

**Panasonic Group Sustainability Data Book 2020**  
**Standards for Calculating Main Environmental Performance Indicators**

**Reporting period**

April 1, 2019 - March 31, 2020

**Scope of this report**

Product-related: All products developed in the reporting period.

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

(Not included: Ficoso International S.A., consolidated subsidiary since April 2017 respectively, and this consolidated subsidiaries.)

Others: Scope according to individual initiatives.

**Standards**

Item	Indicator	Calculation method
Energy · CO <sub>2</sub>	Ratio of total energy created to total energy used	Total energy used <sup>*1</sup> : Total energy created <sup>*2</sup>  *1 Total amount of 'the energy used during use of products', 'the energy used by the purchased products/services' <sup>*3</sup> , 'the energy used during transportation', and 'the energy used during production activities'. *2 Total amount of 'the energy created by products/services', the amount of used renewable energy including photovoltaic solar energy from the generator installed at Panasonic sites, and the amount of the energy from renewable energy sources that were purchased/used by Panasonic sites. *3 Basic unit of the energy used per amount from the table of industrial related cost x Procurement amount from external companies (annual).
	Amount of energy created by products/services	Total amount of the energy created: the total amount of power generated by photovoltaic solar panels/cells in their service life that Panasonic sold <sup>*1</sup> , and the total amount power generated by fuel cells in their service life that Panasonic sold <sup>*2</sup> , and of the energy used: the total amount of power used by automotive batteries in their service life that Panasonic sold <sup>*3</sup> , and the energy used by stationary accumulators in their service life that Panasonic sold. *1 Photovoltaic solar panels/cells: Total energy generation capacity of the products Panasonic shipped in this fiscal year (kW) x Number of the service life years: 25 x Amount of energy generation per 1 product (set per country/region) *2 Amount of energy generation per 1 fuel cell product X Number of service life years: 10 x Total number of products Panasonic shipped in this fiscal year *3 Estimated annual mileage (km/year) / Electric mileage of EV, PHV, and HV (km/kWh) x Estimated number of EV, PHV, and HV where Panasonic automotive batteries are set (Number of vehicles/year) x Service life years (10 (years/vehicle)) *4 Energy capacity per 1 stationary accumulator ( kWh) x (1-0.1)(Use 90% of energy capacity of the stationary accumulator (10% is remaining energy in the stationary accumulator) x 365 (days) x Number of sold accumulators x Number of used times of the accumulator per year x Service life years: 10
	Contribution to energy reduction to use (Direct/Indirect)	Direct: (Annual amount of energy used by standard products in fiscal year 2014 - Annual amount of energy used by standard products in this fiscal year) x Product life x Number of products Panasonic shipped in this fiscal year Indirect: Contribution through effects of; Reduction in environmental load for air conditioners by increasing energy performance of insulation in Panasonic houses, Increase in energy efficiency by other company's products where Panasonic motors are installed <sup>*1</sup> , and Increase in energy efficiency by adopting a thermal converter system.  *1 (Annual amount of energy used by standard motors in fiscal year 2014 - Annual amount of energy used by motors in this fiscal year) x Estimated product life of other company's product x Number of the products Panasonic shipped in this fiscal year
	CO <sub>2</sub> emissions from the use of main products	Annual amount of energy used <sup>*2</sup> by main products <sup>*1</sup> whose respective energy usage is high x Sales quantity x Product life <sup>*3</sup> x CO <sub>2</sub> emission factor.  *1 Household air conditioners, commercial air conditioners, lighting equipments and lamps, household refrigerators, commercial refrigerators, LCD TVs, washing and drying machines, fully-automatic washing machines, dish washer and dryers, IH cooking heaters, EcoCute, bathroom ventilation driers, humidifiers, dehumidifiers, air purifiers, extractor fans, electric fans, vending machines, electronic rice cookers, microwave ovens, electric bidet toilet seats, irons, hair dryers, electric showers, electric water heaters, under-rug heaters, vacuum cleaners, electric thermal pots, range hoods, projectors, mounting machines, 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).
	Amount of renewable energy adopted at our sites	Total amount of used renewable energy that were generated at own sites, including photovoltaic, wind, and biomass power.
	CO <sub>2</sub> emissions in production activities	CO <sub>2</sub> emissions from the use of fuel + CO <sub>2</sub> emissions associated with purchased electricity and heat
	CO <sub>2</sub> emissions per basic unit in production activities (compared to FY2014)	CO <sub>2</sub> emissions per basic unit in production activities (improvement rate of basic unit compared to FY2014) was calculated as follows: Basic unit improvement rate (%) for FY2020 = A2015 x A2016 x A2017 x A2018 x A2019x A2020 $A_n = \frac{\text{Panasonic group total CO}_2 \text{ emission in FYn} / \text{Panasonic group total sales volume in FYn}}{\text{Panasonic group total CO}_2 \text{ emission in FYn-1} / \text{Panasonic group total sales volume in FYn-1}}$ n = 2015, 2016, 2017, 2018, 2019, 2020
	Energy used in production activities	Total amount of energy used (including electricity, town gas, and LPG) in each factory. For the calorific value, the conversion factor specified in "the Order for Enforcement of the Act on the Rational Use, etc. of Energy (Japan)", is used globally. For town gas, however, the conversion factor published by the gas service provider is used. For electricity, the conversion factor is 3.6MJ/ kWh
	Emissions of GHGs other than CO <sub>2</sub> 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 <sub>2</sub> emissions using the Global Warming Potentials stated in the Report.
	Scope 1 CO <sub>2</sub> emissions	CO <sub>2</sub> emissions from the use of fuel + Emissions of GHGs other than CO <sub>2</sub>
	Scope 2 CO <sub>2</sub> emissions	CO <sub>2</sub> emissions associated with purchased electricity and heat
	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 in which the Panasonic Group owns cargo) Energy consumption in international logistics is also tabulated by adopting the concept specified in the guidebook.

	CO <sub>2</sub> emissions in logistics operations in Japan	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 4.6)" published by the Japanese Ministry of the Environment.
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 the amount of: shipped products + sub-materials + waste*. *The figure used for the amount of waste is that published in the Sustainability Data Book 2018 as waste or valuable items.
	Usage of recycled resin	Mass weight of recycled materials used in recycled resin, excluding new resin and newly mixed additives or fillers.
	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 final disposal) (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 all 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 recycled amount. (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).
Compliance	Number of violations	Number of violations of laws and regulations caused by our factories and products
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