Ministry of the Environment
Government of Japan

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Japan's Achievement for Climate Change after the Great East Japan Earthquake

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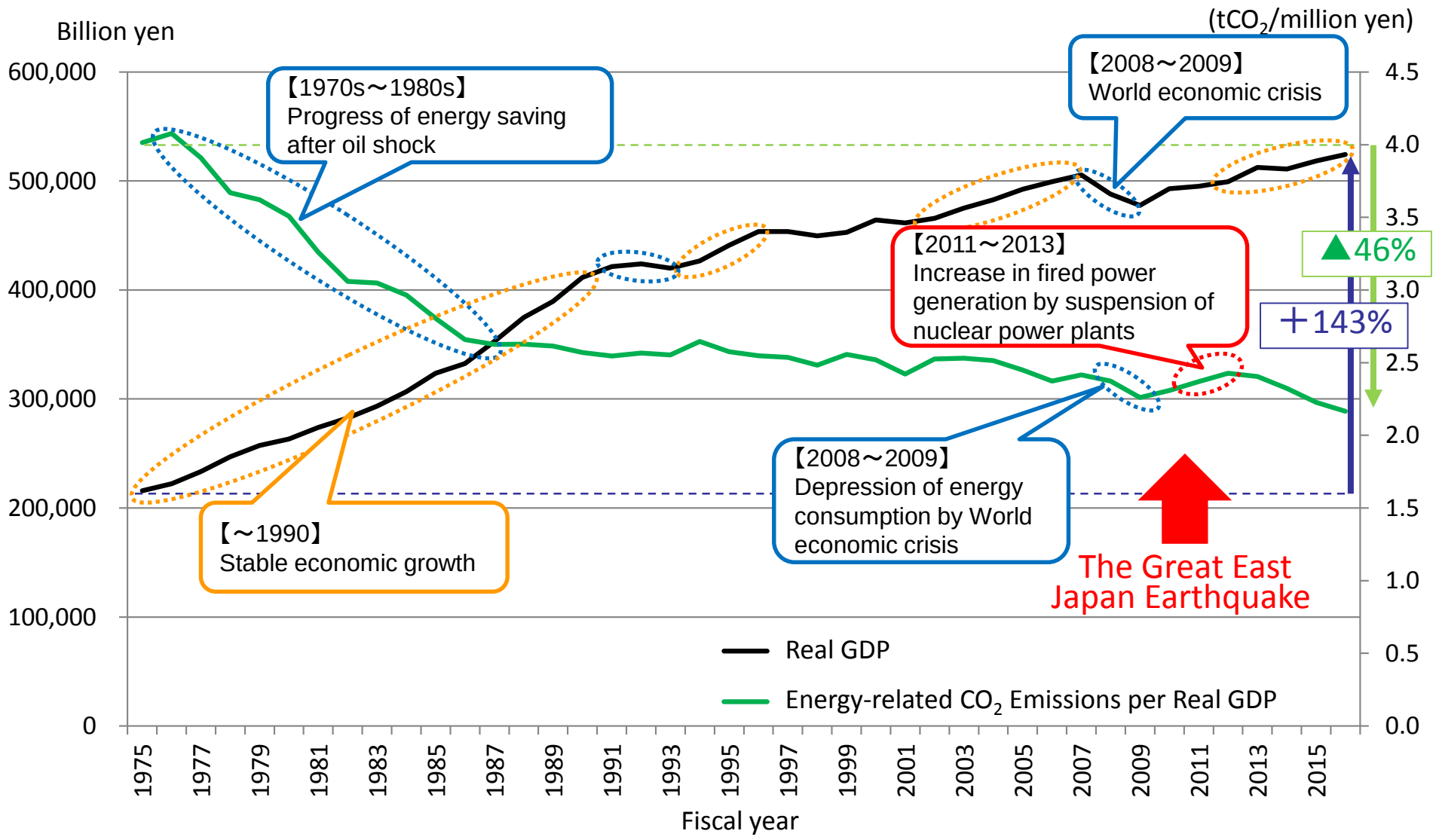
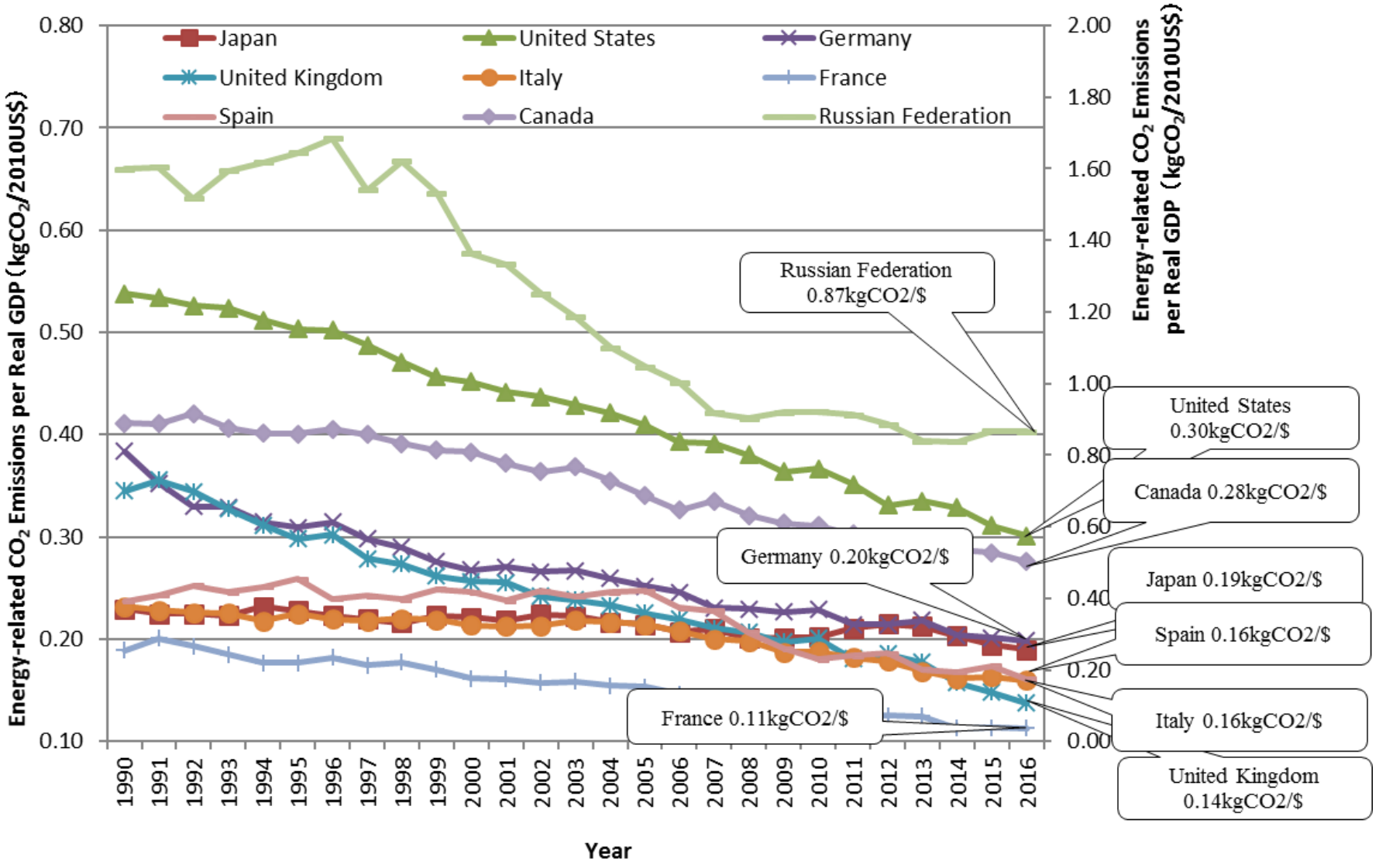
Japan's Real GDP and Energy-related CO_2 Emissions per Real GDP



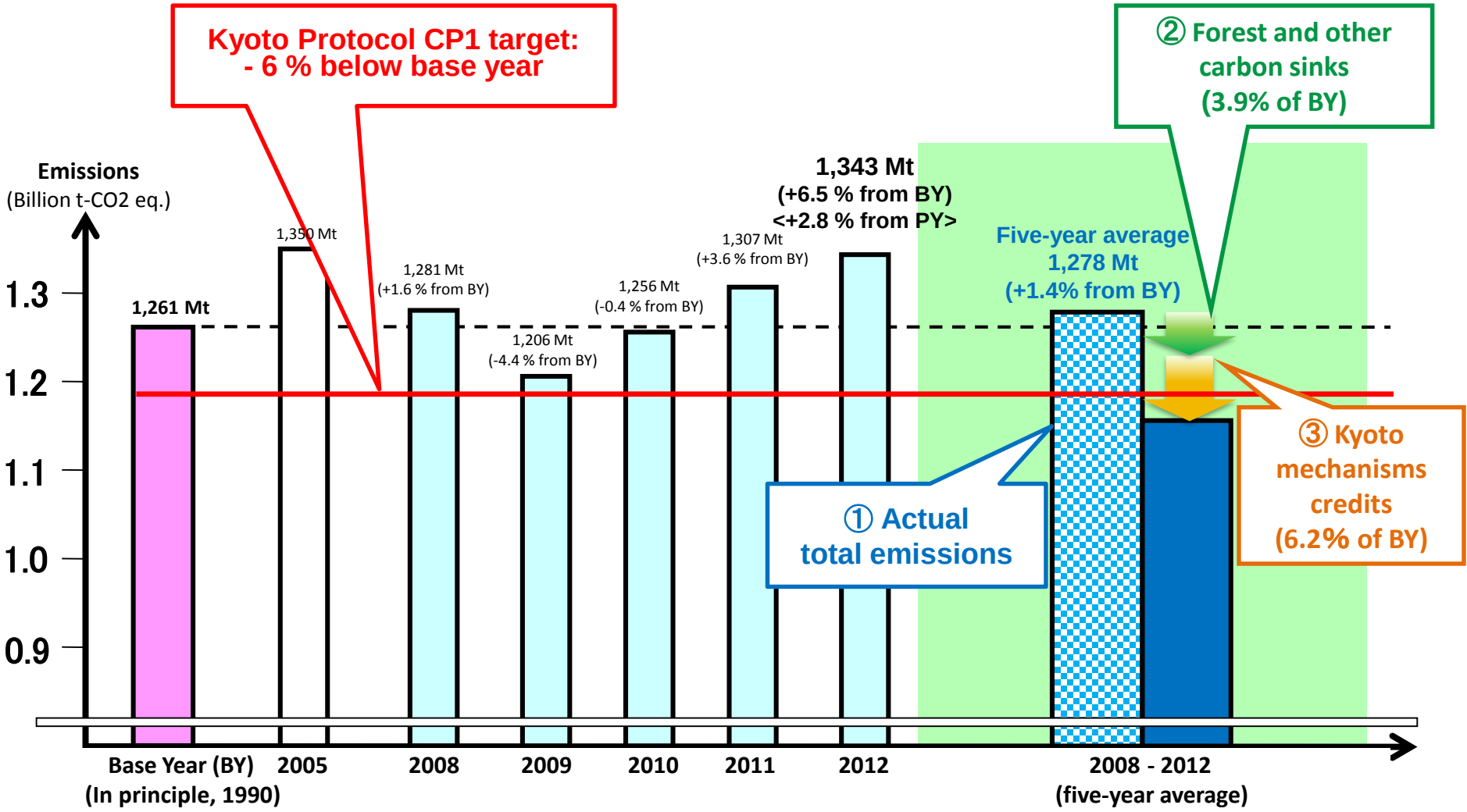
Each Countries' Energy-related CO_2 Emissions per Real GDP



※Real GDP calculated by 2010US$

※Right axis is dedicated for Russia.

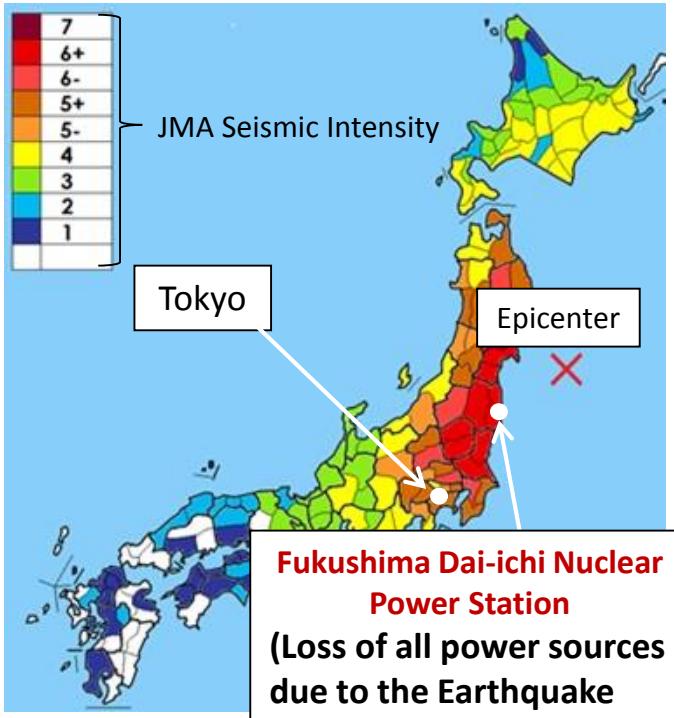
Achievement of First Commitment Period Target of Kyoto Protocol



Five-year average for total emissions after deduction of ② and ③ from ①
=- 8.7% from Base Year

The Great East Japan Earthquake

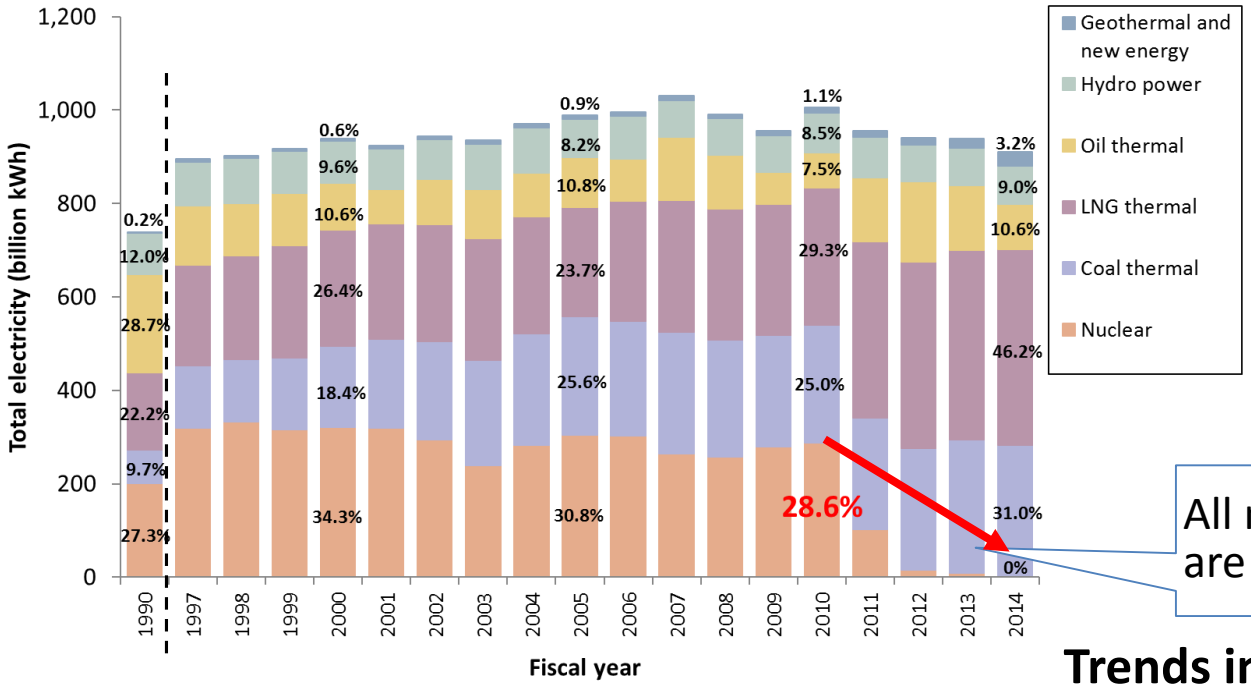
Date : 11 March 2011
Magnitude : 9.0 (the largest magnitude recorded in Japan's history)



Casualties (as of May , 2018)	**Dead: 19,630** **Missing: 2,569**
Housing damage (as of May , 2018)	Total collapse: **121,781** Half collapse: **280,962** Partial damage: **744,530**

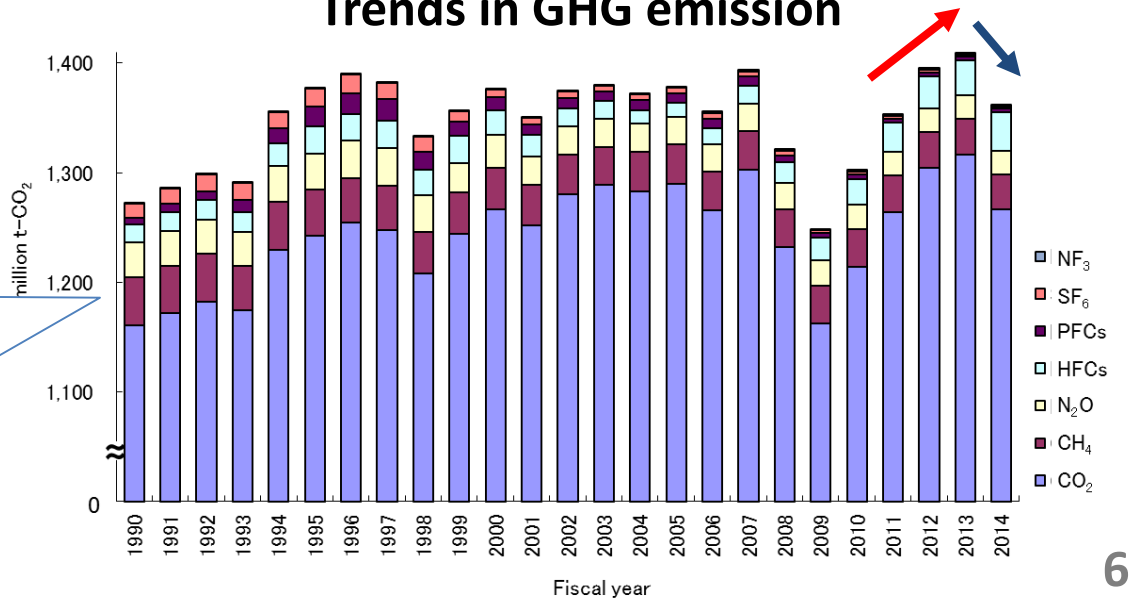
Change of National Circumstances after the Great East Japan Earthquake

Trends in Electricity generation per sources



All nuclear reactors (48 reactors) are suspended.

Trends in GHG emission



【2011～2013】
Increase by expansion of fossil fuel-fired power plants
【2014】
Decrease by progress with energy saving activities and renewable energy introduction

History of Climate Change Policies

2011

Great East Japan Earthquake (2011.3)

1st Commitment Period of the Kyoto Protocol (2008-2012)

Kyoto Protocol Achievement Plan (2005.4-)

2012

2013

Change of Administration (2012.12)

Principal Global Warming Policies for the Time Being (2013.3)

2014

Submission of 2020 target (2013.11)

Fourth Strategic Energy Plan (2014.4-)

2015

Submission of INDC (2015.7)

Long-term Energy Supply and Demand Outlook (2015.7-)

Adaptation Plan (2015.11-)

2016

COP21 Adoption of Paris Agreement (2015.12)

Plan for Global Warming Countermeasures (2016.5-)

2017

Enter into force of Paris Agreement (2016.12-)

2018

Climate Change Adaptation Act (2018.6)

Japan's 2020 Emission Reduction Target

- ✓ Japan's emission reduction target under the Cancun Agreement is -3.8% or more in FY2020 compared to FY2005 level.
- ✓ This target was resubmitted to the UNFCCC secretariat on May 13, 2016, taking into account the emission reduction effect resulting from nuclear power.

Emissions reduction target	3.8 % or more below the base year (FY2005)
Base year	FY2005 (*FY2005 for CO_2, CH_4, N_2O / CY2005 for HFCs, PFCs, SF_6 and NF_3)
Target year	FY2020
Gases covered	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3
GWP values	IPCC Fourth Assessment Report (AR4)
Sectors covered	Energy, Transport, Industrial Processes, Agriculture, LULUCF and Waste
Methodologies	2006 IPCC guidelines

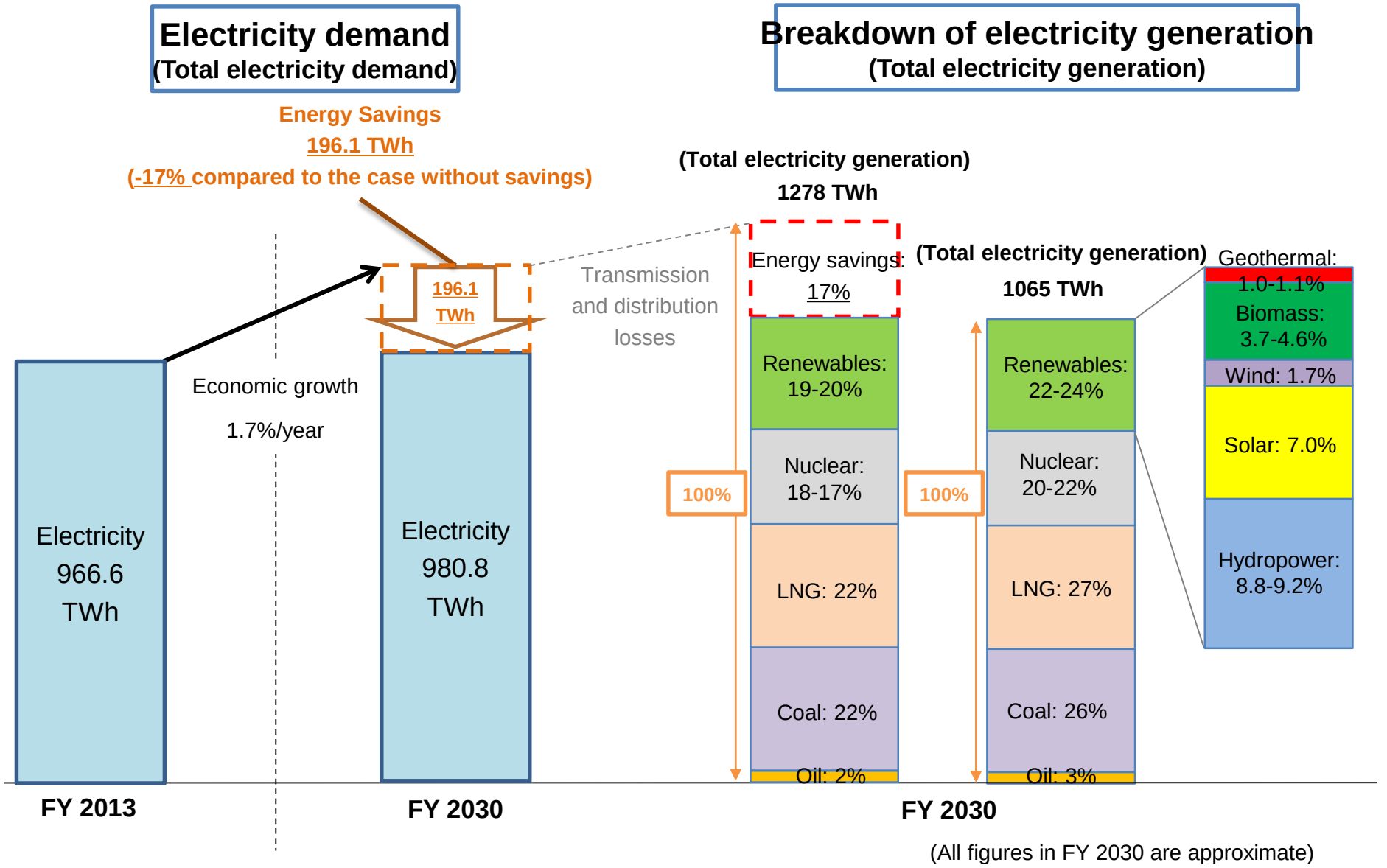
FY: Fiscal year (from April to March)
CY: Calendar year (from January to December)

Japan's 2030 Emission Reduction Target in its NDC

✓ Japan's Nationally Determined Contribution (NDC) under the Paris Agreement is at the level of a reduction of 26.0% by FY2030 compared to FY2013.

Emissions reduction target	-26.0 % below the base year (FY2013) (-25.4% below the base year (FY2005)
Base year	FY2013 and FY2005 (FY2013 is the base year mainly used for presenting Japan's NDC)
Target year	FY2030
Gases covered	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3
GWP values	100 year GWP in the IPCC Fourth Assessment Report (AR4)
Sectors covered	Energy, Industrial Processes and product use, Agriculture, LULUCF and Waste
Methodologies	Guidelines for National GHG inventories prepared by the IPCC and adopted by the COP

(Ref.) Composition of Electricity Generation Mix in FY2030



(All figures in FY 2030 are approximate)

Plan for Global Warming Countermeasures (May 2016)

Purpose of the Plan

Promote Japan's global warming countermeasures in a comprehensive and a well-planned manner

Contents

✓ Basic direction regarding the promotion of global warming countermeasures pursuing actions toward:

- National mid-term target : 26% reduction by 2030
- National long-term goal : aim for 80% reduction by 2050
- Global GHG reduction

✓ GHG reduction target

BY FY2030 : 26% (25.4%) reduction compared to FY2013 (FY2005)
BY FY2020 : 3.8% or more reduction compared to FY2005

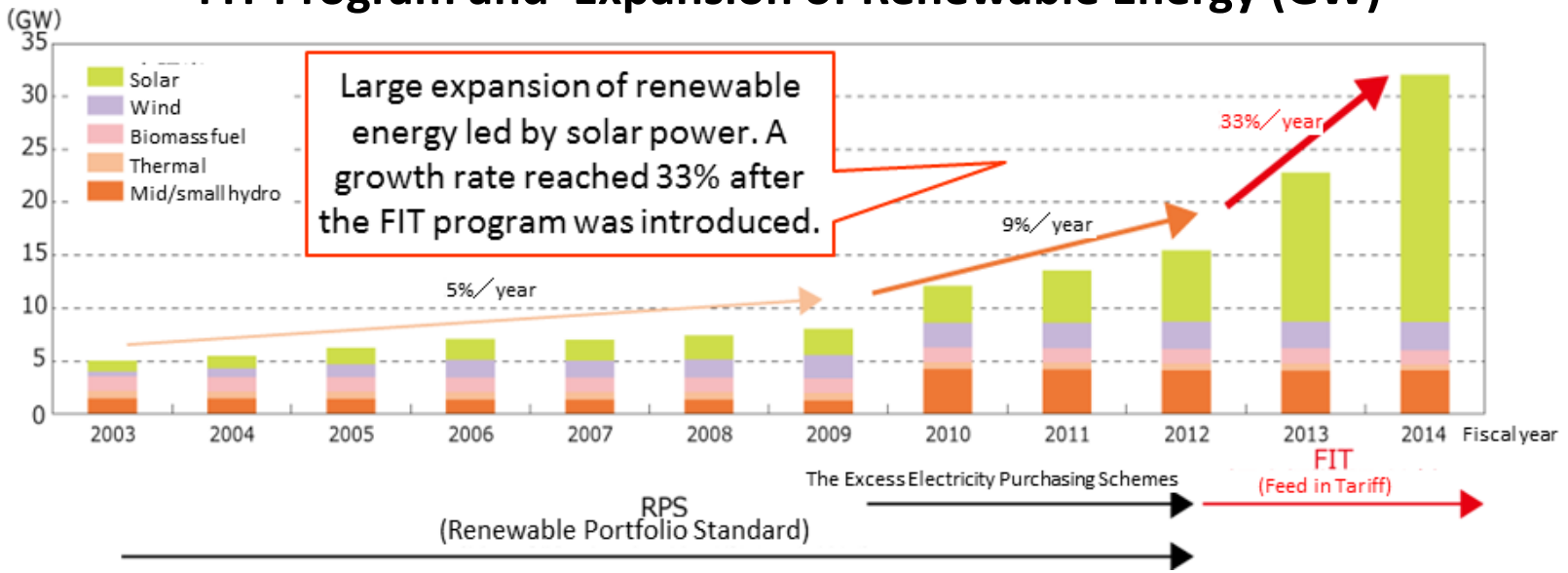
✓ Progress Management of the Plan

Progress review : every year
Revision consideration : every 3 years

✓ Polices and measures for achieving targets

Examples of Policies and Measures (Renewable Energy)

FIT Program and Expansion of Renewable Energy (GW)



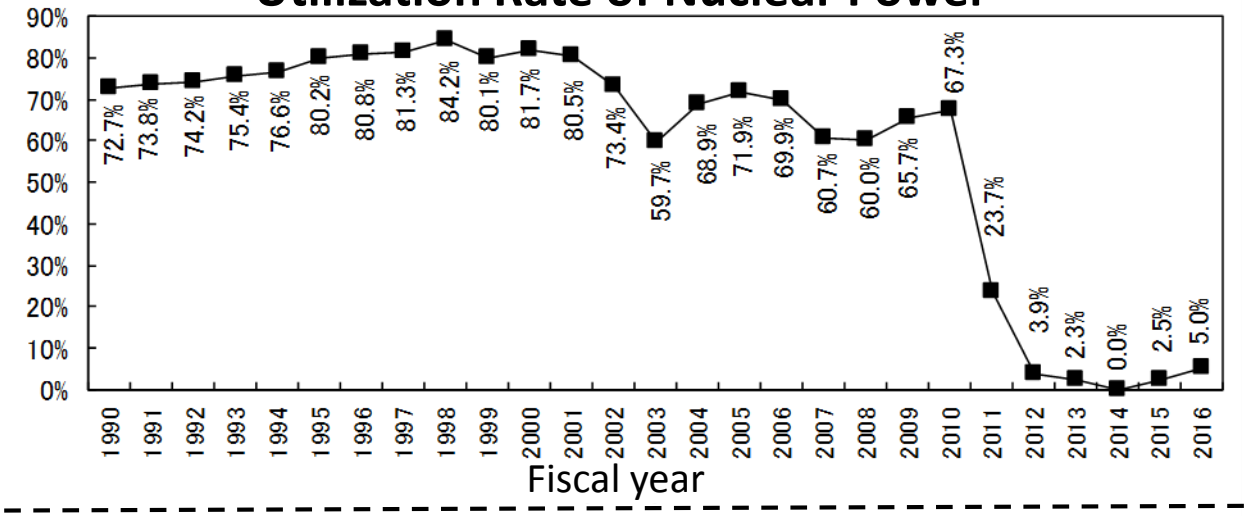
Floating Offshore Wind Power project (Goto-City, Nagasaki Prefecture)

- "Floating" Offshore wind power has more potential in Japan because there are few shallow water areas.
- Facility usage rate is over 30%.
- It survived the biggest typhoon since 1950 (wind speed: 53 m wind speed, wave height: 17 m)
- Fish gather around the turbines and the impact on the marine environment is small.

(Ref.) Nuclear Power

■ Utilizing nuclear power generation whose safety is confirmed

Utilization Rate of Nuclear Power



Situation of Nuclear Reactors' restart

Nuclear Power Plant		2015	2016	2017	2018
Sendai Nuclear Power Plant	Reactor No.1	8.11 Re-operation	10.6～12.8 Periodic inspection		1.29～ Periodic inspection
	Reactor No.2	10.15 Re-operation		12.16～2.26 Periodic inspection	4.23 Periodic inspection
Genkai Nuclear Power Plant	Reactor No.3			3.23 Re-operation	※
Takahama Nuclear Power Plant	Reactor No.3	1.29 Re-operation	1.29 Injunction	6.6 Re-operation	
	Reactor No.4	2.26 Re-operation	3.9 Injunction	5.17 Re-operation	5.14～ Periodic inspection
Ikata Nuclear Power Plant	Reactor No.3	8.12 Re-operation		10.3～ Periodic inspection	
Ohi Nuclear Power Plant	Reactor No.3				3.14 Re-operation
	Reactor No.4				5.11 Re-operation

Present

※ Periodic inspection: 3.31～5.16

Examples of Policies and Measures (Energy Saving①)

◆ Perform thorough energy conservation countermeasures to **reduce the energy demand by about 50.3 billion kL**.

◆ Realize **extensive energy efficiency improvement (about 35%) equivalent to that after the oil crisis.**

- Mandatory compliance with energy efficiency standards for newly constructed residential housing and buildings gradually by 2020
- Promotion of low-carbon buildings and acceleration of ZEB (Net Zero Energy Building)/ZEH (Net Zero Energy House). Achieve ZEB for the average of newly constructed buildings.
- Proliferation of energy-saving household appliances and OA equipment by the top-achiever standard, etc.
  - Share of highly efficient LED and organic EL (possession base) is almost 100%
  - Introduction of water heaters for business use: 7% (2012) → 44%
  - Residential fuel cells: 55,000 units (2012) → 5.3 million units
  - Residential heat pump type water heaters: 4 million units (2012) → 14 million units
  - Introduction of HEMS (Home Energy Management System) in all households
  - Introduction of BEMS (Building Energy Management System) in about 50% of buildings

Examples of Policies and Measures (Energy Saving②)

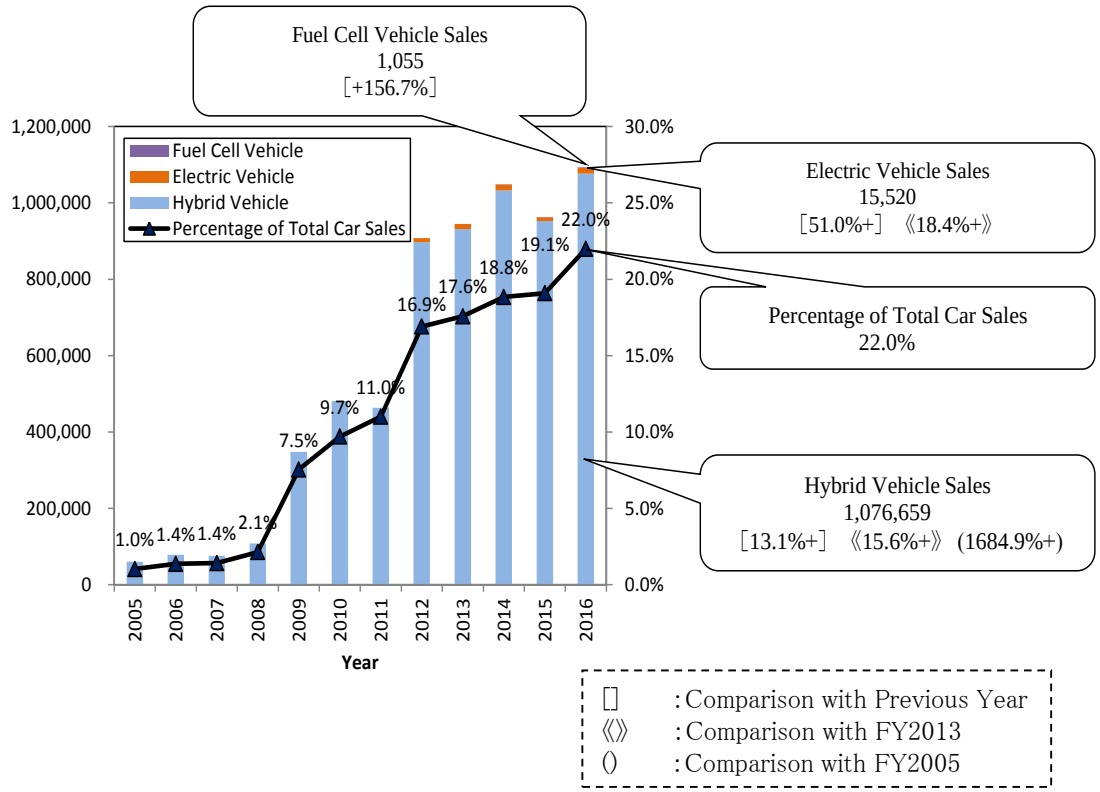
Target consumers who are purchasing new cars, implement the campaign to encourage them to purchase eco-cars, in collaboration with dealers and manufacturers. **This leads to the** choice or actions by consumers **to purchase eco-cars.**

Using a unified logo, start a campaign in collaboration with the people involved

[Unified logo]

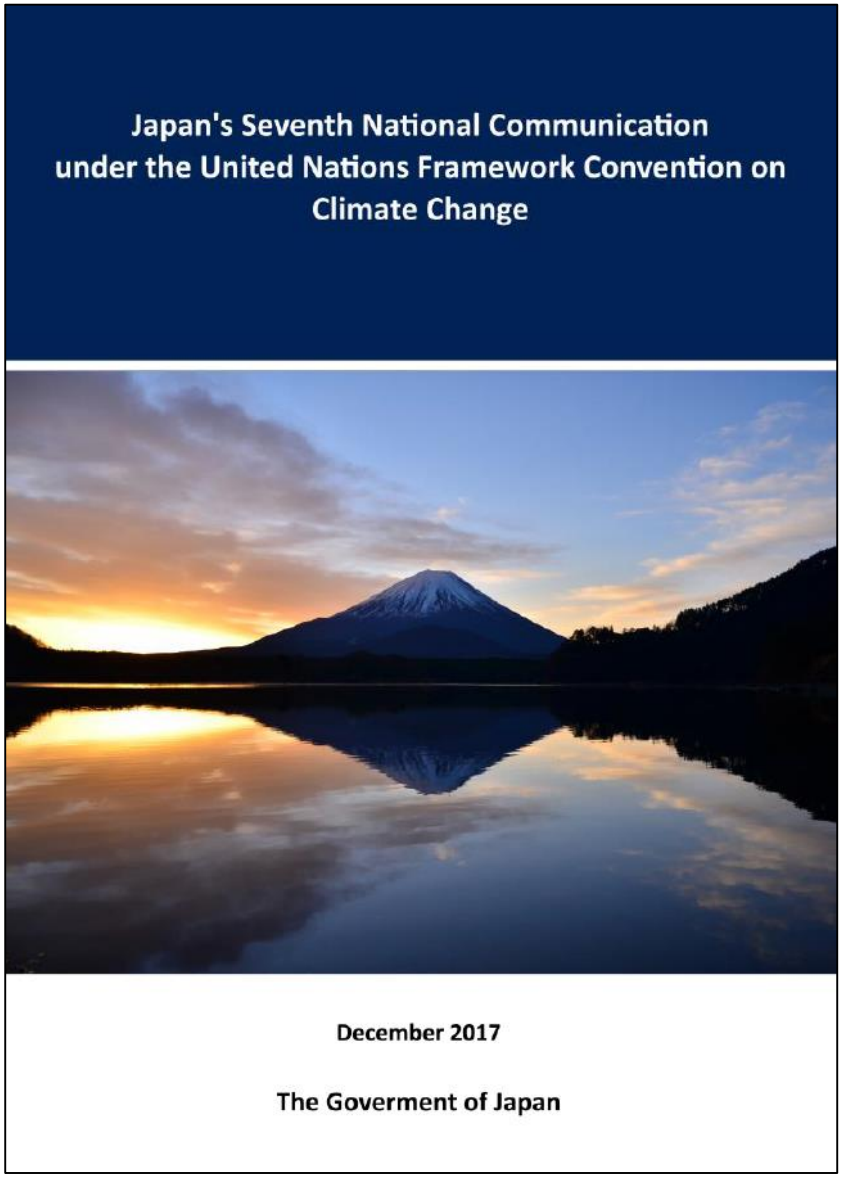
	Fuel efficiency standards in FY 2015		Fuel efficiency standards in FY 2020					EV etc.
	Less than +10%	Achieve more than +10%	Achieve	Achieve more than +10%	Achieve more than +20%	Achieve more than +30%	Achieve more than +40%	
FY 2017	No reduction	Reduction				Tax free/Tax exemption		
FY 2018	No reduction		Reduction				Tax free/Tax exemption	

[Eco-car tax breaks in FY 2017 and FY 2018]



[Trend of car sales about Hybrid Vehicle, Electric Vehicle and Fuel Cell Vehicle]

National Communication 7 (December 2017)



【Contents of National Communication 7】

Chapter 1:
NATIONAL CIRCUMSTANCES RELEVANT TO GREENHOUSE GAS EMISSIONS AND REMOVALS

Chapter 2:
INFORMATION ON GREENHOUSE GAS EMISSIONS AND TRENDS

Chapter 3:
POLICIES AND MEASURES

Based on "Plan for Global Warming Countermeasures"

Chapter 4:
PROJECTIONS

Chapter 5:
VULNERABILITY ASSESSMENT, CLIMATE CHANGE IMPACTS, AND ADAPTATION MEASURES

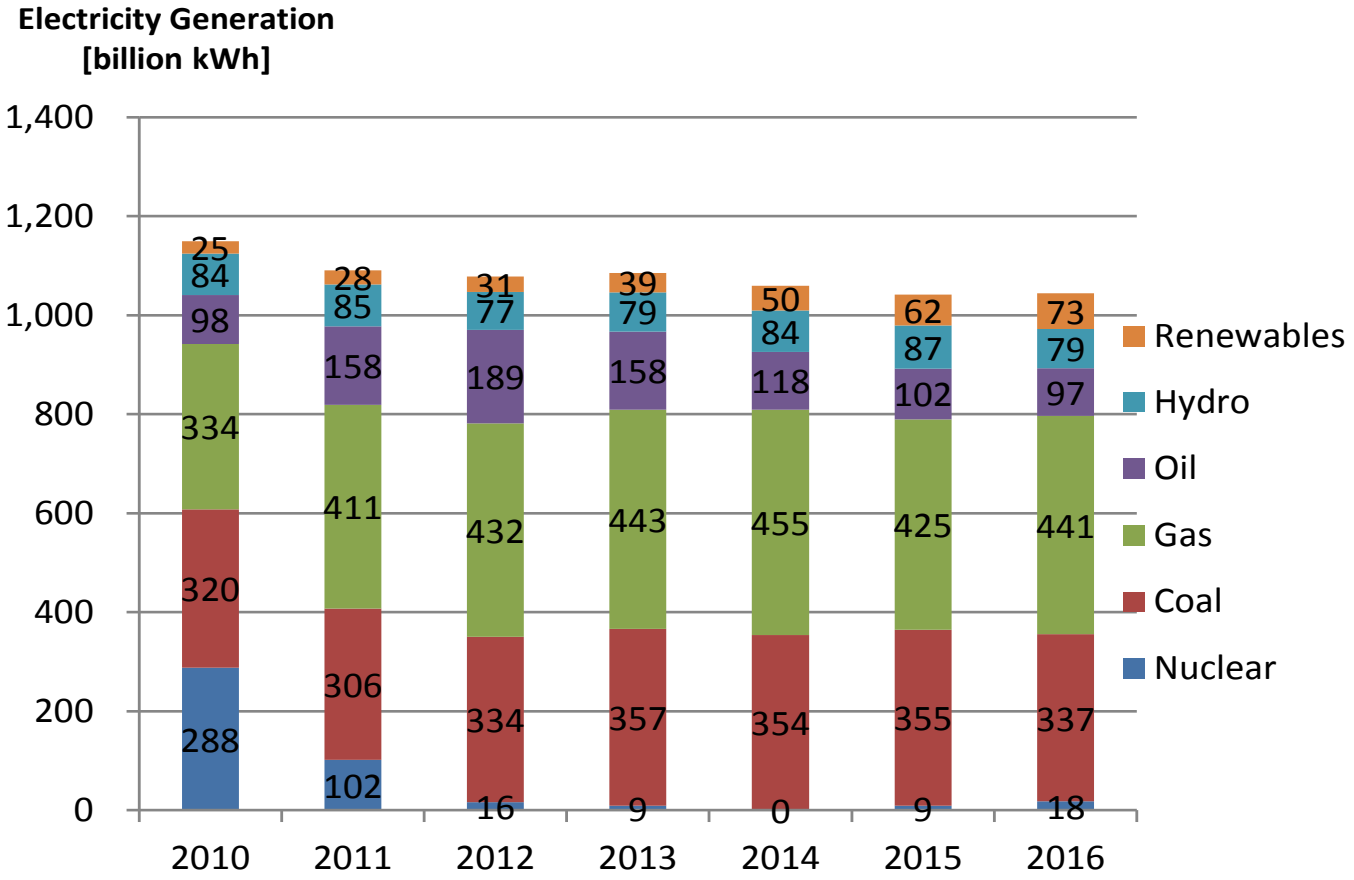
Chapter 6:
FINANCIAL, TECHNOLOGICAL AND CAPACITY-BUILDING SUPPORT

Chapter 7:
RESEARCH AND SYSTEMATIC OBSERVATION

Chapter 8:
EDUCATION, TRAINING, AND PUBLIC AWARENESS

http://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/79481053_japan-nc7-1-japan_nc7.pdf

Electricity Generation per Source and CO_2 emission factors from electricity consumption

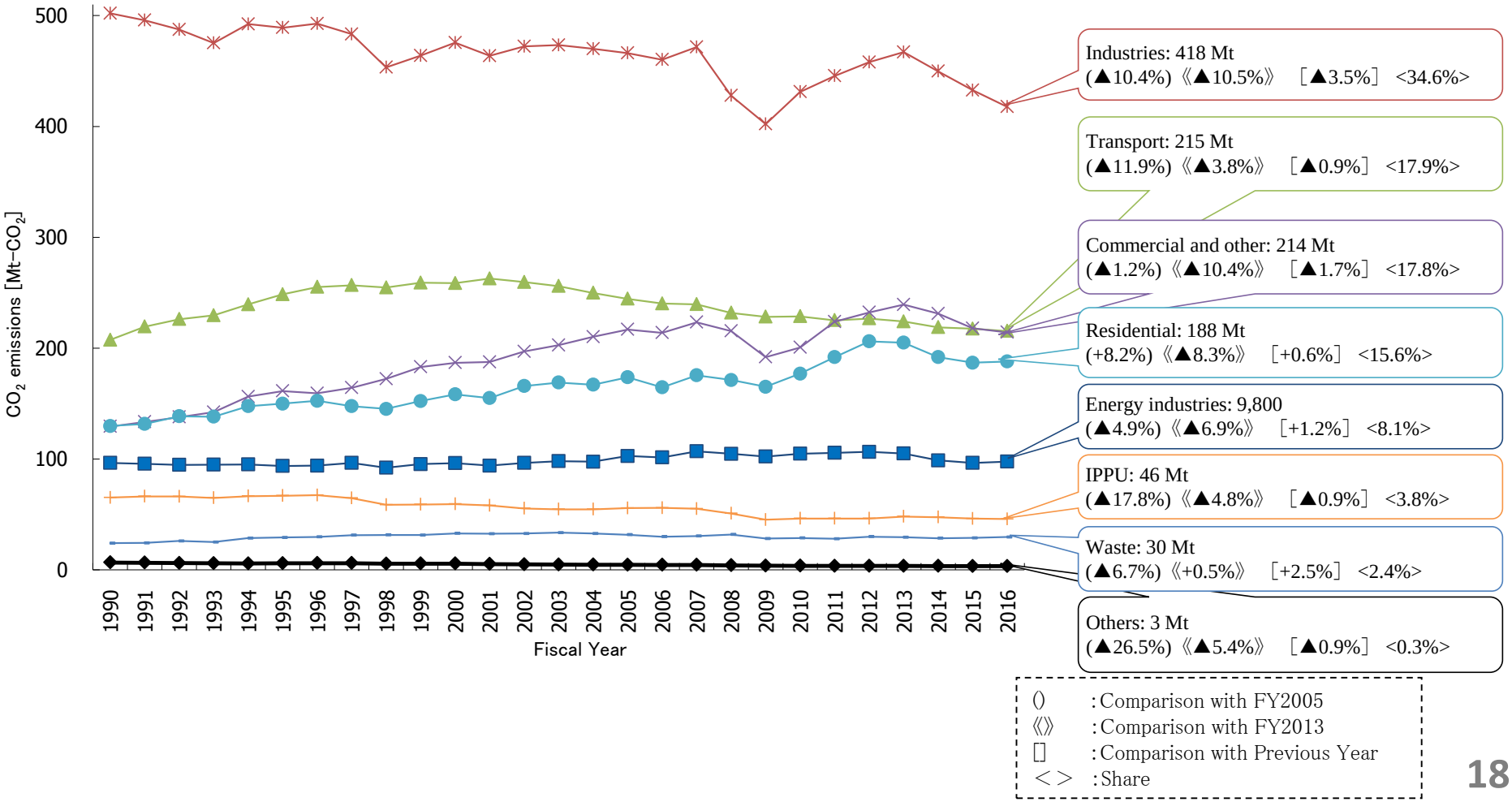


	2010	2011	2012	2013	2014	2015	2016
Renewable and Hydro Rate (%)	9.6	10.4	10.0	10.9	12.6	14.3	14.5
Nuclear Rate (%)	25.1	9.3	1.5	0.9	0	0.9	1.7
Electricity emission factor※ ($kgCO_2$/KWh)	0.43	0.51	0.55	0.57	0.55	0.55	0.53

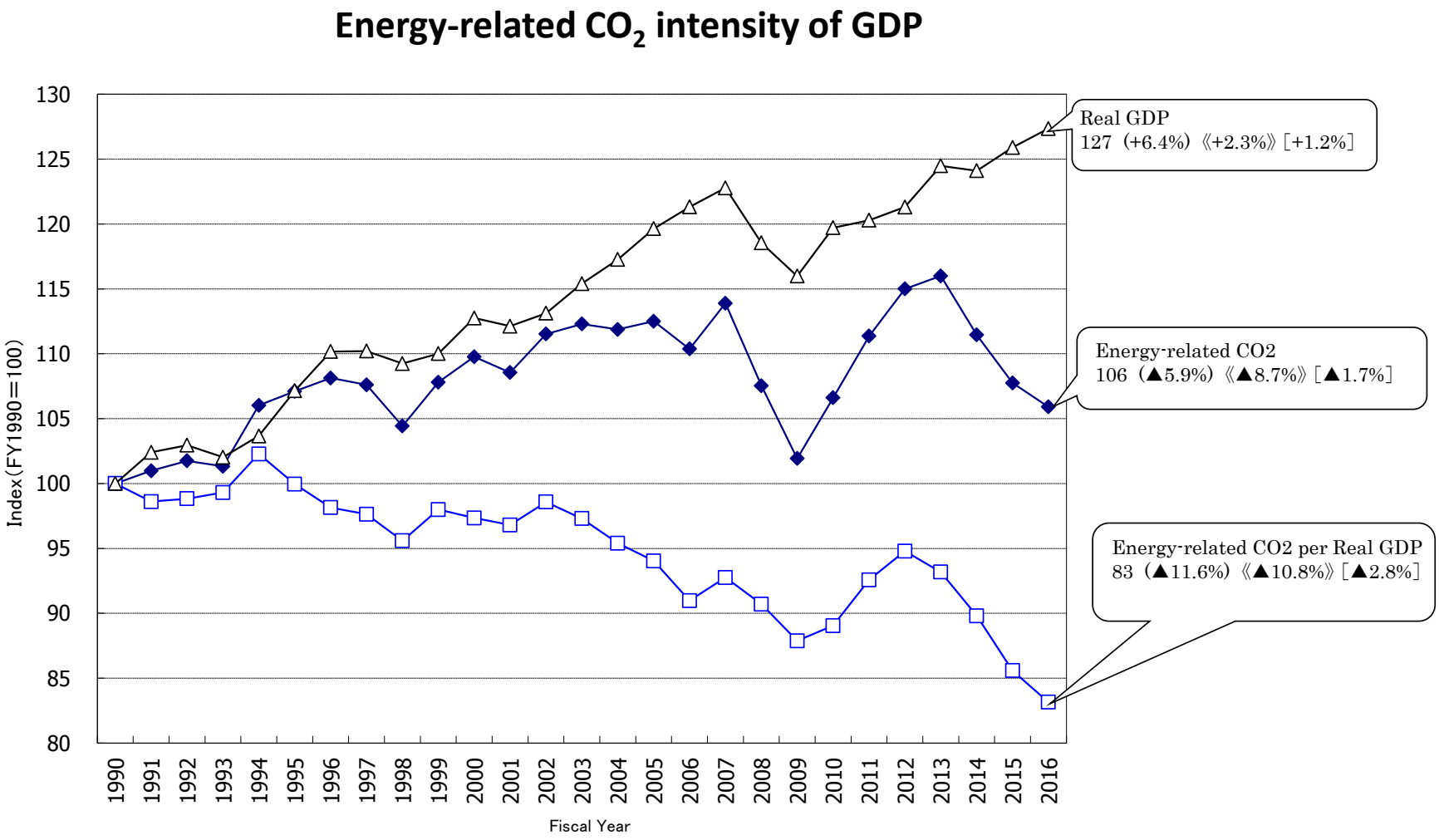
※Electricity emission factor was calculated by dividing total emissions from electricity by the total amount of electricity consumption .

CO_2 Emissions by Sector

- Total emissions in FY2016 were 1,307 million Mt CO2 eq., a 1.2% decrease compared to those of FY2015; a 7.3% decrease compared to FY2013; and a 5.2% decrease compared to FY2005.
- Japan has reduced its GHG emissions for three years in a row since 2014.



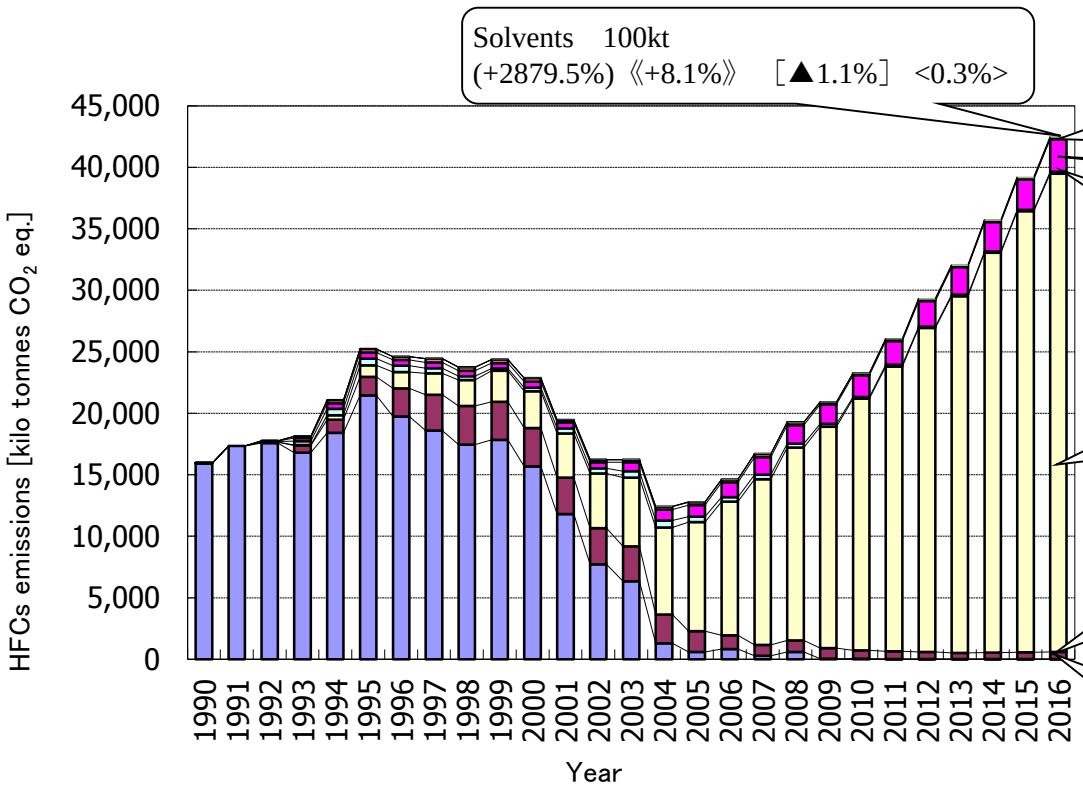
GDP and Energy-related CO_2 Emissions



() : Comparison with FY2005
《》 : Comparison with FY2013
［］ : Comparison with Previous Year

HFCs Emissions

HFCs emissions 42,500 kt CO_2 eq.
(+232.6%)≪+32.5%≫[+8.3%]



Solvents 100kt
(+2879.5%)《+8.1%》 ［▲1.1%］ <0.3%>

Semiconductors and Liquid crystals 100kt
(▲47.4%)《+6.9%》 ［+3.7%］ <0.3%>

Foam blowing agents 2,700kt
(+182.8%)《+18.9%》 ［+6.7%］ <6.2%>

Fluorochemical production (Fugitive Emissions) 100kt
(▲66.9%)《+13.3%》 ［+79.1%］ <0.3%>

Refrigeration and air conditioning 38,900kt
(+338.3%)《+34.1%》 ［+8.4%］ <91.5%>

Aerosols 600kt
(▲67.2%)《+13.5%》 ［+2.8%］ <1.3%>

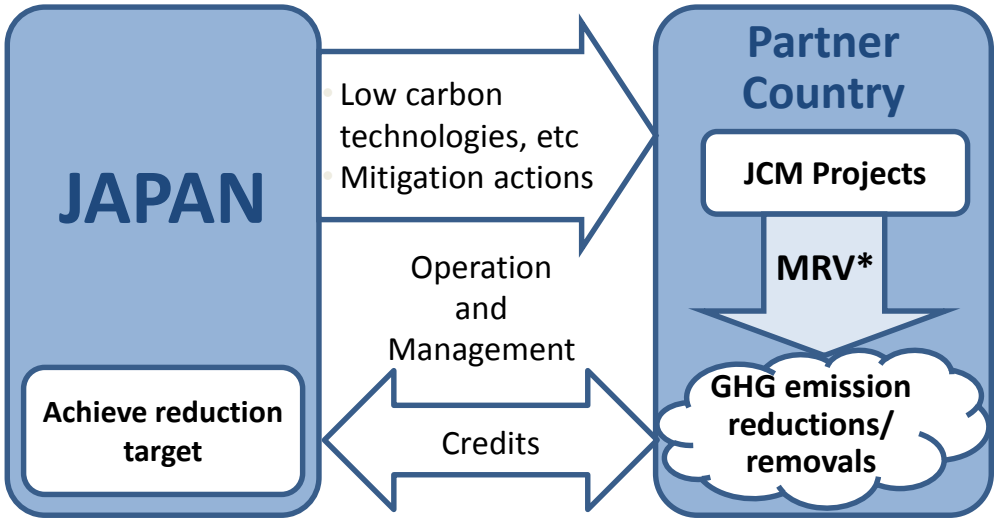
Fluorochemical production (By-product Emissions) 20kt
(▲96.0%)《+45.5%》 ［▲20.0%］ <0.1%>

() :Comparison with FY2005
《》 :Comparison with FY2013
［］ :Comparison with Previous Year
＜＞ :Share

Examples of International Cooperation (Joint Crediting Mechanism (JCM))

Progress:

- 17 partner countries with more than 120 projects in the pipeline whose potential emission reductions accumulated to be about 700 million t-CO_2 by 2030
- 10,764 credits issued from 11 projects
- 29 projects registered
- 53 MRV* methodologies approved



MRV: measurement, reporting and verification

(Example of pipeline projects)

【Waste heat recovery in cement industry】
(Indonesia)
122,000tCO2/y.
Start operation: Dec. 2017

【Waste to Energy plant】
(Myanmar)
4,732tCO2/y.
Start operation: Apr. 2017

【Co-Generation Plant】
(Thailand)
7,308tCO2/y.
Start operation Apr. 2018

【Low carbon hotel by development of BEMS】
(Viet Nam)
605tCO2/y.
Start operation: Jan. 2017

Summary

- Japan had addressed GHG emission reduction and energy saving, such as the dramatic progress of energy saving after oil shock and the achievement of first commitment period target of Kyoto Protocol.
- However, the Great East Japan Earthquake occurred in 2011 brought down the change of our energy structure, in addition to the enormous damage.
- After the earthquake, we decided the Plan for Global Warming Countermeasures to achieve our mid-term target of a reduction of 26.0% by FY2030 compared to FY2013.
- Based on the plan, we are proceeding the various measures, and has reduced our GHG emissions for three years in a row since 2014.
- Including the measure for HFCs, we continue to make further efforts by reducing GHG emissions both at home and abroad.

Thank you