Special Feature #1

Supply and Demand Initiatives for Controlling CO_2 Emissions

Using Nuclear Power to Reduce CO_2 Emissions

Genkai Nuclear Power Plant

Although renewable energies, such as solar and wind power, provide a means of controlling CO_2 emissions, one of the gases responsible for global warming, the power generation method which contributes significantly to reducing emissions, thanks to the fact that it generates no CO_2, and which is unaffected by the weather and produces a significant amount of energy, is nuclear power.

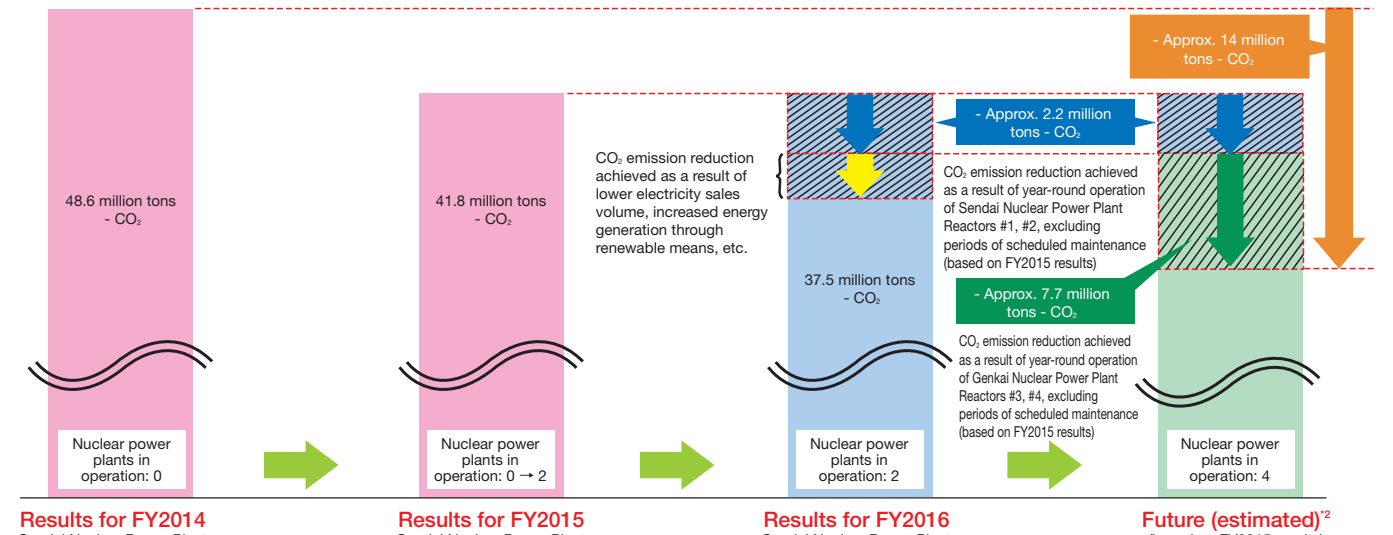
Kyushu Electric Power passed the new national control standards to return reactors #1 and #2 of the Sendai Nuclear Power Plant to normal operation in FY2015, and the continued, safe operation of these reactors in FY2016 (except during the schedule maintenance period) contributed to a large reduction in CO_2 emissions for the year.

And, in line with the global movement towards creating low-carbon societies, all members of the Kyushu Electric Power Group are working together in FY2017 to expedite the restarting of the Genkai Nuclear Power Plant.

Reduced CO_2 Emission as a Result of Nuclear Power

As a result of the stable, continuous operation (except during the schedule maintenance period) of reactors #1 and #2 of the Sendai Nuclear Power Plant during FY2016, the utilization rate of thermal power generation facilities decreased, resulting in approximately 2.2 million fewer tons of CO_2 being emitted compared with FY2015. Further, once reactors #3 and #4 of the Genkai Nuclear Power Plant are returned to normal operation, their impact combined with the impact of reactors #1 and #2 of the Sendai Nuclear Power Plant is estimated to total approximately 7.7 million*1 fewer tons of CO_2 emissions. A simple comparison with FY2014, when none of the nuclear power plants were operating, reveals that CO_2 emissions have been reduced by approximately 14 million tons*1, with roughly half of that due to nuclear power.

Thus, nuclear power is not only a cheaper and more reliable way of generating power, it is also an extremely effective means of reducing CO_2 emissions.



Results for FY2014
Sendai Nuclear Power Plant
Reactors #1, #2 inactive all year
Genkai Nuclear Power Plant
Reactors #3, #4 inactive all year

Results for FY2015
Sendai Nuclear Power Plant
Reactors #1, #2 restarted
(Reactor #1 in September,
Reactor #2 in November)
Genkai Nuclear Power Plant
Reactors #3, #4 inactive all year

Results for FY2016
Sendai Nuclear Power Plant
Reactors #1, #2 operated all year
(excluding periods of
scheduled maintenance)
Genkai Nuclear Power Plant
Reactors #3, #4 inactive all year

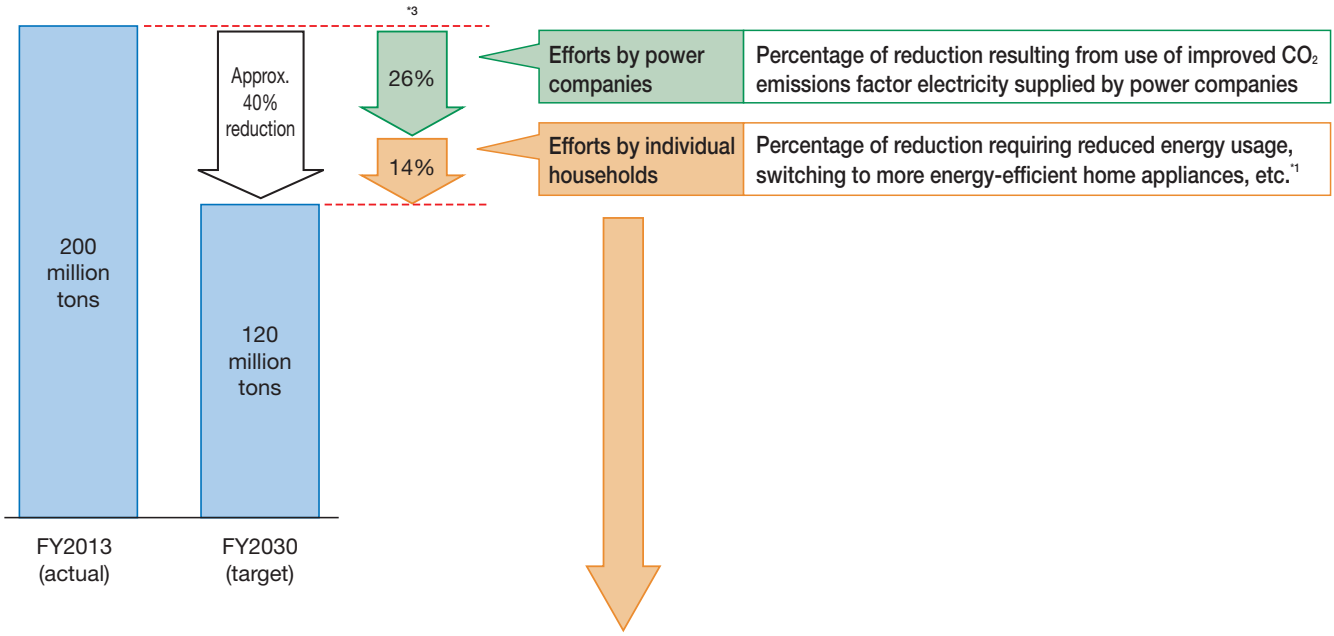
Future (estimated)*2
(based on FY2015 results)
Sendai Nuclear Power Plant
Reactors #1, #2 operated all year
(excluding periods of
scheduled maintenance)
Genkai Nuclear Power Plant
Reactors #3, #4 operated all year
(excluding periods of scheduled maintenance)

*1: Calculated using CO_2 emission volume per electricity sales volume for FY2016 (post-adjustment).
*2: Calculated using the power generation volume of Genkai Nuclear Power Plant Reactors #3, #4 in FY2010.

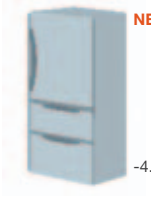
Need for Reduction in Household CO_2 Emissions

According to the Global Warming Prevention Plan drawn up by the government in May, 2016, a target reduction of around 26% for CO_2 emissions by FY2030 (compared with FY2013) has been set for the whole of Japan.
To reach this, households will need to reduce their CO_2 emissions by around 40%, relative to FY2013 levels. Approximately two-thirds (around 26%) of this can be achieved from reductions created by switching to low-carbon electrical power sources, such as nuclear power and renewable energies, however, the remaining one-third (roughly 14%) will require action on the part of each household, such as by reducing energy usage and switching to more energy-efficient home appliances[*1].

Household CO_2 Emissions [*2]



Amount of CO_2 Reduction Resulting from Home Appliance Usage or Replacement[*4]

	Refrigerator (410 - 450 L)	LCD TV (32-inch)	Air Conditioner (2.2 kW)	Subtotal	Total
Usage Improvement	• Do not overfill -0.7% • Only open when necessary -0.2% • Keep open for less time -0.1% • Appropriately set internal temperature -0.9% } -1.9%	• Turn off when not watching -0.3% • Appropriately set screen brightness -0.4% } -0.7%	• Set cooling temperature from 27°C to 28°C -0.5% • Use cooling only when needed -0.3% • Set heating temperature from 21°C to 20°C -0.8% • Use heating only when needed -0.6% } -2.2%	-4.8%	-14.3%
Replacement with High-efficiency Appliances*1	 NEW -4.8%	 NEW -2.0%	 NEW -2.7%	-9.5%	

[Source]
*1: Calculated using amount of CO_2 reduction assumed from replacing 2007 home appliances with 2015 home appliances, based on the 2016 Energy Saving Performance Catalog Winter Edition (December 2016, Agency of Natural Resources and Energy)
*2: Household CO_2 reduction volumes are taken from the Global Warming Prevention Plan (May 13, 2016, Ministry of the Environment)
*3: Breakdown of CO_2 reduction percentages taken from "Current Status and Challenges of Global Warming Prevention" (December 14, 2016), published by the Ministry of the Environment
*4: Amount of CO_2 reduction resulting from home appliance usage or replacement calculated based on the CO_2 reduction amounts used in the Global Warming Prevention Plan (May 13, 2016, Ministry of the Environment) and the home appliance-specific CO_2 reduction amounts used in the 2016 Energy Saving Performance Catalog Winter Edition (December 2016, Agency of Natural Resources and Energy)