Environmental Report - Contributions towards a Low-Carbon Society

■ Management Approach

The TEPCO Group, as members of the Electric Power Council for a Low-Carbon Society* , promotes low-carbonization of energy to achieve our voluntary goals, by such efforts as improvement of thermal efficiency at our thermal power generations and expansion of renewable energy.
*participation of 42 Japanese power operators in Japan (as of April 5, 2017), including the TEPCO Group
We will develop strategies for climate change including quantitative targets, taking into consideration of the condition of restart of nuclear power, which greatly contributes to CO2 reduction.

Major Initiatives

Segment	Details of installation
Power generation	installation of high-efficiency thermal power generation (MACII, IGCC, etc.), installation of renewable energy power generation
Power distribution	System development towards expanding renewable energy system, promoting installation of smart meters
Retail	Propose and provide optimal energy use for customers, promote dissemination of heat pumps and other high-efficiency equipment

<Voluntary goals by the Electric Power Council for a Low Carbon Society (ELCS)>

Goals premising of realization of Japan's FY2030 energy mix
(prospect of long-term energy supply and demand)

	FY2020	FY2030	FY2015 actual
Emission intensity (end use)	—	Approx. 0.37kg-CO2/kWh	0.531kg-CO2/kWh
Maximum reduction potential by adopting BAT during installation of new thermal power plants	Approx. 7 million t -CO2	Approx. 11 million t-CO2	Approx. 4.5 million t-CO2

■ Energy consumption within the organization

GRI 302-1

TEPCO Group energy consumption were as shown below.

FY2016 fuel consumption volumes

Application	Type	Fuel consumption volume
For power generation	Coal (1,000t)	8,137
	Heavy & crude oil (1,000 kL)	2,134
	Gas (LNG, city gas, etc.) (1,000t)	23,565
	Fuel for nuclear power generation (t)	No operational history
Heating and cooling , etc.	Electricity (1,000 kWh)	

*See Input/Output for details on amount of electricity purchased from other companies for sales, amount of Electricity sales, and amount of Gas sales.

FY2016 Energy consumption (buildings, etc.) incidental to overall TEPCO Group business activities

kL (crude oil equivalent)	GJ
40,828	1,582,500

Vehicle fuel efficiency

	FY2015	FY2016
Vehicle fuel efficiency (km/L)	13.0	12.3

■ Energy intensity

GRI 302-3

Thermal power generation efficiency (Lower- Heating Value)

	FY2015	FY2016
Thermal efficiency*(%)	48.2%	49.0%

*Figure indicates the ratio of fuel consumed at thermal power plants that was converted to electricity.

Energy consumption intensity for buildings, etc.*

	FY2015	FY2016
MJ/m2	-	1,427

*Energy consumption intensity
= office building energy consumption (MJ) / surface area of that office building (m2)
*Energy included in intensity is fuel, electricity, heating, and cooling.

■ Reduction in energy consumption achieved

GRI 302-4

Improvement of thermal efficiency of all thermal power plants by 1% has a CO2 reduction effect of 1.9 million tons.
From 2015 to 2016, thermal efficiency at thermal power plants was improved by 0.8%.

■Reductions in energy requirements of sold products and services achieved

GRI 302-5

Due to the characteristics of our business, the products and services we provide do not require energy consumption. Thus, there are no changes in energy requirements.

GHG emissions and energy consumption within the organization

GRI 305-1

■ GHG emissions (Scope 1)

		Unit	FY2015	FY2016	YoY
CO2	From power generation	Kt-CO2	91,300	88,900	-3%

* CO2 emissions are due to the consumption of fuel used for power generation at the TEPCO Group's thermal power plants.
* No CO2 emissions from bio-fuel

FY2016 SF6, HFC, and other GHG emissions incidental to TEPCO Group business activities

	Unit	FY2015	FY2016	YoY
HFC	Kt-CO2	3.0	4.0	33%
SF6 (Sulfur hexafluoride)	Kt-CO2	60.0	61.0	2%
Methane	Kt-CO2	0	0	–
N2O (Dinitrogen monoxide)	Kt-CO2	58.0	58.0	–
PFC	Kt-CO2	0	0	–

* No CO2 emissions from bio-fuel.
* We selected the stock equity method as the consolidation approach for the calculation of emissions.
* As a reference for calculation, we used the "System for Calculating, Reporting, and Publishing Greenhouse Gas Emissions" based on the Act on Promoting Global Warming Countermeasures.

GRI 305-2

■ GHG emissions (Scope 2)

CO2 emissions incidental to indirect energy consumption (buildings, etc.) for TEPCO Group business activities

		Unit	FY2015	FY2016	YoY
CO2		Kt-CO2	-	87.0	-

* CO2 emission is calculated using the energy consumption of the office buildings that are classified as 3300 in the industrial classification by the Act Concerning the Rational Use of Energy (Energy Conservation Act).
* We selected the stock equity method as the consolidation approach for the calculation of emissions.

GHG emissions and energy consumption within the organization

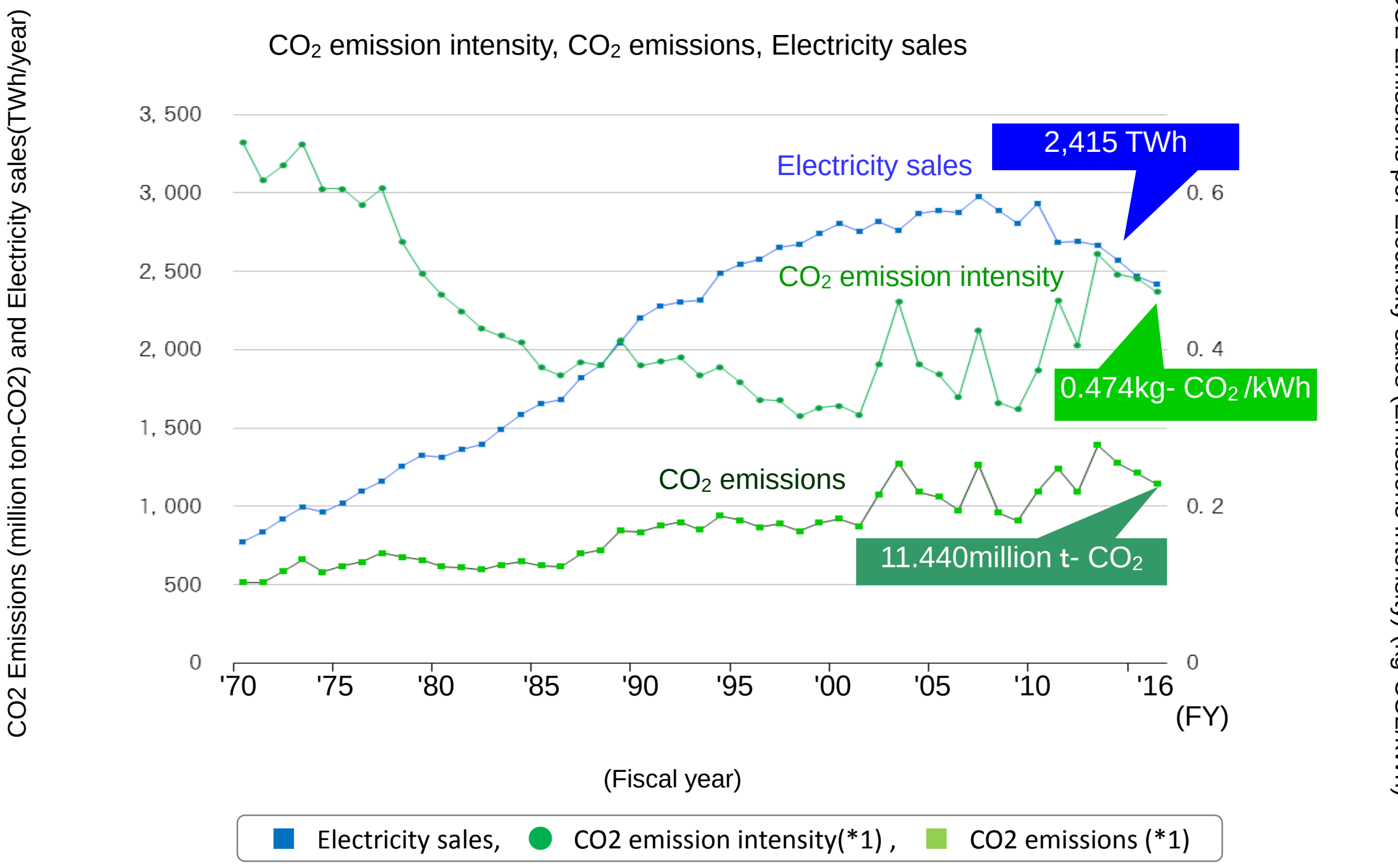
■ GHG emissions intensity

GRI 305-4,305-5

CO2 emission intensity and CO2 Emissions of TEPCO Energy Partners

	Unit	FY2015	FY2016	YoY
CO2 emission intensity	kg-CO2/kWh	0.491(0.5)	0.474(0.486)	-3%(△3%)
CO2 emission volume	Kt-CO2	121,40(12,360)	114,40(11,740)	-6%(△5%)
Electricity sales	TWh	247.1	241.5	-2%

(Notes)
- ( ) indicates CO2 emissions intensity and CO2 emissions prior to reflecting adjustments stipulated in the Feed-In Tariff for Renewable Energy based on the Act on Promoting Global Warming Countermeasures.
- Values in FY2015 is of TEPCO Inc., and values in FY2016 is of TEPCO Energy Partners Inc..
- The Feed-In Tariff stipulates that all power users bear surcharges to the electricity used, and thus all the environmental value be fairly distributed to power users. Values of CO2 emissions intensity and CO2 emissions are calculated in accordance with the provisions of the relevant regulation.
- The CO2 emissions is the emissions from the consumption of fuel used for power generation at thermal power plants, and includes electricity purchased from other companies.



(Note)
1. CO2 Emissions (* 1) and CO2 Emissions Intensity (* 1) are values without carbon credits.
2. TEPCO's CO2 emissions intensity values were calculated in accordance with the "System for Calculating, Reporting and Publishing Greenhouse Gas Emissions" based on the "Act on Promotion of Global Warming Countermeasures." The System does not take into account CO2 reduction values such as those created by tradable green certificates.

■GHG emissions and energy consumption outside of the organization

Energy Consumptions outside of the organization（Scope 3）

GRI 302-2,305-3

Energy consumed outside of the organization is extremely limited compared to internal energy consumption and there is no appropriate calculation method thus we eliminated energy consumption outside of the organization from calculation and reporting. Due to the characteristics of our products and services and the nature of our business, energy consumption is zero for (8) Leased Assets (Upstream), (9) Transportation & Distribution (Downstream), (10) Processing of Sold Products, (11) Use of Sold Products, (12) End-of-Life Treatment of Sold Products, (13) Leased Assets (Downstream), (14) Franchises

	Scope 3 Emissions Category	Energy Consumptions	Amount of Emissions (million ton-CO2)	Calculation Method
Upstream	①Purchased Goods & Services	n/a	n/a	
	②Captial Goods	n/a	18,823	Capital investments × Intensity *1
	③Fuel- and Energy- Related Activities Not Included in Scope 1 or 2	n/a	1,455	Electricity sales - Electrisity generated by the TEPCO Group × Intensity *1
	④Transportation & Distribution (Upstream)	n/a	7,094	Electricity sales (Generated by the TEPCO Group) × Intensity *2
	⑤Waste Generated in Operations	n/a	0.0473	Emissions from major industrial wastes (coal ash, desulfurized gypsum, decommissioned concrete pillars , metal dust , PCB etc, wastewater treatment sludge,Heavy, crude oil ash, shells, etc) × Intensity *3
	⑥Business Travel	n/a	n/a	
	⑦Employee Commuting	n/a	n/a	
	⑧Leased Assets (Upstream)	0	0	
Downstream	⑨Transportation & Distribution (Downstream)	0	0	
	⑩Processing of Sold Products	0	0	
	⑪Use of Sold Products	n/a	n/a	
	⑫End-of-Life Treatment of Sold Products	0	0	
	⑬Leased Assets (Downstream)	0	0	
	⑭Franchises	0	0	
	⑮Investments	n/a	n/a	

Note
We used the Emission Primary Unit Database for Calculating Organization Supply Chain Greenhouse Effect Gas Emissions (Ver. 2.3) (2016 Mar. MoE, METI).

*1: Emission intensity per capital asset value (electricity, gas, heat supply).
*2: Emission intensity at time of fuel procurement (electricity).
*3: Emission intensity by waste product type, treatment method.