management Rank Guidelines (for factories). Including the substances in the Japanese Law of the Pollutant Release and Transfer Registers (PRTR Law).
	Release of substances requiring management	Release amount includes emissions to air, public water areas, and soil.
	Transfer of substances requiring management	Transfer amount includes transfer as waste and discharge into the sewage system. Recycling that is free of charge or recycling where Panasonic pays a fee for treatment under the Waste Management Law is included in "Transfer." (Different from the transferred amount reported under the PRTR Law.)
	Substances subject to calculation of Human Environmental Impact from factories	Chemical substances specified in the Chemical Substances Management Rank Guidelines (for factories).
Human Environmental Impact	Human Environmental Impact = Hazard factor* x (Amount of covered substances released + Amount of covered substances transferred) *Hazard factors: Given by Panasonic, after classification according to the impact on human health and the environment. Factors are set as A: 10,000, B: 1,000, C: 100, D: 10, and E:1, according to the hazardous level. - Emission amount of covered substances: Includes emissions to the atmosphere, public waters, and soil. - Transfer amount of covered substances: Includes transfer as waste and discharge to the sewage system (not including those recycled free of charge or charged under the Waste Management and Public Cleansing Law).	
Eco-conscious products	Definition of Strategic GPs	Products/services that accelerate the transition to a sustainable society: (1) Products/services that reduce environmental impact with top-level environmental performance in the industry (2) Products/services whose promotion and dissemination lead to reducing environmental impact (3) Products/services that reduce environmental impact on a specific region, or support measures to address environmental impact
	Percentage of sales for Strategic GPs	Sales of Strategic GPs / Panasonic consolidated sales
Collaboration with Stakeholders	Number of environmental education program participants	Total number of participants of education programs provided at schools and through extracurricular activities, visits to showrooms and factories, eco picture diary programs, etc. (Cumulative figure from fiscal 2010)
	Number of trees planted	Total number of trees planted being linked to sales activities and through tree planting initiatives on the company's premises and in local communities(Cumulative figure from fiscal 2008).
	CO2 emissions from suppliers	As for fuels, CO2 emission factors provided in the Guideline for Calculation of Greenhouse Gas Emissions (version 2.2) published by the Japanese Ministry of the Environment were used. CO2 emission factor for electricity purchased in Japan is fixed at 0.410 (kg-CO2/kWh) for electricity purchased every fiscal year.