



Ministry of the Environment
Government of Japan

Japan's Climate Change Policies

18th Mar. 2014

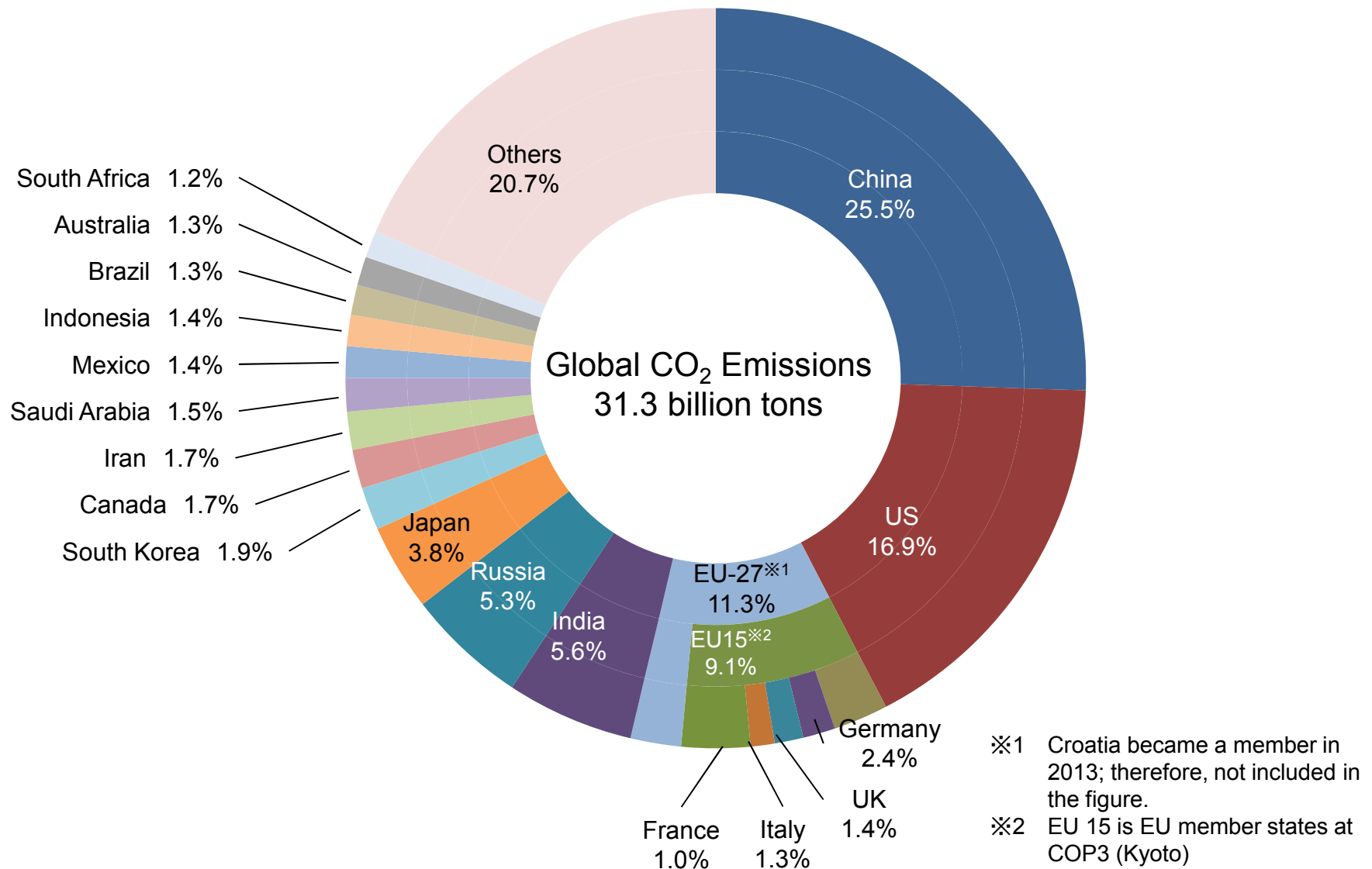
Ministry of the Environment, Japan

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Japan's Greenhouse Gas Emissions in Global Context

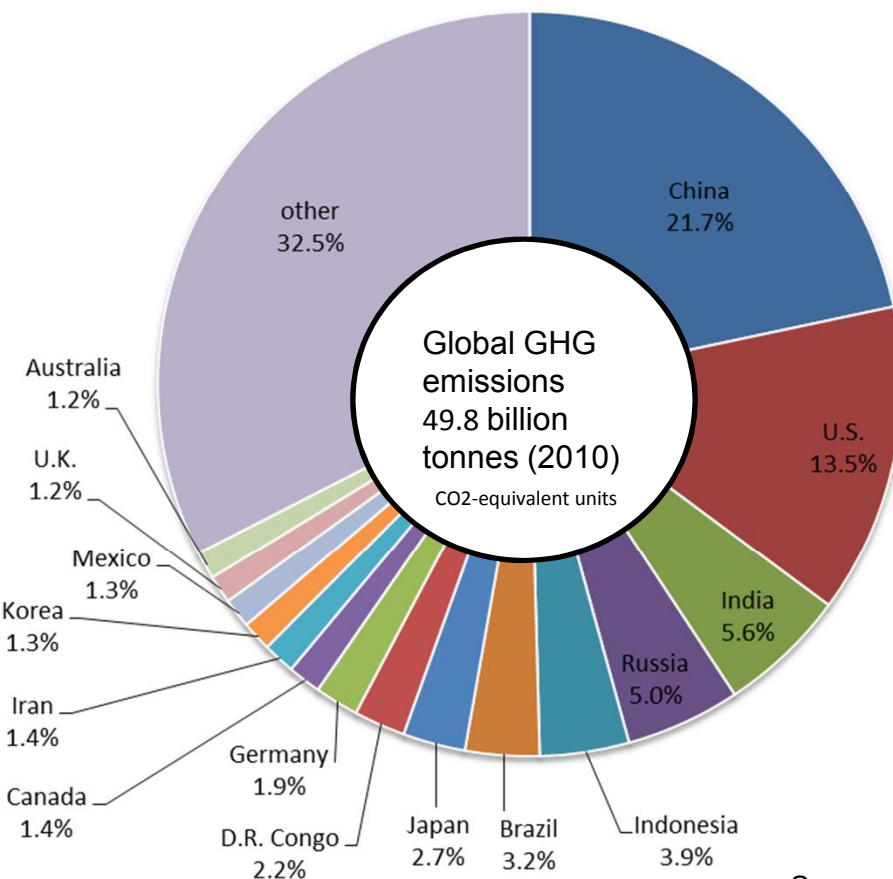
Global CO₂ Emissions (2011)



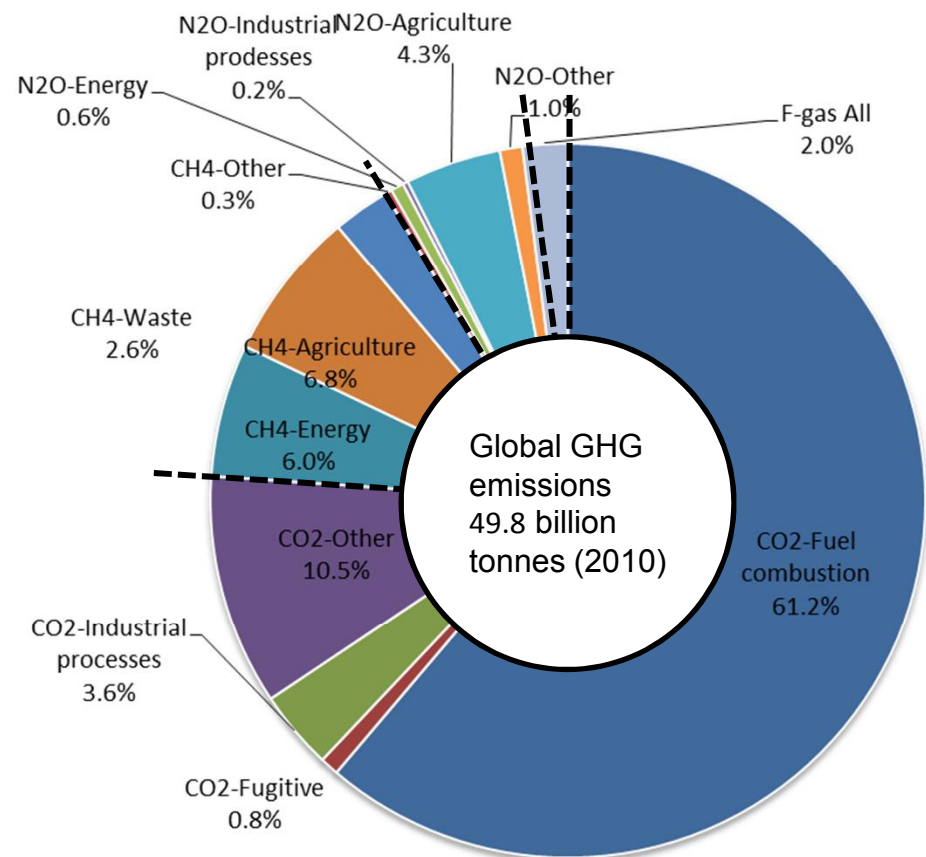
Global GHG Emissions (2010)

- ✓ Global GHG emissions in 2010 is approximately 49.8 billion tonnes of CO₂ eq.
- ✓ **China and U.S. emit more than one-third** of total global GHG emissions
- ✓ Share of **CO₂ from fuel combustion is more than 60%** in total global GHG emissions

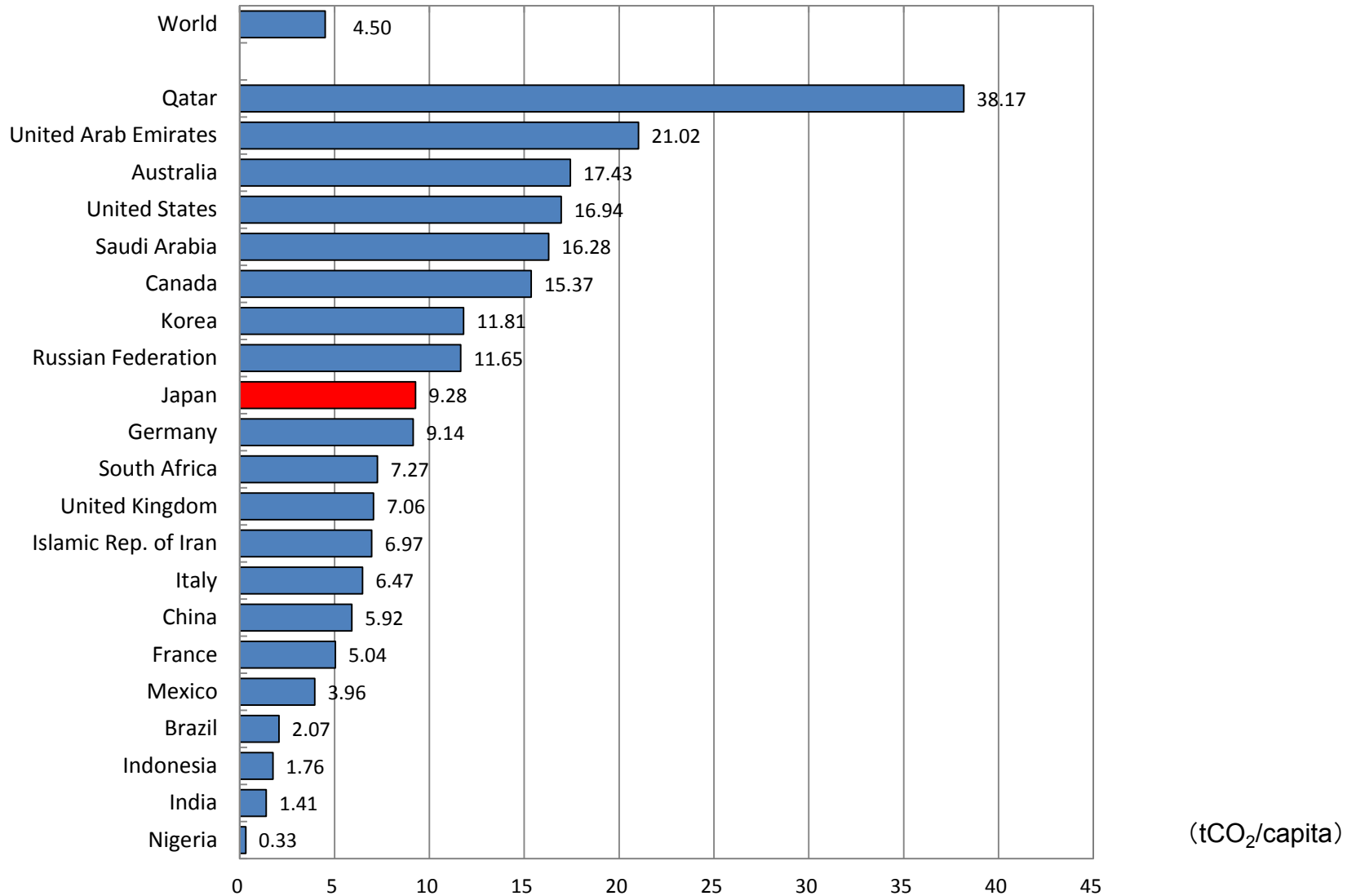
Global GHG emissions by countries in 2010



Global GHG emissions by gas/source in 2010

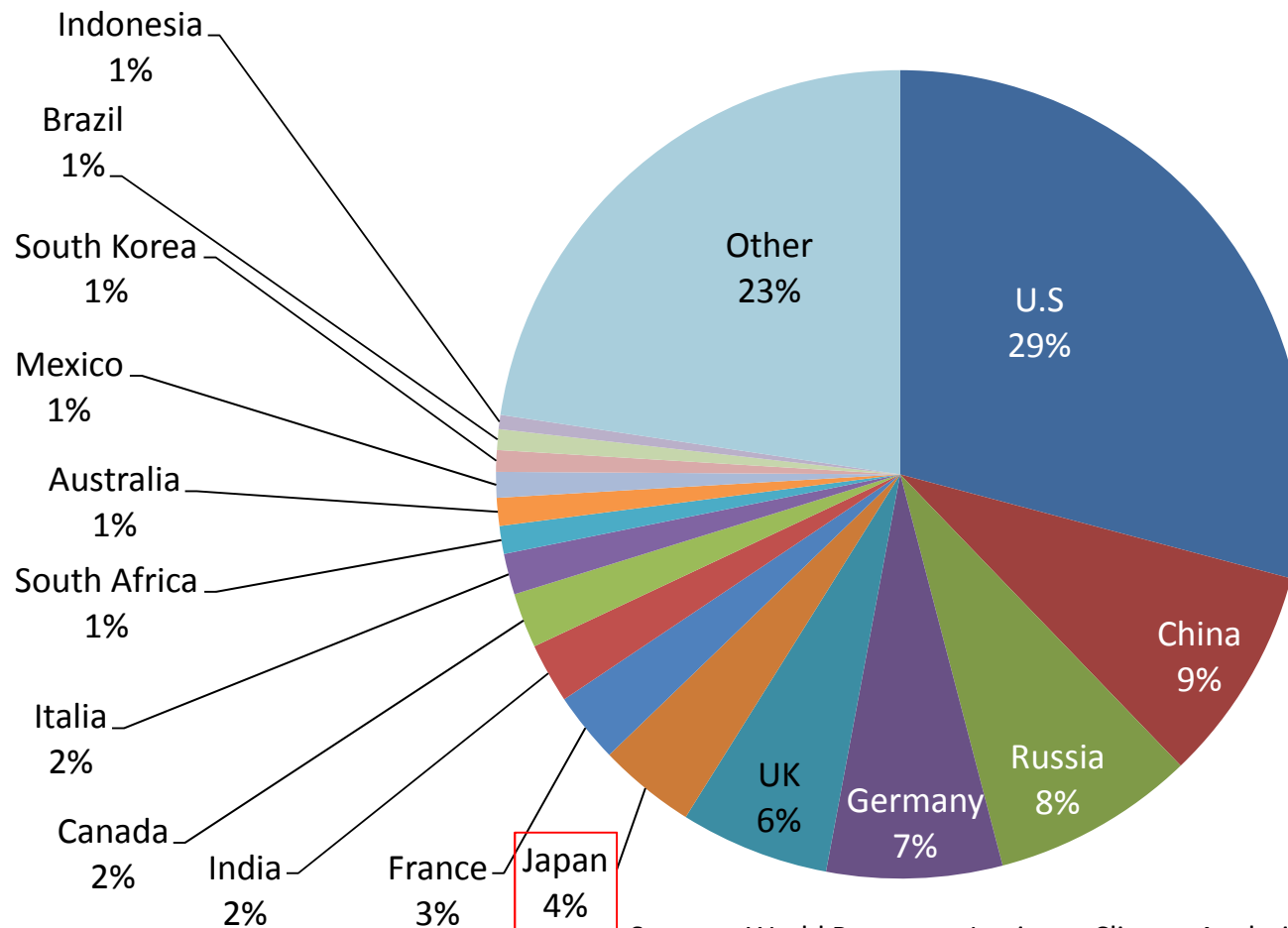


CO₂ Emissions per Capita by Country (2011)



Cumulative CO₂ Emissions after Industrial Revolutions (1850-2006)

- ✓ U.S accounts approx. 30%. 75% of emissions are from developed countries (Japan: 4%)
- ✓ China, India, South Africa and Mexico account 9%,2%,1% and 1% respectively.

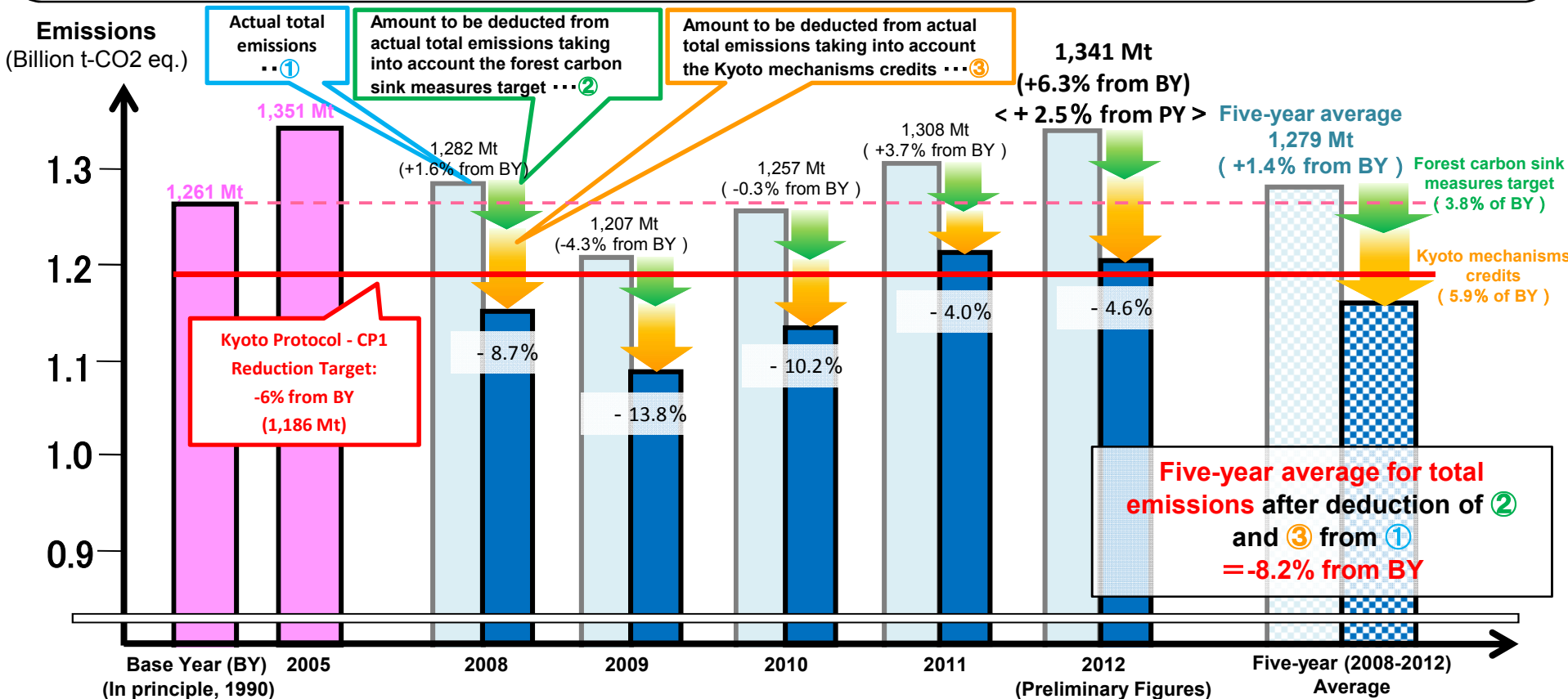


Sources: World Resources Institute, Climate Analysis Indicators Tool

Japan's Greenhouse Gas emissions

Japan's Greenhouse Gas Emissions and Achievements Status for Emission Targets under the Kyoto Protocol

- Japan's total greenhouse gas emissions (preliminary figures) in FY2012 were **1,341 Mt CO₂ eq.** (an increase of 6.3% compared to the base year (BY) and 2.5% compared to the previous year (PY))
- If the **forest carbon sink measures target¹** is achieved and **Kyoto mechanisms credits²** are taken into account, the five-year average for total emissions during the first commitment period (CP1) of the Kyoto Protocol (FY2008-FY2012) shows an 8.2%³ decrease compared to the total emissions of the base year; therefore, it is estimated that Japan will have achieved its target for the CP1 of the Kyoto Protocol (-6 % below base year level).



1: Forest carbon sink measures target: About 3.8% (47.67 Mt CO₂/yr.) of the base year emissions according to the Kyoto Protocol Target Achievement Plan.

2: Kyoto mechanisms credits:

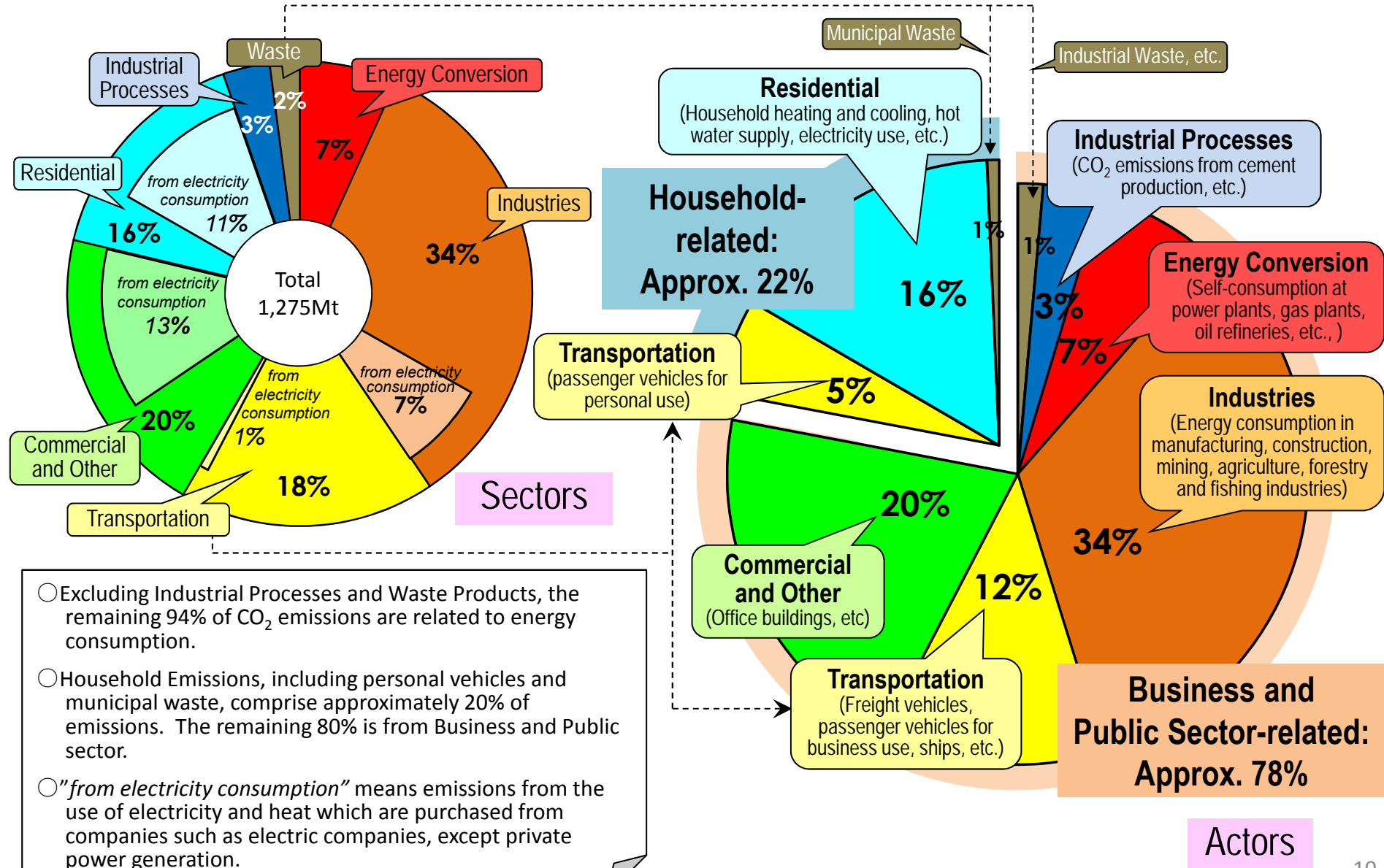
Acquired by the government: Total credits that were contracted as of FY2012 year-end through the Kyoto Mechanisms Credit Acquisition Program (97.528 Mt) divided by 5 (yrs.)

Acquired by the private sector: The amount of credits that were acquired by the Federation of Electric Power Companies of Japan (According to the Environmental Action Plan by the Japanese Electric Utility Industry [FY2009 to FY2013])

3: Total emissions and removals for the Kyoto Protocol target will be finalized after the technical review process under the Kyoto Protocol and the Convention to be conducted in FY2014. Also, the Kyoto mechanisms credits will be finalized after the true-up period for the first commitment period (expected to be completed in the second half of 2015 or later).

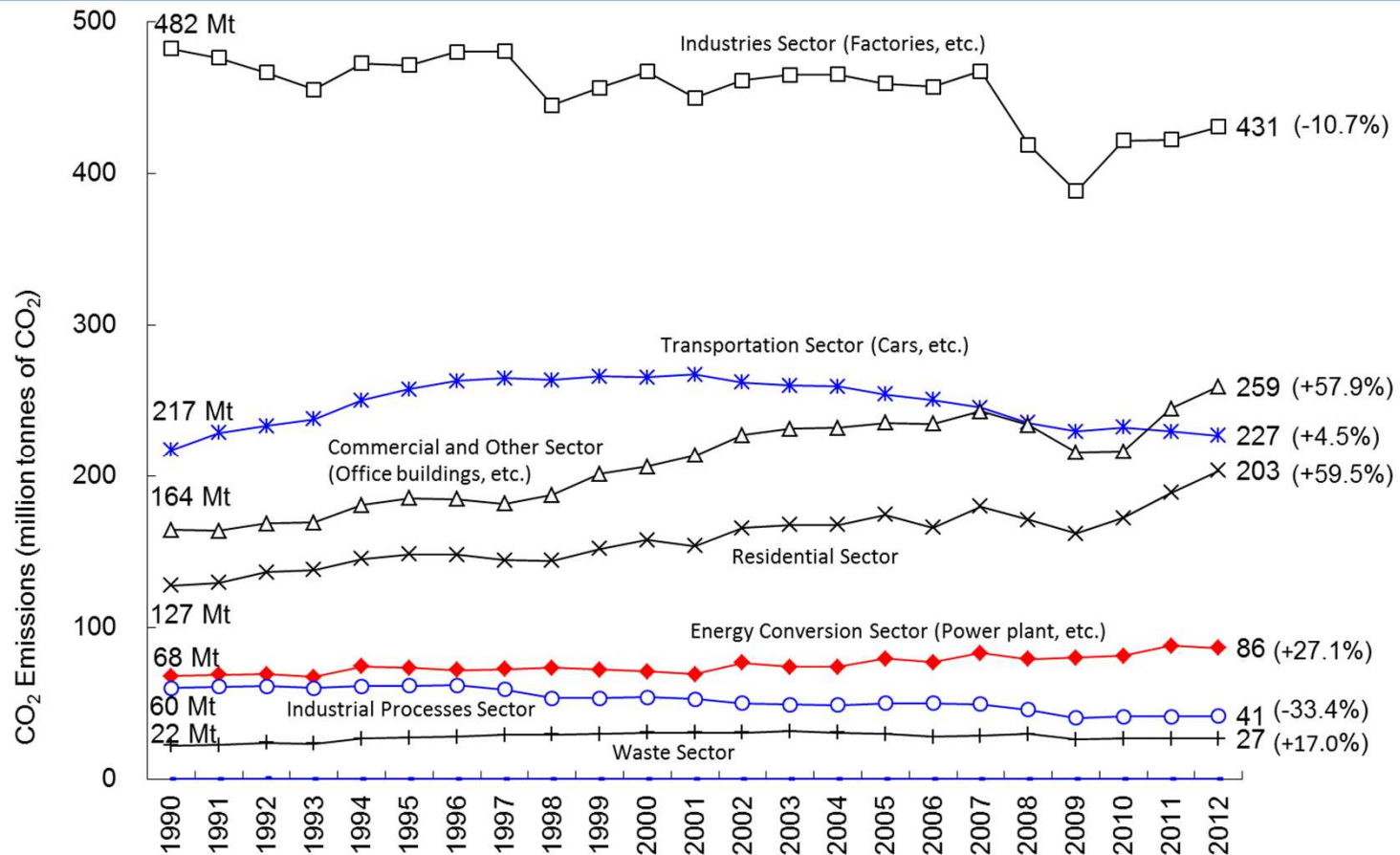
CO₂ Emissions by Sectors and Actors (2012)

(Preliminary figures)



Trends in Energy oriented CO2 emissions by sector

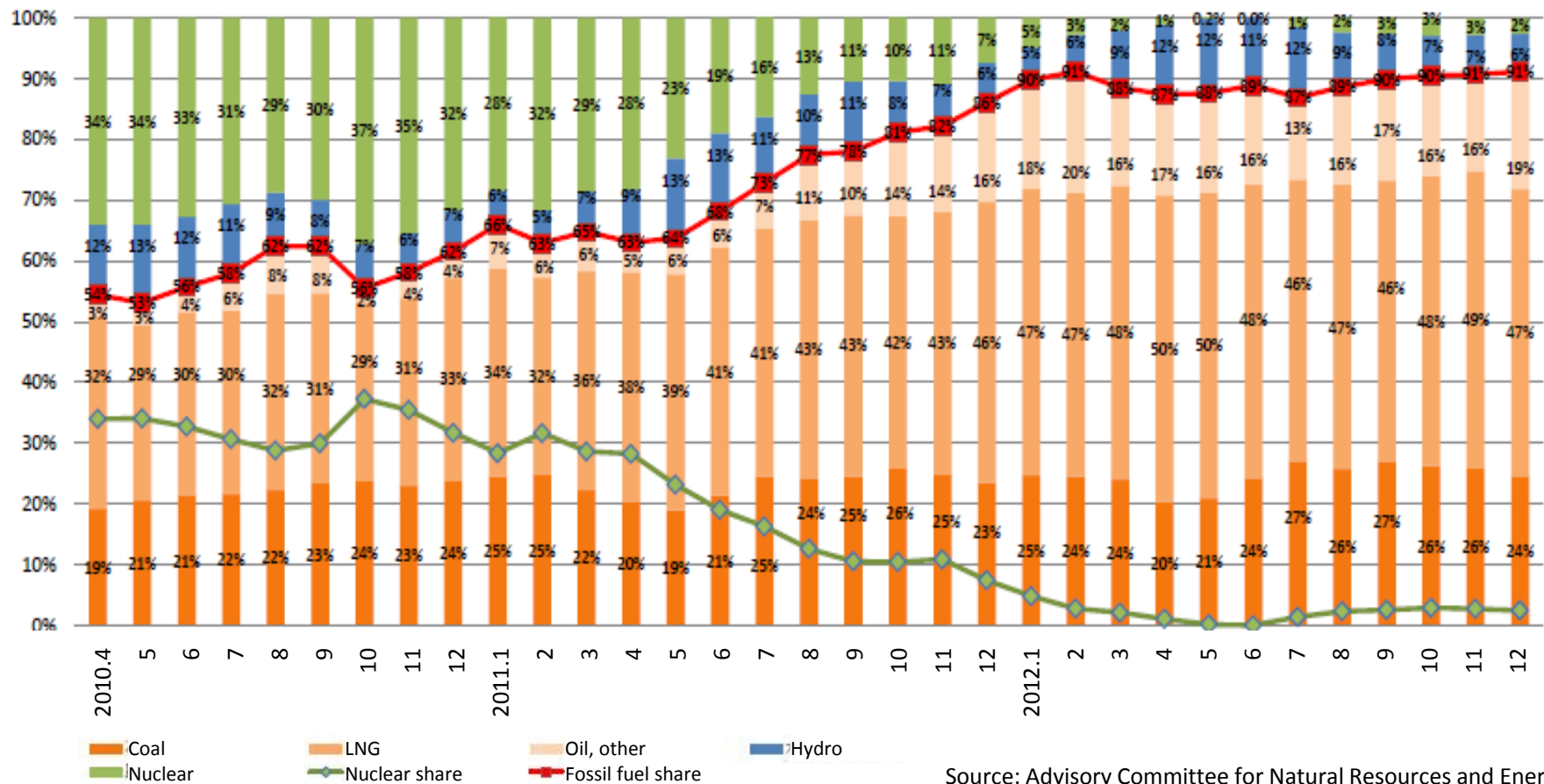
- CO2 emissions from industries sector have been **decreasing** as production volume dropped **because of financial crisis in late 2008**.
- CO2 emissions from transportation sector have been **decreasing** by means **of improvement in transportation efficiency** etc.
- CO2 emissions from commercial and other sector have been **increasing** by **expanding floor area** as well as **worsening emission factor** due to the increase in fossil fuel, power generation share after the earthquake.
- CO2 emissions from residential sector have been **increasing** by growth in energy use in response to **increasing number of household** as well as **worsening emission factor** due to the increase in fossil fuel power generation share after the earthquake
- Emissions from energy conversion sector (power plant etc.) have been increasing in response to energy demand increase such as electricity.



Change in energy mix for power generation after the earthquake

- After the earthquake disaster, nuclear power plants have been shut down for maintenance, and the share of the nuclear power generation dropped drastically. (Oi nuclear power plant No.3 and 4 were restarted in July 2012)
- On the other hand, power generation from fossil fuel reached approximately 90% of total domestic power generation, including 50% from LNG power plant.

Trends in energy mix for power generation (General/Wholesale Electric utility)

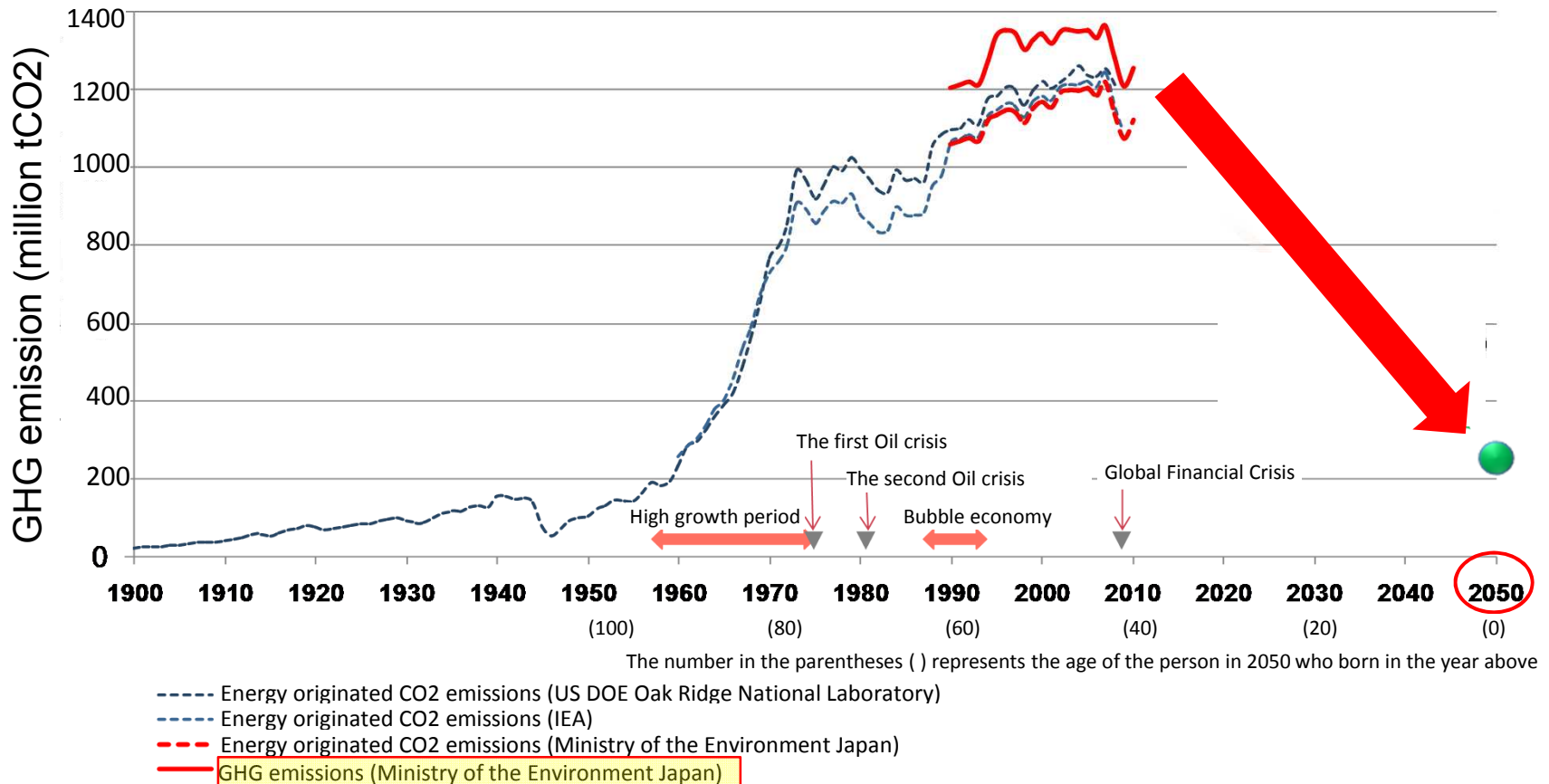


Act on Promotion of Global Warming Measures

Japan's GHG reduction goal in 2050

- Japan will pursue the goal of **80% reduction in GHG emission by 2050** in order to fulfill the responsibility as an industrialized country, as is stated **in the forth Basic Environmental Plan** (revised in April 2012)
- To achieve the 80% reduction goal, global warming measures including **innovative energy efficiency** and **maximum use of renewable energy** will be important

Japan's GHG emission trends and the long term goal



Act on Promotion of Global Warming Measures

Kyoto Protocol Target Achievement Plan (Article 8 – 9)*

- The national government shall establish a Kyoto Protocol Target Achievement Plan for attaining the targets prescribed in the Kyoto Protocol.

* For 2013 onwards, "Kyoto Protocol Target Achievement Plan" was replaced with "Global Warming Measures Plan" by the revision of the Act in May 2013.

National and Local Government Action Plan (Article 20-2 – 20-3)

- The national government shall formulate a plan to reduce GHGs associated with its own activities.
- All prefectural and municipal governments shall formulate plans to reduce GHG emissions associated with their own activities. Large local governments shall formulate plans to reduce GHG emissions in their jurisdictional areas.

Guidelines for Controlling Emissions (Article 21)

- Guidelines on measures to control GHG emissions associated with business activities (application of high efficient equipment, proper cooling and heating, efficient use of office appliances, etc.)
- Guidelines on measures that contribute to GHG control in providing products used in daily life (visualizing CO₂ emissions from products, promotion of 3R etc.)

GHG Emissions Accounting, Reporting and Disclosure System (Article 21-2 – Article 21-11)

- GHG emitters shall calculate and report their GHG emissions. The national government shall announce the information.
- Report is required for each entity and franchise chain.
- CDM credits are considered in the calculation of emissions.

Center for Climate Change Action (Article 24,25)

- National center: Japan Center for Climate Change Action (JCCCA)
- Local centers: designated by 47 prefectures + 8 cities (as of December 2013)

Emissions Trading in Kyoto Mechanisms (Registry) (Article 29 – 41)

- Stipulates transaction rule of Kyoto Mechanism Credits
- Provides procedure of A/R CDM credits usage]

Miscellaneous

- Promotion of appliances which emit less amount of GHG, etc.

Kyoto Protocol (KP) Target Achievement Plan(1)

- ◆ Japan's target for the first commitment period is -6% from 1990.
- ◆ Under the Act on Promotion of Global Warming Measures, KP Target Achievement Plan was fully revised by the Cabinet in March 2008.

Target of Reduction and Removal of GHGs

	Targeted emissions in FY2010	
	Million t-CO ₂	Compared to the Base Year
CO ₂ from energy sources *	1,076~1,089	+1.3%~+2.3%
CO ₂ , CH ₄ , N ₂ O from non-energy sources	132	-1.5%
HFCs, PFCs, SF ₆	31	-1.6%
Total GHG emissions *	1,239~1,252	-1.8%~-0.8%
CO ₂ removal by sinks		-3.8%
Kyoto Mechanisms		-1.6%

* Estimation of emissions is shown with a range, based on the assumed range of measures' effect. While the maximum case should be pursued, the estimation is set to achieve the Kyoto Protocol target even in the minimum case.

KP Target Achievement Plan(2)

Policies & Measures to Achieve the Target

1. Policies and measures regarding the reduction and absorption of GHG

(1) Policies and measures for reducing GHG emissions

[Examples of measures]

- Promotion of voluntary action plans by industries
- Improvement of energy efficiency of houses and buildings, equipment, factories and automobiles.
- Measures regarding agriculture, forestry and fisheries, water supply and sewage systems and traffic flows
- Measures regarding waste and CFC substitutes (HFC, PFC and SF₆)
- Measures to promote the use of new energy

(2) Measures regarding greenhouse gas removal sources

- Forest management and national campaigns for the development of beautiful forests

2. Cross-sectional measures

- System for the calculation, reporting and announcement of data on emissions
- National campaigns for environment friendly life style etc.

Issues to be reviewed

- Domestic emissions trading
- Environment taxes
- Review of late-night life/work styles
- Introduction of a summer time system

Interim policy on global warming measures

(Decision made by Headquarters for Global Warming Measures, 15 March 2013)

I . Basic policy on global warming measures after FY2013

- **Based on the Cancun agreement under the UNFCCC**, Japan will proactively take global warming measures through **registration of emissions reduction target by 2020** and through **international reporting and validation of the progress towards the target**
- **25% reduction target by 2020 will be revised from scratch by COP19 held in November this to achieve the target year**
- Measures and policies to be set forth in the Global Warming Measures Plan will be discussed in **the joint meeting of Central Environment Council and Industrial Structure Council**, as well as related councils. Based on the discussion, the **Headquarters for Global Warming Measures will develop a draft of Global Warming Measures Plan**, for the adoption by the **Cabinet** .

II . Strategy for developing Global Warming Measures Plan

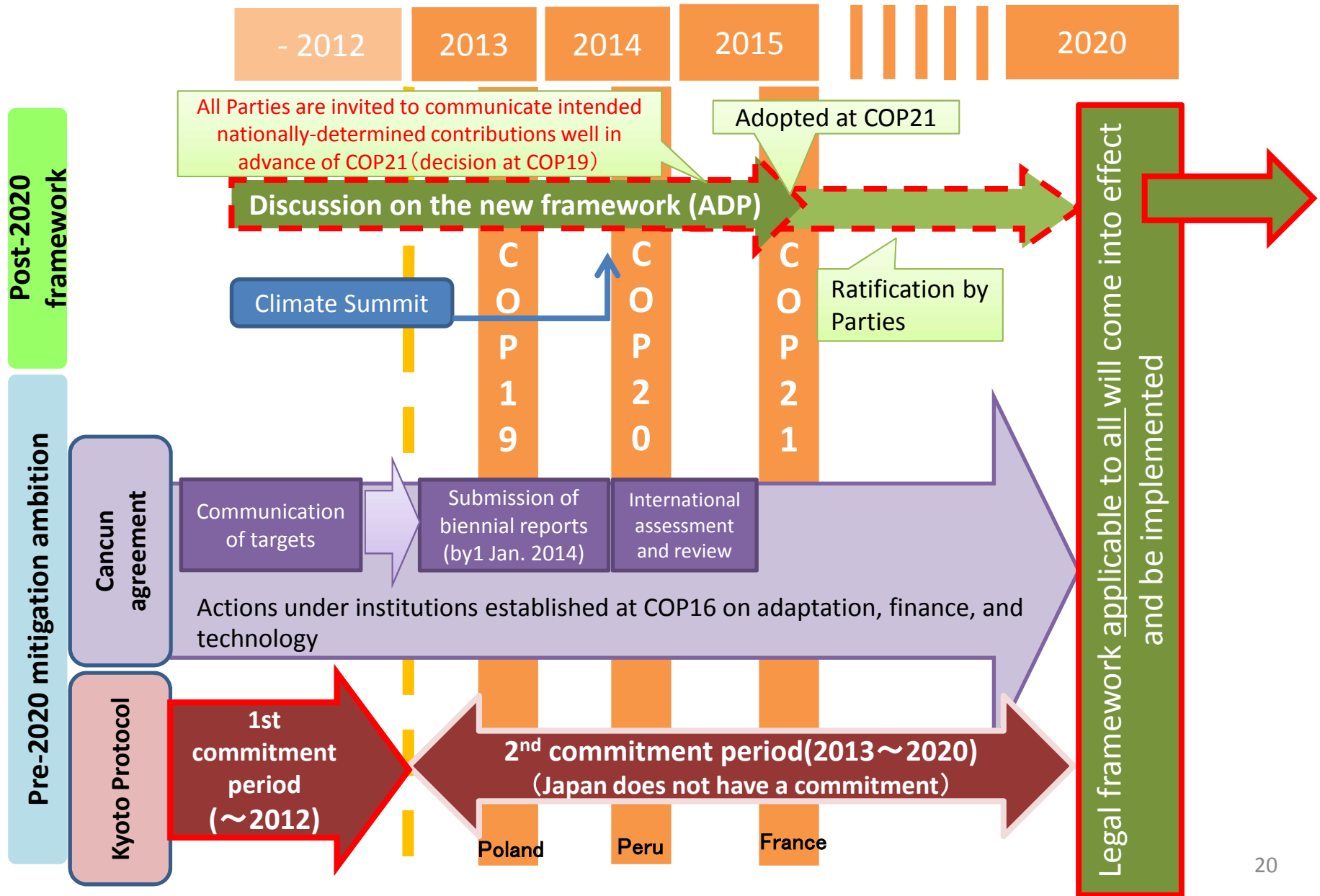
- Measures and policies to be set forth in the Global Warming Measures Plan are expected to contribute also to activation of our economy and will be considered by fully using the finding through implementation and progress monitoring of the Kyoto Protocol Target Achievement Plan, and by taking into account the progress of the energy policy discussions.
- **Given that renewable energy and energy efficiency measures** have been expanding among private sectors as well as citizens after The Great East Japan Earthquake, those measures will be further promoted to a maximum so that they will contribute to the development of Low Carbon Society by using Japan's technologies and wisdoms.

III . A principle of action before the formulation of the new Plans for Global warming measures

- Taking into account the necessity of seamless actions for global warming, local authorities, private sectors and citizens **are expected to take actions equivalent to or beyond those listed in the Kyoto Protocol Target Achievement Plan, even before the formulation of the new Global Warming Measures Plan**. The government will try to accelerate the global warming measures by supporting those actions.

Japan's New Emissions Reduction Target for 2020

Timeline of International Negotiations



Japan's new emission reduction target in 2020

- Japan's greenhouse gas emission is set as **3.8% emission reduction in 2020 from the 2005 level** in order to implement Cancun agreement, and also based on prime minister's designation of zero-based review of 25% reduction target by COP19
- **This is a target at this point, which has not yet taken into account the emission reduction effect resulting from nuclear power**, given that the energy policy and energy mix, including the utilization of nuclear power are still under consideration
- A firm target, based on further review of the energy policy and energy mix will eventually be set.

【Principles of the new target】

The new target will be achieved by implementing the measures listed below comprehensively, while attaining the economic growth goal set by the current government

- (1) **20% improvement in energy intensity** which is at the world leading level
- (2) Improvement of emission factor of electricity by **renewable energy** etc
- (3) **Strengthening fluorocarbons countermeasures** based on amended law on fluorocarbons
- (4) Application of the “**Joint Crediting Mechanism (JCM)**”
- (5) Utilization of **carbon sink of forest**

【Actions in response to the new target】

Register the new target to United Nations Framework Convention on Climate Change Secretariat (29 Nov).
Implement mitigation measures steadily, through Biennial Report submission and International review based on Cancun agreement

Global Warming Countermeasures to implement Cancun Agreements

(1) Energy-originated CO2

Energy-originated could be broken down into 5 sectors: Industry; Commercial and other; Residential; Transport; and Energy conversion. Table below shows emission projection for each sector. It is necessary to note that emission levels shown in Table below are indicative levels, estimated using emission intensity in FY2012, which is the latest results, because projection on nuclear power plant activities for FY2020 is currently unavailable and emission factor for power generation in FY2020 is unable to be set. The estimation figures may vary depending on future circumstances.

	Base year (FY2005)	FY2012 (preliminary figures)	Estimated emissions of each sector in FY2020		Estimated reduction in final energy consumption
	A	—	B	(B-A)/A	—
	Million t-CO2	Million t-CO2	Million t-CO2 (Note 1)	(Increase rate of each sector compared to base year)	Million kl (%) (Note 3)
Energy-originated CO2	1,203	1,207	1,208	+0.4%	—
Industry	459	431	484	+5.4%	▲2(▲1.1%)
Commercial and Other	236	259	263	+11.4%	▲5(▲6.5%)
Residential	174	203	176	+1.1%	▲10(▲17.9%)
Transport	254	227	190	-25.2%	▲25(▲25.8%)
Energy conversion (Note 2)	79	86	95	+20.3%	—

(Note 1) Because projection on nuclear power plant activities for FY2020 is currently unavailable and emission factor for power generation in FY2020 is unable to be set, these figures were estimated using emission intensity in FY2012, which is the latest result.

(Note 2) Because power supply mix in FY2020 is currently unavailable, the future energy consumption of own use in power plants is unavailable as well. Hence, the energy consumption level for FY2020 is assumed to be the same as in FY2005.

(Note 3) Estimated reduction level is calculated by setting FY2005 as a base year

Global Warming Countermeasures to implement Cancun Agreements

(2) Non Energy-originated CO2

The target is set as -12.5% (approximately 70 million t-CO2) compared to FY2005.

(3) Methane

The target is set as -21.7% (approximately 18 million t-CO2) compared to FY2005.

(4) Nitrous oxide

The target is set as -8.3% (approximately 22 million t-CO2) compared to FY2005.

	Base year (FY2005)	Estimated emission amount of each gas in FY2020	
	A	B	(B-A)/A
	Million t-CO2	Million t-CO2	Compared to base year
Non-energy-originated CO2	80	70	-12.5%
Methane	23	18	-21.7%
Nitrous oxide	24	22	-8.3%

(Note) The Global Warming Potentials, based on the IPCC Second Assessment Report, are used.

Global Warming Countermeasures to implement Cancun Agreements

(5) Fluorinated gases

Since refrigerants in refrigerators and air-conditioners have shifted from HCFCs, which are ozone depleting substances, to HFCs, it is expected that the emissions of fluorinated gases (HFCs, PFCs, SF6 and NF3) will increase. The goal is set as no more than +109.1% (approximately 46 million t-CO2) emissions compared to CY2005. However, since estimation for some HFCs, PFCs and NF3 are not available at this point, the estimation of these gases are excluded. It is necessary to note that the figures may vary depending on future circumstances. Particularly, in regards to HFC refrigerants, due to the enactment of the “Act on Rational Use and Proper Management of Fluorocarbons” in 2013, shifting to non-fluorocarbon and low-GWP refrigerants as well as improving management of refrigerants will be implemented, which will lead to substantial emissions reduction. The result is expected to save 9.7 million to 15.6 million t-CO2 compared to the case where no additional actions are implemented. After measures of the above-mentioned law are concretized, the figure with additional measures will be reviewed. Thus, the mitigation effect of this law is not reflected in Table 4-3. Instead, the figure is based on the case where no additional actions are implemented.

		Base year (FY2005)	Estimated emissions of fluorinated gases and each gas	
		Million t-CO2	Million t-CO2 (Note 1)	Compared to base year
Fluorinated gases		22	46	+109.1%
	HFCs	11	41	+272.7%
	PFCs	7	3	-57.1%
	SF6	5	2	-60.0%
	NF3 (Note 2)	-	-	-

(Note) The Global Warming Potentials, based on the IPCC Second Assessment Report, are used.

(Note 1) Expected reduction effect by “Law for Partial Amendment to Law Concerning the Recovery and Destruction of Fluorocarbons” in 2013 is not reflected in the table. The figure is planned to be reviewed after measures of the above-mentioned law are concretized.

(Note 2) Emissions of some HFCs, PFCs and NF3, additional gases for the second commitment period of the Kyoto Protocol as agreed at the COP 17 and other conferences, are not estimated and reflected in this table.

Global Warming Countermeasures to implement Cancun Agreements

LULUCF sector

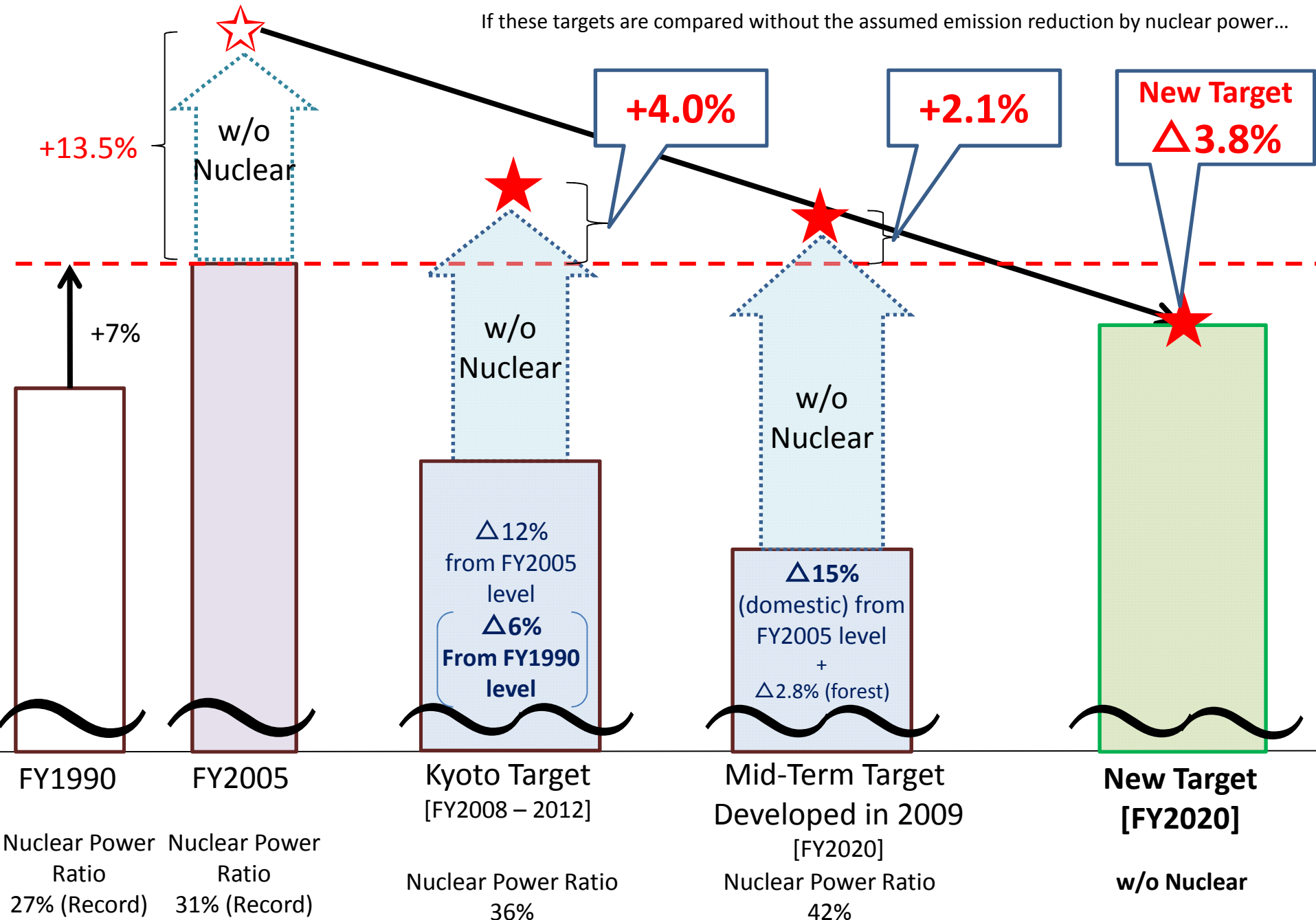
The target for the LULUCF sector is to ensure that the amount of removals by forest management for the period between FY2013 and FY2020 will be, on average, 3.5% of the total GHG emissions in FY1990 (approximately 44 million t-CO₂), which is the agreed upper limit of removals by forest management for the second commitment period of the Kyoto Protocol. (The level of removals will correspond with approximately 2.8% or more of the total GHG emissions in FY2005 (approximately 38 million t-CO₂).)

Joint Credit Mechanism

Japan is promoting the establishment and implementation of the “Joint Crediting Mechanism (JCM)” in which Japan facilitates the diffusion of advanced low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributes to sustainable development of developing countries. Following an appropriate evaluation of the contributions to GHG emission reductions or removals in developing countries in a quantitative manner, Japan will use them to achieve its emission reduction target.

New Target vs. Past Targets

If these targets are compared without the assumed emission reduction by nuclear power...



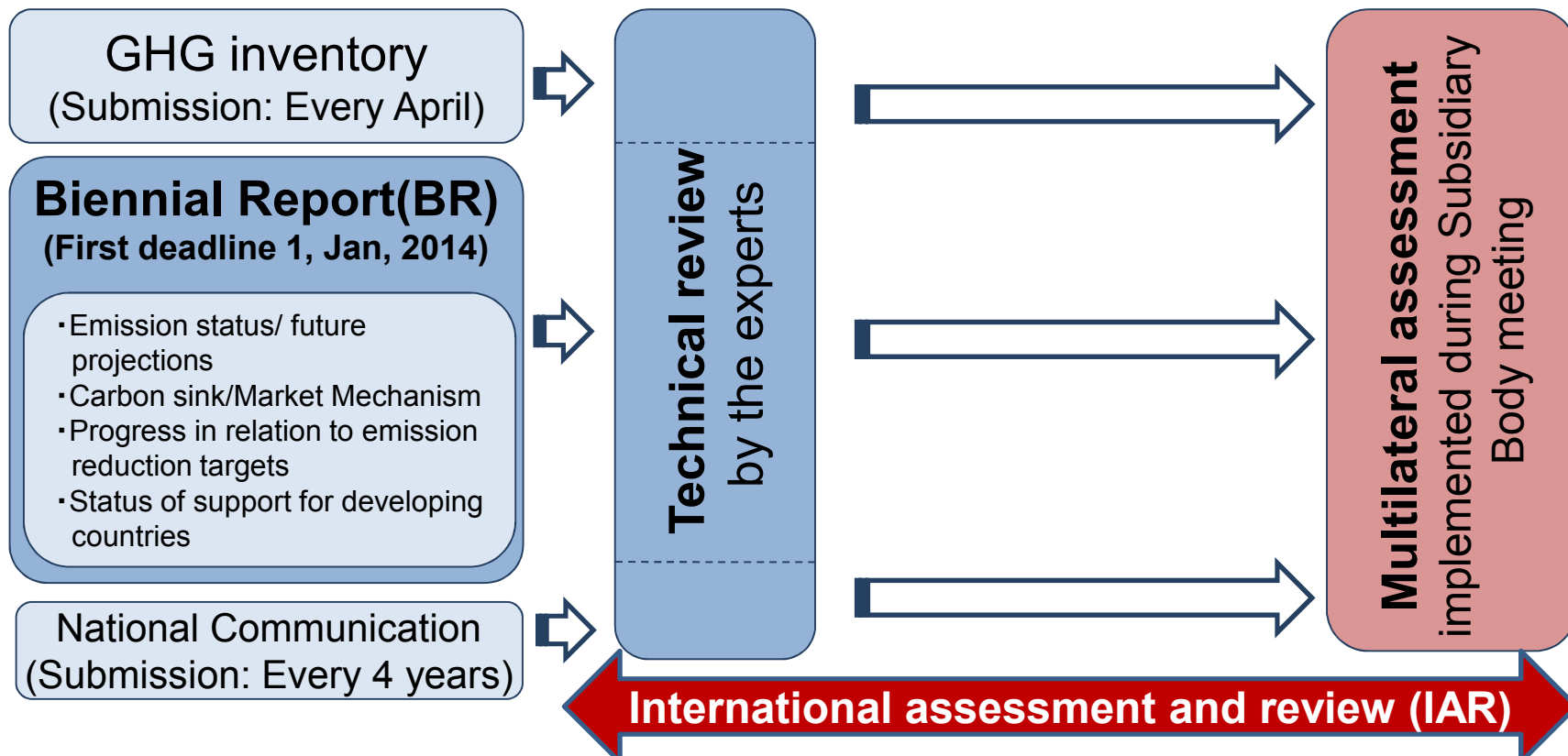
Global Warming Measures toward Emissions Reduction Target for FY 2020

Following sides are based on the description in the Biennial Report submitted to the UNFCCC Secretariat on 27,December 2013.

MRV based on Cancun Agreements

(Developed countries)

Reporting and assessment of the progress towards target of developed countries



«Multilateral assessment»

- Any Party can submit written questions in advance against review report. The Party under assessment should respond to those questions within two months
- All Parties will undergo the assessment and the assessed country will make a presentation as well as Q&A
- Results of the assessment will be sent to related organization of the Convention

Energy-originated CO₂

Formulation of Low-carbon Urban/Regional Structures and Socioeconomic Systems

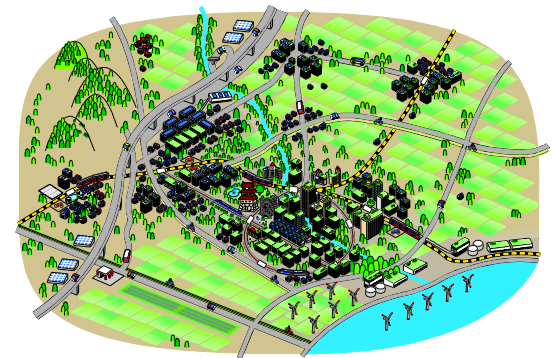
Since urban/regional structures and transportation systems will continue to influence CO₂ emissions in the mid- and long-term time frames through increases/decreases in traffic and other factors, the Government will encourage low-carbon urban/regional development in the mid- and long-term time frame by low-carbonizing urban/regional structures and socio-economic system based on the action plans for low carbon society in the local level which are in accordance with the Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998)

(Examples)

- promotion of non-fossil-fuel energy use such as solar power
- supports for actions on GHG emissions reduction led by citizens and business operators
- promotion of rearrangement and improvement of regional environment (i.e. promotion of convenience of public transportation)

The cities with high energy demands

activities should be conducted such as improvement of energy use through holistic and efficient use of energy, implementation of countermeasures against urban heat island, and formulation of Compact Cities by concentrating urban functions. Moreover, such activities should be in accordance with local low-carbon city plans based on the Low Carbon City Act (Act No. 84 of 2012) and be consistent with action plans for low carbon society and master plans for city planning in the local level.



Low Carbon City Promotion Act (Outline)

Background

The Great East Japan Earthquake triggered changes in energy supply/demand and raised awareness about energy and global warming issues among the people. It is important to accumulate successful examples of low-carbon cities development and transportation system as well as to rationalize energy use in urban areas by promoting private sector investment, thereby vitalizing housing market and local economy.

Outline of Law

- Formulation of basic policy (ministers of land, infrastructure, transport and tourism, environment and economy, trade and industry)
- Certification of private low-carbon buildings, etc.

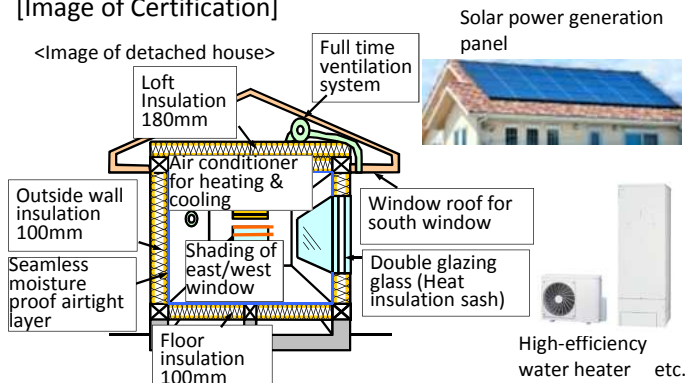
Income and Other Tax Reduction for Low-Carbon Housing

Year of Residence	Increase in maximum amount of income tax reduction (10 years)		Lowering of registration license tax rate
2012	4 million JPY (3 million JPY general)	Storage registration	0.1% (0.15% general)
2013	300 million JPY (2 million JPY general)	Transfer registration	0.1% (0.3% general)

[Not included in calculation of floor-area ratio]

Floor space exceeding regular building floor space related to facility for low-carbon building (battery, heat storage tank, etc.)

[Image of Certification]



- Formulation of low-carbon community development plan (municipalities)

Concentration of urban functions

- Concentration of hospital and welfare facility, condominiums, etc.

- ◇ Creation of private-sector certification program
- Development of integrated parking lots by private sector
- ◇ Special case of obligation to build parking lot in new construction

○ Pedestrian-friendly city development

(footpath and bicycle road development, barrier-free efforts)

Promotion of use of public transportation

- Bus line and LRT development, etc, communal transportation system
- ◇ Special case of process for various business acts including bus and railway services
- Automobile CO2 emissions control



Low-carbon building

- Advanced low-carbon building and housing development by private sector, etc.

Promotion of areal management and use of greenery and energy

- Conservation and promotion of greenery zones by NPOs
- ◇ Expansion of cooperative management system of planted areas
- Use of unused sewerage heat ◇ special case of sewerage intake by private sector
- Installation of solar power generation and batteries in areas adjacent to city parks and ports and harbors
- ◇ special case of dominant use permission

Energy-originated CO2 (Industrial Sector)

Initiatives in the Industrial Sector (Manufacturers, etc.)

■ Promotion and Reinforcement of Voluntary Action Plans of Industry (voluntary initiatives by business operators in accordance with the Commitment to a Low Carbon Society))

Guidelines for Controlling Greenhouse Gas Emissions

Through the formulation and publication of the Guidelines for Controlling Greenhouse Gas Emissions based on the Act on Promotion of Global Warming Countermeasures, the Government will encourage business operators to actively implement environmentally-friendly business actions on a voluntary basis.

Although the Guidelines for Controlling Greenhouse Gas Emissions have been formulated in some sectors, the guidelines will be reviewed as necessary in reference to the development of available cutting-edge technologies (best available technologies: BATs).

the Commitment to a Low Carbon Society

As initiatives after FY2013, each industry group formulates and implements greenhouse gas emission reduction plans (the Commitment to a Low Carbon Society) with the pillars of '2020 targets for global warming countermeasures of domestic business activities,' with the assumption of the maximum use of the world's most advanced low-carbon technologies, 'contribution to emissions reduction in the other sector through providing low-carbon products and services,' 'promoting international contributions (contributions to emissions reduction in the other countries),' and 'developing and introducing innovative technologies' in order to pursue voluntary initiatives by business operators. The formulation and progress statuses of those initiatives will continue to be strictly assessed and verified by the Government.

■ Promotion of Introduction of Highly Energy-efficient Equipment and Devices

Energy saving at plants and operation sites

Encouraging business operators to invest in energy saving, the Government will implement support measures including replacement with cutting-edge energy-saving equipment at the time of replacing facilities and equipment at plants and operation sites.

Energy saving in non manufacturing sector

the Government will work on the diffusion of fuel-efficient and low-carbon construction machinery in the construction industry and support for the implementation of and R&D for global warming countermeasures in the agriculture, forestry and fishing industries.

Energy-originated CO₂

(Commercial & other Sector)

Initiatives in the Commercial and Other Sector

■ Low-carbonization and Energy-savings in Equipment and Devices

Top Runner Program

Top Runner Program requires manufacturers and importers of products to meet criteria which is in line with standards of currently most-advanced devices and assumed technological advances in about 3 to 10 years. The Government is expanding the application of the Top Runner Program onto equipment and devices such as electric water heaters (heat pump water heaters), multifunction machinery and printers, and LED light bulbs were newly added in 2013.

Guidelines for Controlling Greenhouse Gas Emissions

Through the formulation and publication of the Guidelines for Controlling Greenhouse Gas Emissions Based on the Act on Promotion of Global Warming Countermeasures, the Government will encourage business operators to implement energy-saving and low-carbonization business actions on their equipment.

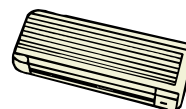
■ Improvement of the Energy-efficiency Performance and Low-carbonization of Housing and Buildings

New housing and buildings

- Gradual approach for the mandatory energy conservation standards for newly constructed housing and buildings by 2020
- Introduction of the Top Runner Program for construction materials and inclusion of thermal insulation material
- Diffusion of low carbon building with a higher energy-efficiency performance
 - Enhancing and diffusing an objective and clarified system for verifying and labeling comprehensive environmental performances of housing and buildings
- Realizing the concept of “Net Zero Energy” for the average energy consumption of new housing and buildings by 2030.

Existing housing and buildings

- Support on retrofits for energy-efficiency improvement and low carbonization
- Support on improvement of the use of equipment and devices
- Provision of consultation on potential capacity of GHG emissions reduction
- Promotion of energy consumption data
- Discussing multilateral measures for replacing equipment with high-performed one



Energy-originated CO₂ (Commercial & other Sector)

Initiatives in the Commercial and Other Sector

■ Smart Consumption of Energy by Using Energy Management

- Improve the method for using devices by dramatically enhancing the energy consumption efficiency of equipment and utilize the developed network, while realizing the smart consumption of energy through 'Energy management' through which consumers voluntarily participate in and contribute to the demand and supply as well as management of energy with a view to create a society with optimum, efficient energy consumption.

(Examples)

- Promote the setting and expansion of diverse electricity bill menus through conducting operation tests of demand response system in four smart community regions and the Electricity System Reform.
- Promote the introduction of smart meters as infrastructure and install them in all households and plants in the early 2020s.
- Promote the introduction of the energy management systems such as HEMS (Home Energy Management System) and BEMS (Building Energy Management System)
- Promote the use of renewable energy and energy-saving in water supply, sewage system and waste management
- Support diffusion and commercialization of services using the green ICT which is expected to lead to cleaner and more economically-efficient society. The policy is including the development of new Green Data Centre and aiming at curbing CO₂ emissions through the use of green ICT

Energy-originated CO2 (Commercial & other Sector)

Initiatives in the Commercial and Other Sector

■ Initiatives by Public Organizations

Government

The Government will reduce greenhouse gas emissions with regard to its own administration and undertakings at a level which is equivalent or superior to initiatives in the current national commitment plan, even during the period before the new national commitment plan is formulated in line with the new plan for global warming prevention.

The Government will conclude “contracts considering reduction of greenhouse gases and other emissions” mainly in six areas (namely, supply of electricity, automobiles, vessels, ESCO, buildings, and industrial waste) based on the “Law Concerning the Promotion of Contracts Considering Reduction of Emissions of Greenhouse Gases and Other Emissions by the State and Other Entities”, as well as its basic policy.

In order to spur demands for products that contribute to greenhouse gas emissions reduction and other eco-friendly goods and services, the Government will take the initiative in procuring such goods and services based on the “Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other.”

Prefectures and municipalities

Prefectures and municipalities will take actions such as implementing countermeasures with regards to the natural and social conditions of region and reducing GHG emissions from their administrative operations.

Local Government Action Plan

Local government's plan on GHG emissions reduction associated with their own activities

- Energy saving in local government offices

Plan development coverage (as of 1/Oct/2012)

*Prefectures (100%),
Ordinance-designated cities (100%),
Core cities (100%),
Special ordinance cities (100%)
Other municipalities (76.8%)*

Consultation and coordination by Council on global warming measures

Local governments, local centers for climate change action, climate change action officers, business operators and residents participate in the process.

Local action plan for its jurisdictional area

- Promoting renewable energy
- Promoting emissions reduction activities by local business operators and residents including energy saving
- Development and improvement of local environment including public transportation and greening.
- Establishment of Recycling-Based Society

Plan development coverage (as of 1/Oct/2012)

*Prefectures (78.7%),
Ordinance-designated cities (75.0%),
Core cities (87.8%),
Special ordinance cities (82.5%)
Other municipalities (7.1%) –non-mandatory*

Energy-originated CO₂ (Residential Sector)

Initiatives in the Residential Sector

- Low-carbonization and Energy-savings in Equipment and Devices (Reprinted)
- Improvement of the Energy-efficiency Performance and Low-carbonization of Housing and Buildings (Reprinted)

- Diffusion of Combined Heat and Power

Promote the diffusion of combined heat and power such as household fuel cells (“Ene-farm”)

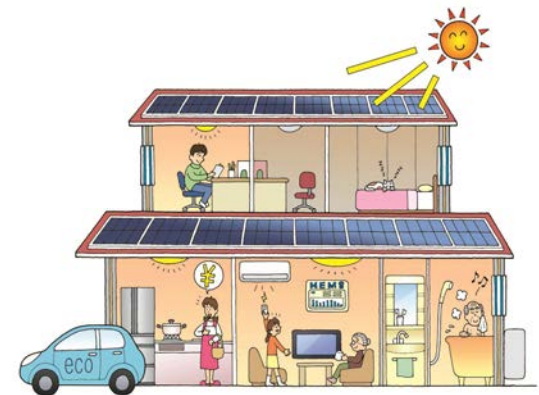
Introduce 5.3 million household fuel cells (“Ene-farm”) into the market by 2030

- Other Supportive Measures

Promote innovative changes towards low-carbon lifestyle

(Examples)

- “Visualization” of CO₂ emissions by various product types
- Introduction of HEMS and promotion of the data use
- Promotion of “Home CO₂ advisor service.”



Energy-originated CO₂

(Transport Sector)

Initiatives in the Transport Sector

■ Promotion of the Use and Diffusion of Vehicles with Lower Environmental Load

- For highly energy-efficient next-generation vehicles (including hybrid vehicles, electric vehicles, plug-in hybrid vehicles, fuel-cell vehicles, clean diesel vehicles and compressed natural gas vehicles), the Government will aim to increase the share of these vehicles in the new car sales from 50 percent to 70 percent by 2030 by promoting measures to create initial demand, support R&D to improve performance and build efficient infrastructure.

Electric Vehicle (EVs)

- Promote the development of recharging infrastructure
- Support the purchase of EVs to create mass production effects and to promote price reduction
- Support research and development to extend a cruising range and reduce cost

Fuel-cell vehicles

- Review regulations on fuel-cell vehicles and hydrogen infrastructure in order to enable the release of fuel-cell vehicles to the market in 2015
- Support the introduction of hydrogen stations (preliminary introduction in approximately 100 locations mainly in four major metropolitan areas by FY2015)

- To promote such diffusion of next-generation automobiles, the Government will work to provide preferential tax treatment such as tax cuts for eco-friendly automobiles.



EV・PHV

Energy-originated CO₂

(Transport Sector)

Initiatives in the Transport Sector

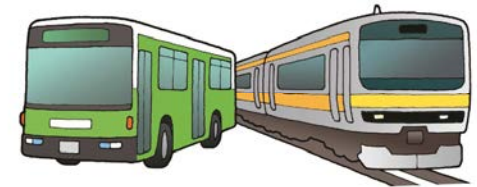
■ Promotion of Traffic Flow Management and Promotion of the Environmentally-friendly Usages of Vehicles

- Promote the environmentally-conscious form of driving by pursuing the diffusion of Eco-drive Management Systems (EMS) for vehicle transport operators
- Promote the smoother traffic flows by Rearranging the traffic environment to be safer and more comfortable for bike users, improving the administration of pricing on highway use, and promoting the introduction of Intelligent Transport System (ITS) which is effective for drivers to select the best routes to their destinations.



■ Promotion of Public Transport Utilization

- promote the use of public transport systems through various measures including improving the service and convenience of railways and buses, and promotion of eco-commuting



■ Promotion of Low-Carbonized Transportation through Railway, Vessel, and Aviation

- Energy saving in domestic vessels through manufacturing of Super Eco-Ships
- Energy saving in domestic aviation through efficient operating method for aircrafts
- Energy saving in railways by introducing highly energy-efficient vehicles and renewable energies in railway facilities

Energy-originated CO₂

(Transport Sector)

Initiatives in the Transport Sector

- **Improvement of the Efficiency of Logistics Systems and Promotion of Modal Shifts, etc.**
 - Improve the efficiency of truck transport by encouraging the use of larger trucks such as large CNG trucks and promoting cooperative transport and delivery by logistics operators etc. within regions
 - Promote modal shifts from truck transport to rail freight or to coastal shipping
(Examples)
 - Installation of large containers (31 ft), which is efficient to promote phasing out from larger trucks use, and the “Eco- Rail Mark” etc.,
 - Introduction of truck with separable trailers and the “Eco-Ship Mark”
 - Reduction of the total distance of land transportation of international cargo through the rearrangement of freight terminals
 - Reduction of environmental load by strengthening a partnership between owners of goods and operators of logistics
 - Promote low energy conservation of harbor areas, and facilitation of renewable energy introduction and its use at the harbors which are the node of vessel transportation and land transportation.
 - Concerning biofuel, promote the research and development of technologies aimed at practical use.

Energy-originated CO₂

(Energy Conversion Sector)

Initiatives in the Energy Conversion Sector

■ Power from Renewable Energy Sources

Promote the thorough use of renewable energy sources including onshore and offshore wind power, solar power, small-scale hydro power, geothermal power and biomass

- Steady and stable operation of feed-in tariff scheme
- Implement rearrangement and operation tests of the power grid, streamline the procedure of environmental impact, implement other regulatory and institutional reform such as rationalization of safety regulations etc

Wind power generation

- Promote its introduction by urgent introduction of large storage batteries for the power system, creating a condition for early strengthening of Hokkaido-Honshu Electric Power Interconnection Facility, rearrangement and operation tests for the power grid.
- regulatory and institutional reform including streamlining the procedure of environmental impact assessment and rationalization of safety regulation
- Overcome its technical challenges for offshore floating wind power generation, establish evaluation methods for safety, reliability and economic aspect and environmental assessment method through demonstration projects by 2015. At the same time, achieve commercialization by around 2018 while promoting establishment of international standards.



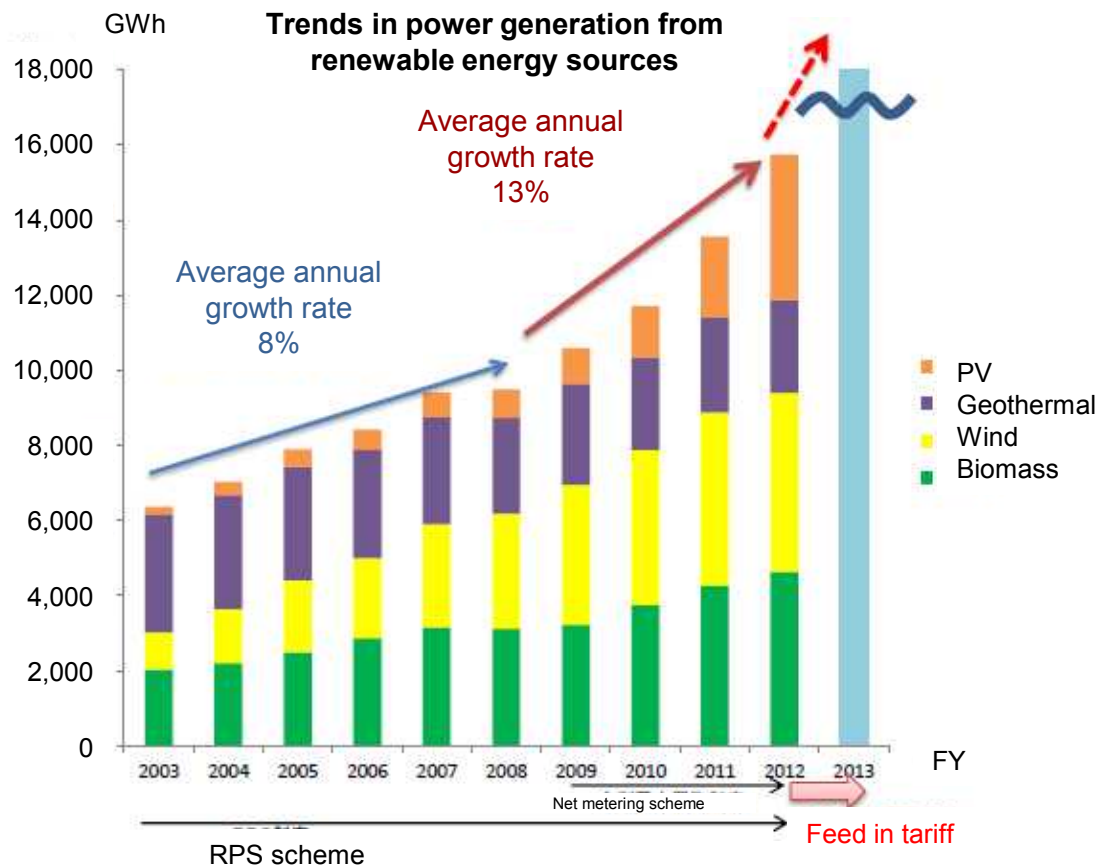
Solar power generation

- Feed-in tariff scheme and regulatory and institutional reform
- Reducing power generation costs through development and implementation of innovative technologies



Trends in renewable energy power generation

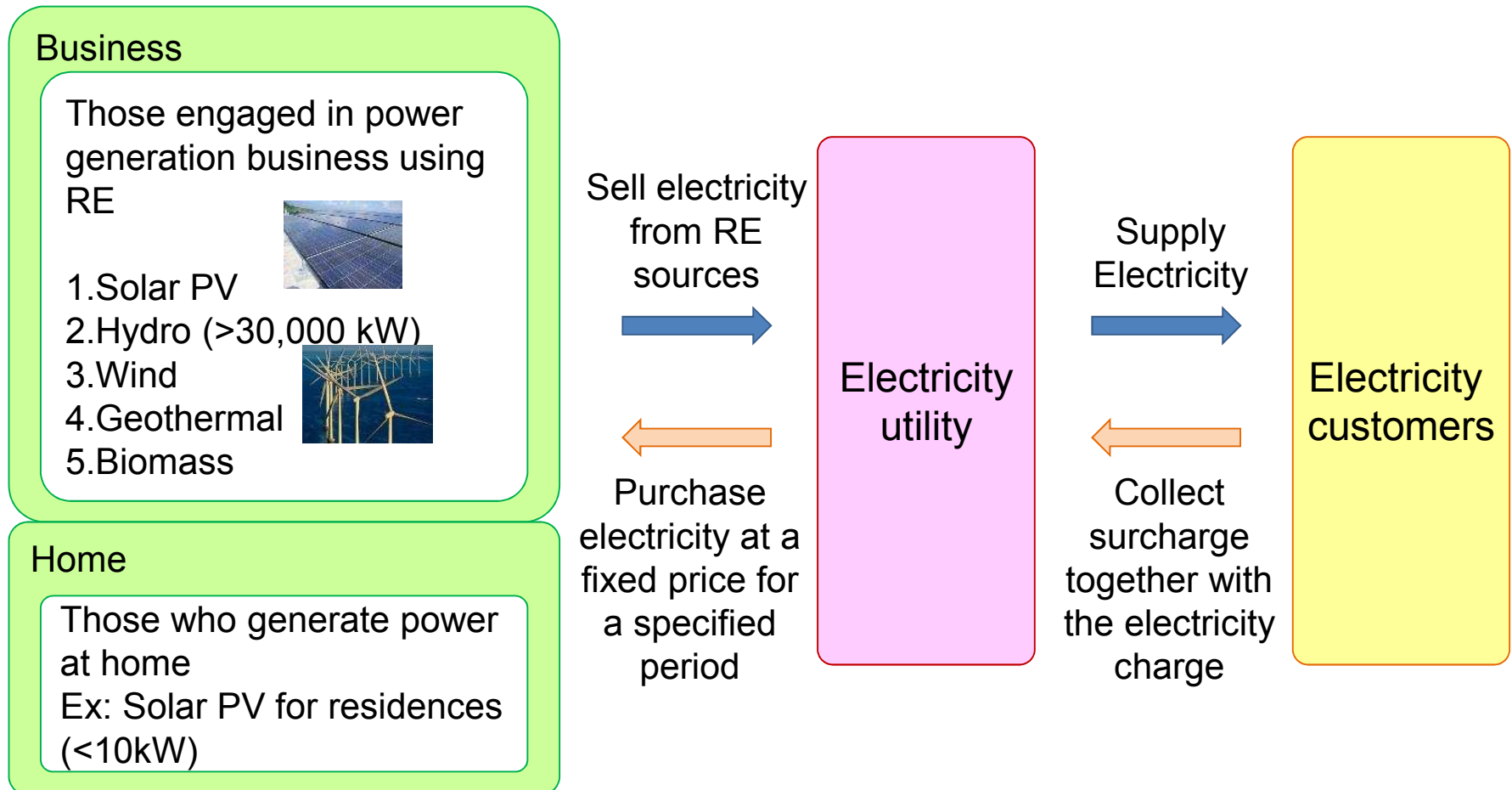
- Share of renewable energy (excluding hydro power) in the total power generation in Japan has been approximately 1%
- Average annual growth rate of the power generated from the renewable energy sources increase to 13% after implementation of PV net metering scheme in Nov 2009 and feed in tariff scheme in July 2012. (The power from renewable energy sources will be 3.4 times higher than that of 2012 after 10 years if the annual growth rate of 13% continues.)



Feed-in Tariff for Renewable Energy (RE)

All of generated renewable electricity (except electricity by residential RE equipment) shall be purchased at a fixed price.

The bill for introducing FIT was adopted in August 2011 and came into force on 1 July 2012 .



Shortening the duration of environmental assessment for renewable energy installation

- In order to shorten the duration of national review of the environmental assessment through operations, concrete policies are formulated in late November 2012, by the Ministry of the Environment and the Ministry of Economy, Trade and Industry.

1. Shorten the duration of national review

Proceed national review and local authority's review in parallel



**Maximum shortening period: Approx. 4 months
(150days->Approx. 45days)**

② Simplification of environmental assessment (investigation, projection and assessment)

Business operators use the data collected through the Environmental Information Collection Project by the MOE etc.



Shortening period: Approx. 1 year



Aimed at **halving** the administration period of typical 3 years*

(With local authority's and business operator's cooperation, the further shortening will be possible)

※Average duration for thermal power plant. There is no wind project that has completed the whole process after it was covered under the law

※As for procedures for the Document on Primary Environment Impact Consideration, effort will be made to shorten the duration at maximum with similar approach with the Draft Environment Impact Statement

Energy-originated CO2 (Energy Conversion Sector)

Initiatives in the Energy Conversion Sector

Geothermal power generation

- Streamlining the procedure of environmental impact assessment
- Rationalization of safety regulations to enhance the use of small-scale geothermal power generation using the existing wells at hot springs
- Promoting understanding of people in the local level
- Research projects on potential feasibility of geothermal power

Small-scale hydro power generation

- Arrange business environment which promotes the introduction

Biomass energy

- Establishing the framework to promote actions aiming at developing the primary sector with using the renewable energy
- Promoting the use of urban biomass use such as sewage sludge
- Achieving the use of local biomass energy in 100 regions in 5 years to promote industrialization and introduction of biomass energy.

Ocean power generation

- Actions for early commercialization through technology development and demonstration

In addition to these activities, the Government will, among others, promote the demonstration and introduction of the independent and decentralized energy system with renewable energies as a core, in regions such as remote islands.

■ Renewable Heat Energy

- promote the use of renewable heat energy sources that are specific to particular regions and exhaust heat such as waste heat from incineration

Energy-originated CO2 (Energy Conversion Sector)

Initiatives in the Energy Conversion Sector

■ Persuasion of High Efficiency in Thermal Power Generation

- Promote development of framework for managing CO2 emissions trend with participation of the whole stakeholders of power generation, which should be consistent with the national GHG emissions reduction target.
- Promote speeding-up and clarification of environmental assessment
- Arrange environment for the private sector so that the sector can easily invest in the highly-efficient (coal or LNG) thermal power generation.
- Support technological development for further improvement in power generation efficiency
(Examples)
 - Advanced ultra-supercritical (A-USC) thermal power generation; Practical use in 2020 (generating efficiency: approx. 46% after improvement)
 - Coal gasification fuel cell combined cycle (IGFC) ; Practical use in 2030s (generating efficiency: approx. 55% after improvement)
 - LNG thermal power generation; practical use of gas turbine of 1700 ° C class by around 2020 2030s (generating efficiency: approx. 57% after improvement)
- Concerning carbon dioxide capture and storage (CCS), the Government will accelerate technological development for practical use around 2020s and conduct survey on potential CO2 storage sites for CCS precondition in order to obtain outcomes at an early date. Also the Government will consider the possibility of coal thermal power plants being equipped with CCS by 2030 on the precondition of commercialization, make it clear what to expect on CCS Ready along with a considerations about the progress of survey on the sites and commercialization, and consider the possibility of the introduction of CCS Ready as early as possible.

■ Utilizing Nuclear Power Generations whose Safety is Confirmed

The Government will leave judgment of the safety of nuclear power plants to the specialist of the Nuclear Regulation Authority. When the Nuclear Regulation Authority admits the compliance to regulatory standards, the government will respect the judgment and will proceed with the restart of the nuclear plant. In this case, the Government will make efforts to obtain understanding and cooperation of relevant parties including the municipality of each nuclear facility site.

Conclusion of Director-general level meeting on thermal power plant bidding by TEPCO (April 2013)

- Coal power plant may be awarded a contract if the Thermal power plant bidding is done by TEPCO
- Coal power plant has strength in stable operation and economic efficiency but weakness in environmental aspects

1. Effective global environmental countermeasures in the power industry

Since effective actions consistent with national plans and targets, are needed in the power sector, promote the development of a sector-wide framework in which;

- The goals are consistent with national plans
- Main business operators including PPSs are participating
- Responsible body is clearly defined (focusing on retail stage)

2. Treatment of CO₂ within environmental assessment

Evaluate from a stand point below where necessary and reasonable

(1) Adoption of BATs (Best Available Technologies)

- The government will identify and publish “Development and commercialization status of cutting-edge power generation technologies” by size and by fuel types, as a reference for business operators’ consideration and will request business operators to adopt BATs

(2) Consistency with national targets and plans

- ① **In relation to mid-term target** : If the business operator takes actions under the sector-wide framework or plans to take measures including mitigation in abroad to offset the net increase emission over a natural gas power plant, it is judged as consistent with national targets and plans.
- ② **In relation to 2050 target** : The government will accelerate development of the technologies which is targeted to be commercialized by around 2020, conduct survey on potential CO₂ storage sites as a prerequisite for CCS, identify requirements for CCS Ready plants, and request business operators to study continuously including technological development in order to put carbon capture facilitations towards commercialization.

~Toward Zero Carbon Emission Thermal Power Plants~

Carbon dioxide Capture and Storage (CCS)

- In order to achieve Japan's long term target to reduce greenhouse gas emission by 80% by 2050, zero carbon power plants are absolutely necessary.
- Especially, coal fired power plants, which continue to exhaust large amount of CO₂ during its long lifetime, are recommended to introduce CCS in order to reduce CO₂ emission.



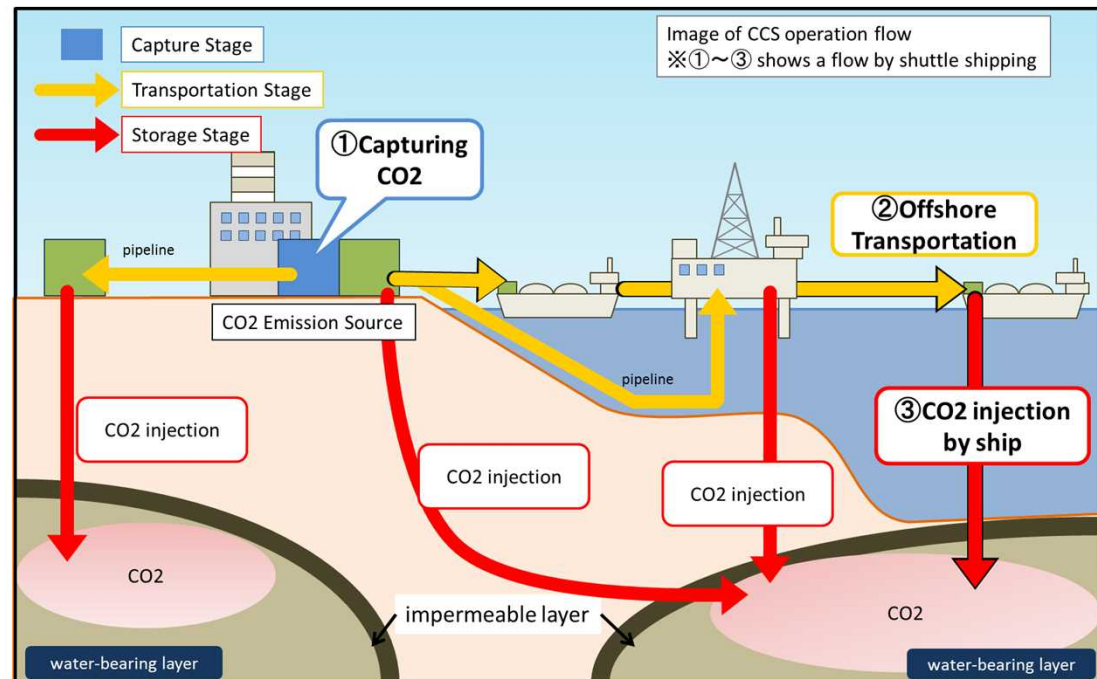
New Project by Ministry of the Environment, Japan (Budget for FY2014 :1,243 Million Yen) Introduction and Promotion of CCS Equipped Zero Carbon Emission Power Plants

1. Survey on potential CO₂ storage site (A joint project with METI)

- Identify potential CO₂ storage sites in waters surrounding Japan, including deep sea area.

2. Feasibility Study on introduction of environmentally friendly CCS technology

- Study an integrated transportation and storage system based on shuttle shipping.
- Assess environmental impact of CO₂ absorbent.



Non Energy-originated CO₂ , Methane and Nitrous Oxide

Non Energy-originated CO₂

- Reduce CO₂ emissions in the cement production process by increasing the production proportion and expanded use of blended cement
- Reduce CO₂ emissions from waste incineration by promoting waste reduction and recycling

Methane

- Promote the reduction of direct landfill of organic waste such as garbage, which will in turn reduce methane emissions associated with waste landfill
- Reduce methane emissions associated with rice by replacing the conventional approach of plowing in rice straw with application of compost.

Nitrous Oxide

- Reduce nitrous oxide emissions by upgrading combustion technology at sewage sludge combusting facilities
- Reduce nitrous oxide emissions associated with the waste incineration by promoting the upgrade of combustion technology at general waste incineration facilities as well as by promoting the 3Rs initiatives
- Reduce nitrous oxide emissions associated with the application of fertilizers through the use of lower fertilizer application rates, split-application regimes and slow-release fertilizers.

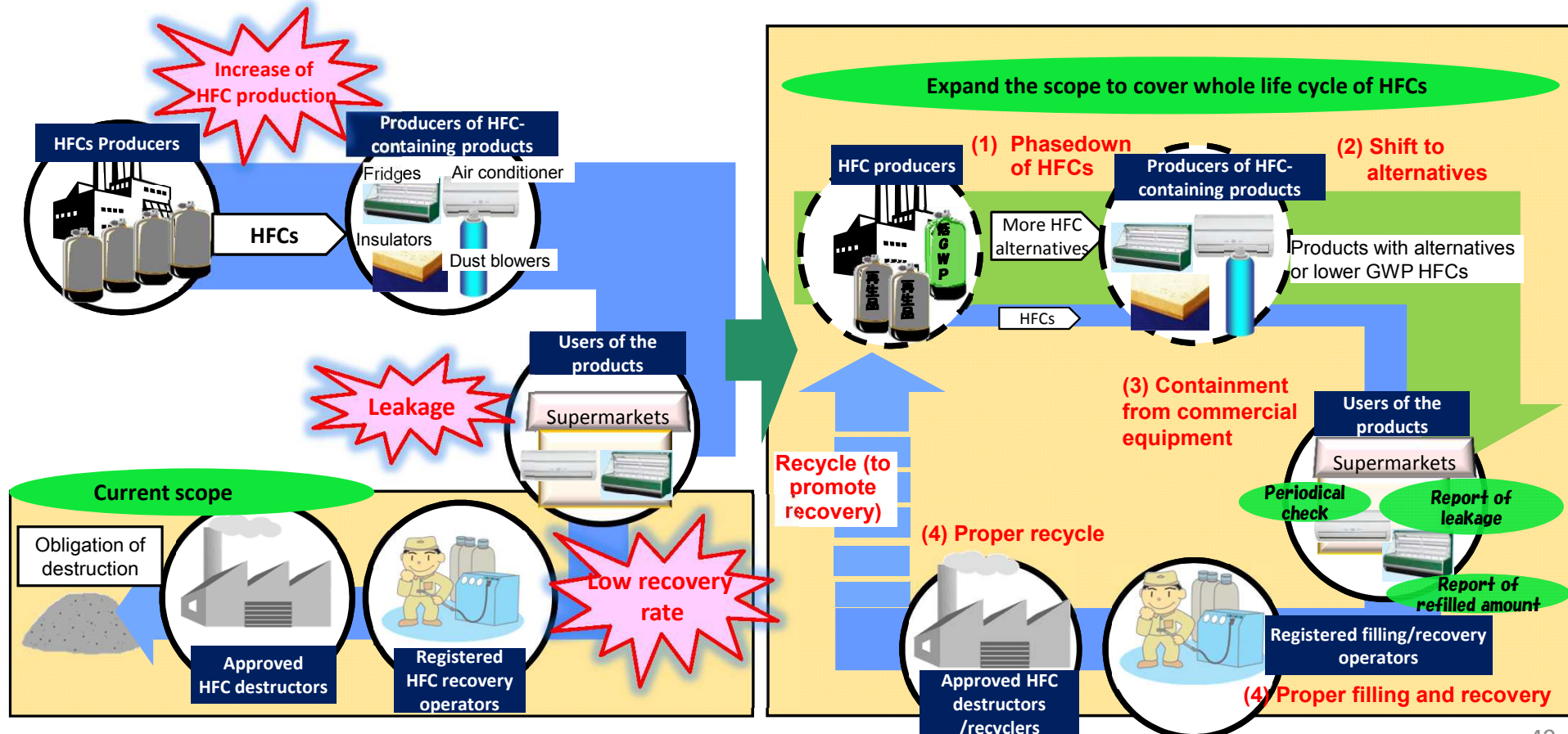
Fluorinated Gases: HFC, PFC, SF6 and NF3

- It is important to ensure the appropriate management and disposal of the four fluorinated gases; HFC, PFC, SF6 and NF3. It is also important to pursue development and diffusion of other substitutes that have a low global warming potential (GWP) and/or are fluorocarbon-free.
- Given that it will take some time to achieve the conversion of refrigerants in existing refrigeration and air conditioning equipment on the market, it is important to pursue a rapid implementation of measures through the appropriate application of the Fluorocarbons Law.

o

Existing scheme

New scheme



Greenhouse Gas Sink Policies and Measures

Measures for Managing Forest Carbon Sink

- Variety of measures need to be implemented in a sustainable manner between FY 2013 and FY 2020 including thinning an annual average of 520 thousand hectares, appropriate forest development such as planting, proper management and conservation of protection forests, use of timber and woody biomass and so on.
- The Government will, by 2020, promote establishment of seed orchards and scion gardens which are necessary to replace existing breeds of major forestry species with seeds and seedlings that grow well and development of appropriate forest resources through steady planting and other measures
- the Government will consider new schemes to secure financial resources for forest carbon sink management, including a fiscal policy and levying the cost of forest development on the public. The Government will also promote the public-private joint initiatives in a steady and comprehensive manner, including community afforestation programs and forest environment campaigns designed to gain the extensive understanding and support of the public.

Measurement for Sink Source in Agricultural Soil

- Contributes to the increased carbon storage in both agricultural lands and pasture soils by promoting continuous usage of organic matter in fertilizers and green manures

Promotion of Urban Greening

- For the urban greening, actions will be continuously promoted such as park maintenance, greening in roads and bays, and creation of the new greening spaces at buildings. Improvement in report and verification system for the urban greening will also be strategically carried out.

Cross-sectional Strategies

Cross-sectional Strategies

- GHG Emissions Accounting, Reporting and Disclosure Program
- Making the Tax System Greener
- Domestic Emission Trading Scheme
- Preliminary Studies, Forecast and Evaluation of GHG Projects
- Promotion of Environmental Considerations in Business Activities
- Greening Finance
- Promotion of a Credit Scheme for Promoting Emission Reduction Activities in Japan (J-Credit scheme)
- Development of Public Campaigns
- Technology Development for Global Warming Countermeasures

Accounting, Reporting and Disclosure System(1)

System outline

- The system is based on the Act on Promotion of Global Warming Measures revised in 2005 (Enforced in Apr. 2006)
- Specified emitters are obliged to calculate and report their GHG emissions. The government collects and announces the information.

Objectives

- Establishing foundation for emitter's voluntary action by calculating their own emissions
- Promoting voluntary action and fostering momentum of emissions reduction through information disclosure and visualization

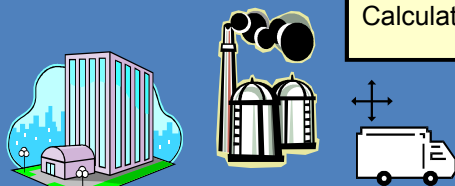
① Covered entities (specified emitters) calculate their emissions and report the emission information of the preceding fiscal year by business operator until end-July every year.

② The competent ministers compile the reported information and notify the Minister of the Environment and the Minister of Economy, Trade and Industry

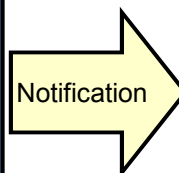
③ The notified information is compiled by the Minister of the Environment and the Minister of Economy, Trade and Industry, and is publicly announced/disclosed to the general public.

Specified emitters

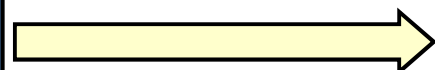
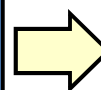
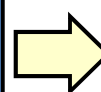
Business operators, etc. (including public sector) who own business establishments that emit considerably large amounts of greenhouse gases are covered.



Competent ministers



Minister of the Environment,
Minister of Economy,
Trade and Industry



Public Announcement

The emissions information, etc., are compiled by operator, by industry, and by prefecture, and made public.

Reading

Disclosure

The emissions information on a specific operator is disclosed upon request.

Requests

General public,
business operator

※ Emitters may submit relevant information such as the reason of increases or declines in its emissions.

※ If a specified emitter considers that its competitive interests could be harmed by a public announcement of its emissions data, then the emitter may request the protection of its rights and interests.

※ Penalty is provided for reporting-obligation violation or false report.

As to the reporting for energy-derived carbon dioxide, the framework of the Energy Conservation Act is utilized (e.g., admitting the report using the periodic report of the Energy Conservation Act).

Accounting, Reporting and Disclosure System(2)

Reporting Entity and types of green house gas

Type of greenhouse gas	Reporting entity (specified emitter)
<p><u>Energy-originated carbon dioxide (CO₂)</u></p> <p>(Carbon dioxide emitted in connection with fuel combustion or the use of electricity or heat supplied by another party.)</p>	<p>[Specified establishment emitters]</p> <ul style="list-style-type: none"> • Parties whose total annual energy consumption of all business establishments has a crude oil equivalent of at least 1,500 kiloliters. • If a party has a business establishment whose annual energy consumption has a crude oil equivalent of at least 1,500 kiloliters, it has to report the emissions of the establishment as a breakdown. <p>[Specified transportation emitters]</p> <ul style="list-style-type: none"> • Specified freight carriers, specified passenger carriers, specified air carriers, and specified consigners in the Energy Conservation Act.
<p><u>Greenhouse gases other than the above (“5.5 gas”)</u></p> <ul style="list-style-type: none"> ○ Non-energy originated CO₂ ○ Methane (CH₄) ○ Nitrous oxide (N₂O) ○ Hydrofluorocarbons (HFCS) ○ Perfluorocarbons (PFCS) ○ Sulfur hexafluoride (SF₆) 	<ul style="list-style-type: none"> • Parties meeting both conditions below: <ul style="list-style-type: none"> [1] total emissions of all business establishments for each type of greenhouse gas have a carbon dioxide equivalent of at least 3,000 tons. [2] at least 21 full-time employees in their overall business. • If a party has a business establishment whose emissions of each type of greenhouse gas have a carbon dioxide equivalent of at least 3,000 tons, it has to report the emissions of the establishment as a breakdown.

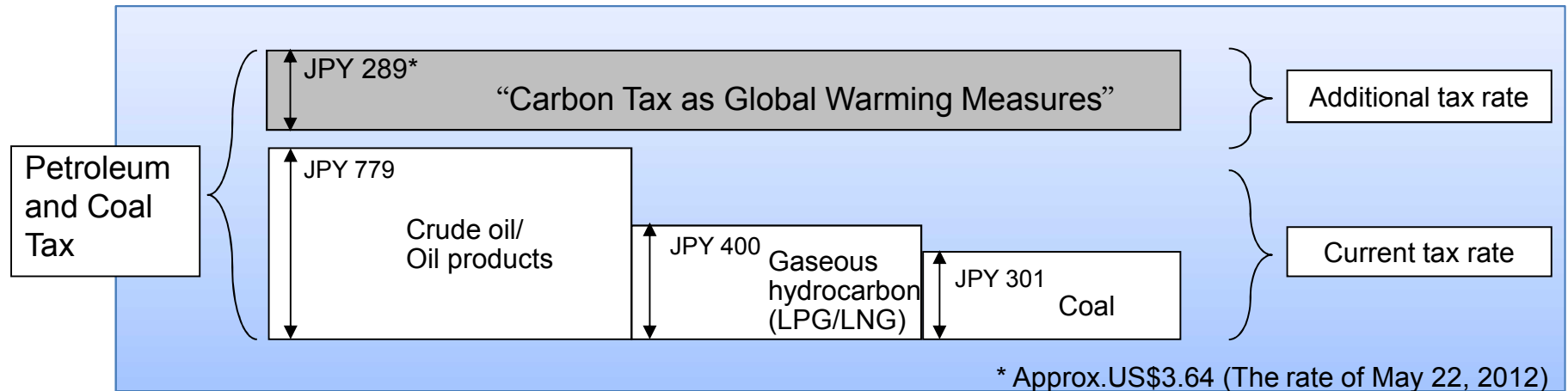
※Whether an entity should report or not is judged using the calculation method specified in the government/ministerial ordinances.

New Carbon Tax Scheme

- Tax rate corresponding to the amount of CO₂ emissions for all fossil fuels (JPY 289/t-CO₂)
- Enforced from Oct. 2012 and increases in the tax rate gradually over 3 and a half years
- All the tax revenue will be allocated for curbing energy-originated CO₂ emissions

Tax Rate

Tax Rate per t-CO₂ of “Carbon Tax as Global Warming Measures”



Enforcement Stage

Object of Taxation	Current Tax Rate	From Oct. 1, 2012	From Apr. 1, 2014	From Apr. 1, 2016
Crude oil/Oil products [per 1 kl]	(JPY 2,040)	+ JPY 250 (JPY 2,290)	+ JPY 250 (JPY 2,540)	+ JPY 260 (JPY 2,800)
Gaseous hydrocarbon [per 1 t]	(JPY 1,080)	+ JPY 260 (JPY 1,340)	+ JPY 260 (JPY 1,600)	+ JPY 260 (JPY 1,860)
Coal [per 1 t]	(JPY 700)	+ JPY 220 (JPY 920)	+ JPY 220 (JPY 1,140)	+ JPY 230 (JPY 1,370)

Tax Revenue

[1st year] **JPY 39.1 billion** ; [Normal year] **JPY 262.3 billion** (about US\$3.31 billion)



To be used for introduction of renewable energy and enhancement of energy conservation measures, etc.

CO₂ reduction effect of the tax

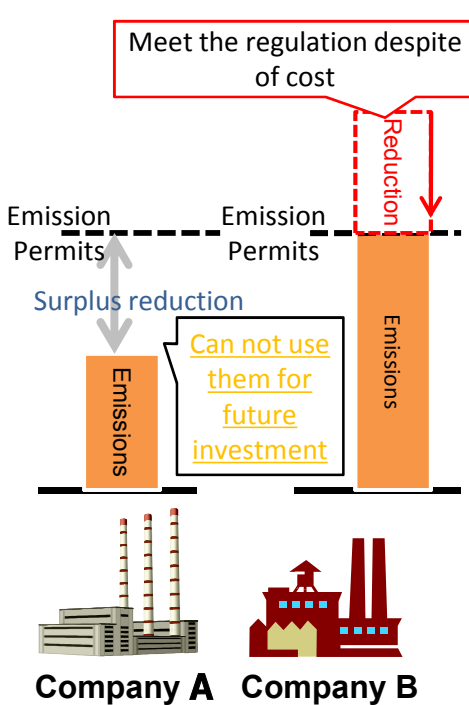
○The overall CO₂ reduction effects (both price and revenue effect) from energy is estimated to be -1.5% to -2.2% (6 to 24 million CO₂) in 2020 compared with 1990 levels.

Estimated CO₂ reduction effect by tax for global warming measures

	2020
Price effect	-0.2% (Approx. 1.76 tonnes of CO ₂ reduction)
Revenue effect	-0.4% to -2.1% (Approx. 3.93 to 21.75 million tonnes of CO ₂ reduction)
Total	-0.5% to -2.2% (Approx. 5.69 to 23.5 million tonnes of CO₂ reduction)

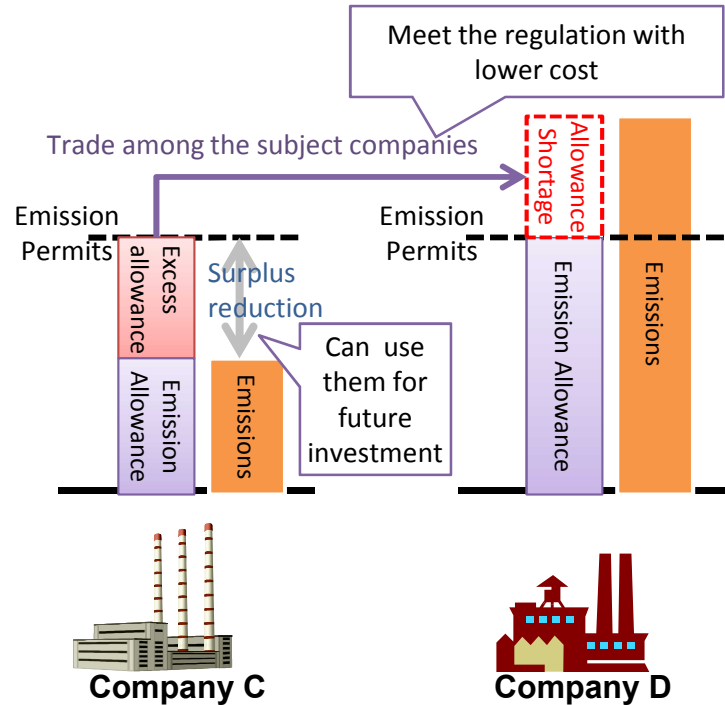
Domestic emissions trading scheme

Simple emissions regulation



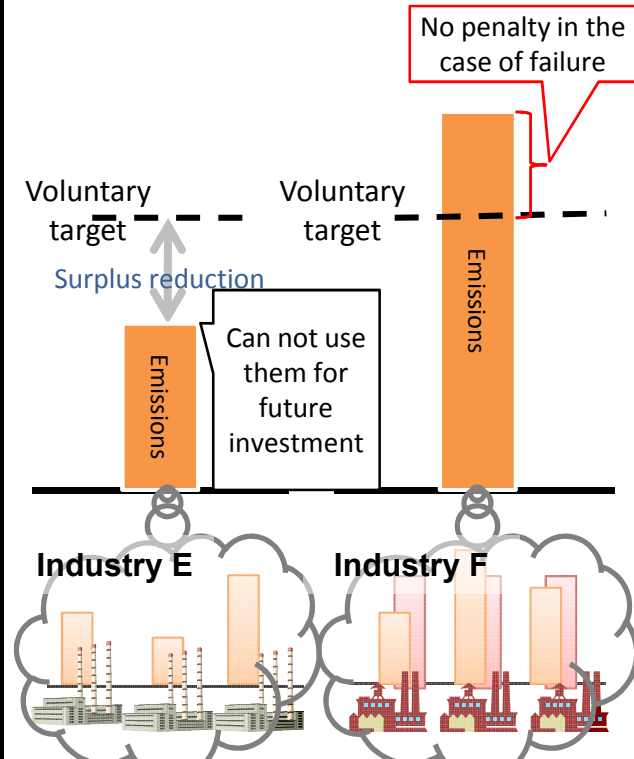
Can assure the emissions reduction effects but less flexible

Domestic emissions trading scheme



Assure the emissions reduction under the fair and transparent rules, and at the same time, maintain flexibility by permitting trade

Voluntary target for industries



Flexible; however, emissions reduction effects are uncertain, and difficult to manage unfairness among the industries /companies

Summary of the Guidelines for GHG Emission Control

- Based on Japanese Act on Promotion of Global Warming Countermeasures, the following 2 effort obligations are imposed on business Operators (Article 20-5,-6)
- The competent Ministers announce the guidelines for emission control that show business operators the necessary measures in fulfilling these obligations (Article 21)
- These are pioneering guidelines for GHG emission control mentioning concrete measures in Japan.

Effort obligations of business operators

① Measures to control GHG emission associated with business activities

Industrial Sector (Apr. 2013~)	<ul style="list-style-type: none"> ○ Activities for the effective implementation <ul style="list-style-type: none"> • Establishment of management system, Education of workers on the system • Management of the emission amounts, facilities installation and operation status • Collection and organization of the information • Implementation of PDCA ○ Measures for emission control, etc. Present measures regarding how to select and use facilities, i.e., combustion and heat utilization, etc. <ul style="list-style-type: none"> • Updating to energy efficient boilers / Improvement of thermal efficiency • Optimization of flow rate and pressure in the water supply and drainage pumps, maintenance and inspection of heat source facilities on a regular basis, etc.
Service Sector (Dec. 2008~)	<ul style="list-style-type: none"> ○ Activities for the effective implementation <ul style="list-style-type: none"> • Establishment of management system, Education of workers on the system • Management of the emission amounts, facilities installation and operation status • Collection and organization of the information • Implementation of PDCA ○ Measures for emission control, etc. Present measures regarding how to select and use facilities i.e., combustion and heat utilization, etc. <ul style="list-style-type: none"> • Updating to energy efficient heat source units / Fragmentation of the ranges in air conditioning • Optimization of air ratio in combustion facilities / Management of temperature and humidity in air conditioning, etc.
Waste Management Sector (Feb. 2012~)	<ul style="list-style-type: none"> ○ Activities for the proper and effective implementation <ul style="list-style-type: none"> • Promote voluntary efforts by residents / Separated collection of wastes / Waste control, etc. ○ Measures for emission control, etc. Present measures regarding how to select and use facilities <ul style="list-style-type: none"> • Vehicles for waste collection • Facilities for waste incineration • Treatment facilities for emitted gases, etc. ○ CO2 emission with measures listed in the guidelines "The reference CO2 emission amounts per processing incinerator unit" are shown in the guidelines. They are estimated based on the type and capacity of municipal solid waste incinerators.

② Measures that contribute to GHG control in providing products used in daily life (Dec. 2008~)

- **General measures to be taken by business operators**
 - Manufacture of high energy efficient products
 - Coordination with local governments
 - Provision of the information through the use of "visualization" such as carbon footprint system, etc.
- **Concrete measures to be taken by business operators**
 - Present the measures to be taken for the manufacture of apparatus, i.e., lighting, heating and cooling equipment, etc.
 - Manufacture of low-energy-consumption lighting equipment, etc.

*In addition to the guidelines above, the guidelines for other sectors are to be added.

Promotion of Low Carbon Investment through Environmental Finance

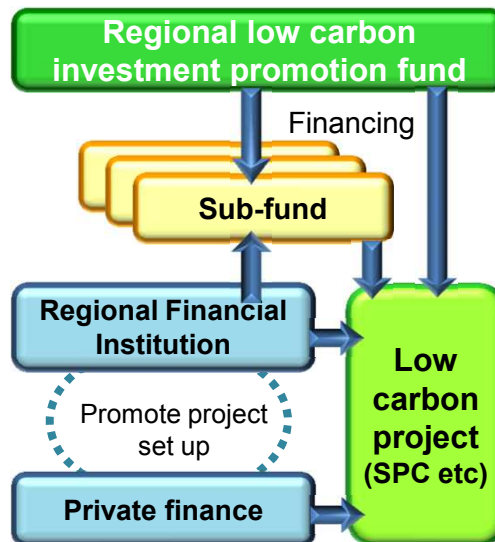
Issues

- To create a low carbon society, a large amount of additional investment is required with **drastic increase in renewable energy and thorough use of energy efficiency measures as pillars**. To this end, **mobilizing private finance is essential**
- Strongly promote “**Low Carbon Society Establishment Finance Initiative**” launched in Jan 2013, and **foster regional low carbon projects across the country through accelerating and mobilizing private finance**
- **Deliver menus based on the needs** of the users including region, business operators and financial organizations

Diffuse regional low carbon investment promotion fund across the country

Set up regional low carbon investment promotion fund which finances low carbon projects, as an incentive for private finance

Expand private investment for low carbon projects which contribute to both CO2 emission mitigation and local revitalization by expanding sub-fund set up in collaboration with regional financial institution



Interest subsidy for expanding environmental financing

Implement interest subsidy to lighten the burden of interest cost and to facilitate smooth financing for low carbon project, as well as to promote finance with environmental viewpoint from both corporate base and project base.

Promote Eco-lease for household and business entity

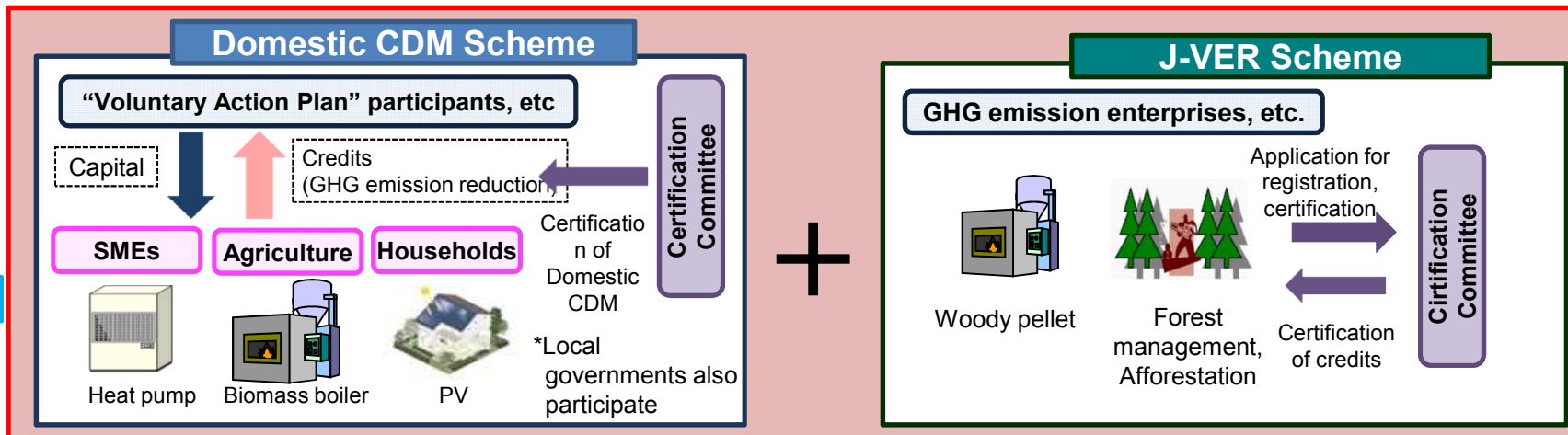
A part of cost is subsidized, in case low carbon devices are installed by “lease” contract, in order to lighten the burden of household and business entity who cannot afford the upfront cost for the installation

Outline of J-Credit Scheme

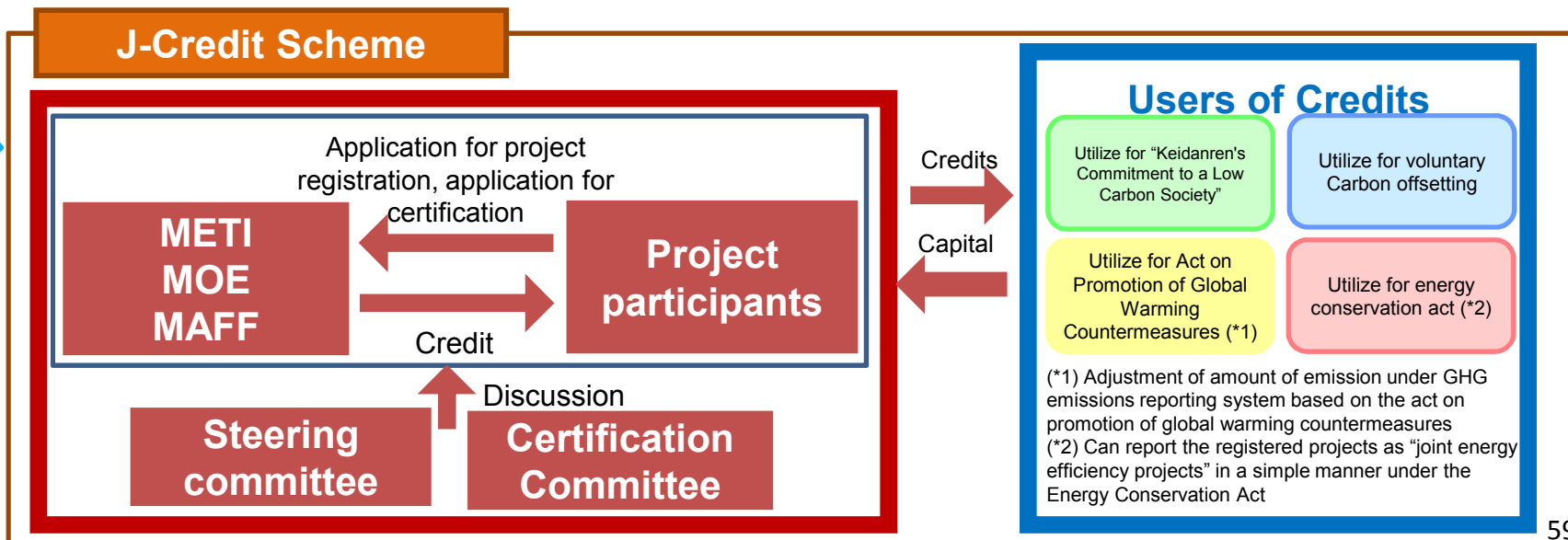
Vitalize new scheme by resolving the confusing situation that two similar schemes (Domestic CDM, J-VER) that create credits exist (Enhance usability by uniting two previous schemes)

- ◆ Promote GHG emission reduction and removal in Japan after 2013 continuously and actively
- ◆ Enhance actions of industries, actions of CSR and voluntary carbon offsetting

Until
end of
March
2013



After
April
2013



(*1) Adjustment of amount of emission under GHG emissions reporting system based on the act on promotion of global warming countermeasures
(*2) Can report the registered projects as "joint energy efficiency projects" in a simple manner under the Energy Conservation Act








National campaign on solutions to global warming

- Runs “National campaign on solutions to global warming” in order that government and citizens can work together for preventing global warming and shifting towards low carbon society.
- Calls for practicing “6 challenges” proposed in the campaign to citizens and companies, and promote various projects namely, “Cool BIZ”, “Warm BIZ”, “Smart Move”, and “Morning Challenge” Fostering. In order to manage the power shortage by the Great East Japan Earthquake, power conservation actions are also in place
- Calls for members of “Individual Challenger”, and “Company/organization challengers” who agreed with the national campaign (As of June 2012, Individual: 920,000 members, Companies: 25,000 members)
- Information on latest CO₂ facilities or devices is provided through various measures including SNS

6 Challenges

-  Let's choose eco-friendly lifestyle
-  Let's choose energy efficient products
-  Let's choose renewable energy
-  Let's choose eco-friendly house/building
-  Let's support products & actions related to CO₂ reduction
-  Let's participate in local actions against global warming

7 points of power conservation in house

-  1 Take care to switch off
-  2 Reduce stand by power losses
-  3 Power conservation through air-conditioner
-  4 Power conservation through refrigerator
-  5 Power conservation through lighting
-  6 Power conservation through TV
-  7 Other power conservation

Super Cool Biz

Suggestion of comfortable lifestyle even in the room temperature settings of 28 degree Celsius

SUPER COOLBIZ

Super Cool Biz
Logo

Cool Share
Logo

エアコン無しで涼しいところに集まろう

COOL SHARE

Warm Biz

Suggestion of comfortable lifestyle even in the room temperature settings of 20 degree Celsius



Poster of Cool Biz

Smart Move – Eco transportation-

Suggestions of low CO₂ emissions move to reduce CO₂ emissions associated with transportation

Not only environmental friendly but also comfort, convenient and healthy lifestyle is named “smart move” and promote to company, organization and public

「移動」を「エコ」に。

smart move

Morning Challenge! (Challenge to morning lifestyle)

Suggestions of new morning lifestyle to reduce CO₂ emissions



CO₂ reduction effects

Shorten the use of lighting, Air-conditioner, TV for 1 hour/day (annual reduction per household)
 [Lighting] Approx. 85kg of CO₂ reduction
 [Air Conditioner] Approx. 58kg of CO₂ reduction
 [TV] Approx. 22kg of CO₂ reduction
 (Total) Approx. 165kg of CO₂ reduction



Morning Challenge! Website

Campaign on Lighting “Akari Future Plan”

◆Background

- CO₂ emissions from residential and commercial sectors has been increasing. Lighting accounts for 13% of the residential sector (second largest after refrigerator).
- In 2008, Ministry of Economy, Trade and Industry called for shifting from incandescent lamp to more energy efficient products by 2012
- Major home appliance manufacturers would stop producing incandescent lamp by 2012
- For that reasons, two Ministers (MOE and METI) have jointly requested again to manufacturers and retailers

◆ “Akari Future Plan” kick-off meeting

Date: 13/June/2012

◆ “Akari Future Plan” website

◆ “Akari Future Plan” Poster and Leaflet



Summary of New Low Carbon Technology Plan

Decided by the Council for Science and Technology Policy on September 13th, 2013

- In January 2013, Prime Minister Abe issued the following instruction: “Establish proactive diplomatic strategy against global warming in order to contribute to the world with Japan’s technologies.”
- Japan is to contribute toward addressing global issues such as global warming and energy scarcity by steadily developing and diffusing innovative technologies. The aims are to reduce the world’s greenhouse gas emissions by half by 2050 (80% reduction for developed countries) and to contribute to overcoming environmental and energy issues hindering the economic growth of developing countries.
- The revision of the present strategy detailed the following:
 - (1) Identification of innovative technologies that require development both over the short-to-medium and medium-to-long term.
 - (2) Strengthening of policies for promoting technology development, and
 - (3) Measures required for global expansion and diffusion of innovative technologies, in order to expedite steady development and diffusion of innovative technologies.

(1) Identification of Innovative Technologies

A total of 37 technologies were identified as “innovative technologies”. It is important to globally expand the technologies through technology development according to the needs of target countries, product optimization, and combination of various technologies.

Technologies for Short/Medium-term Development (To Be Developed by ~2030)

- Production • Supply sector
 - High-efficiency coal-fired power generation, high-efficiency natural gas-fired power generation, wind power generation, solar energy, geothermal power generation, ocean energy, nuclear power, etc.
- Consumption • Demand sector
 - Next-generation automobiles, innovative structural materials, innovative devices, energy management, energy efficient houses/buildings, etc.
- Distribution • Supply/Demand Integration sector
 - Fuel cells, high-performance electricity storage, heat storage and insulation technologies, etc.

Technologies for Medium/Long-term Development (To Be Put into Practical Use after ~2030)

- CO₂ Capture and Storage (CCS), artificial photosynthesis, biomass utilization, Hydrogen production/transport/storage, etc.

(2) Strengthening of Policies for Promoting Technology Development

Promotion of Investment in R&D Cultivation of Innovative Technology Seeds

Improve investment environment for the private sector through utilization and promotion of R&D tax systems. Develop high-risk high-return technologies under the leadership of the government.

(3) Measures Required for Global Expansion and Diffusion of Innovative Technologies

Promotion of the Joint Crediting Mechanism

Promote the development of projects through cooperation among relevant ministries, agencies and organizations including JICA and JBIC.

*JICA: Japan International Cooperation Agency

*JBIC: Japan Bank for International Cooperation

Promotion of Utilizing International Standardization

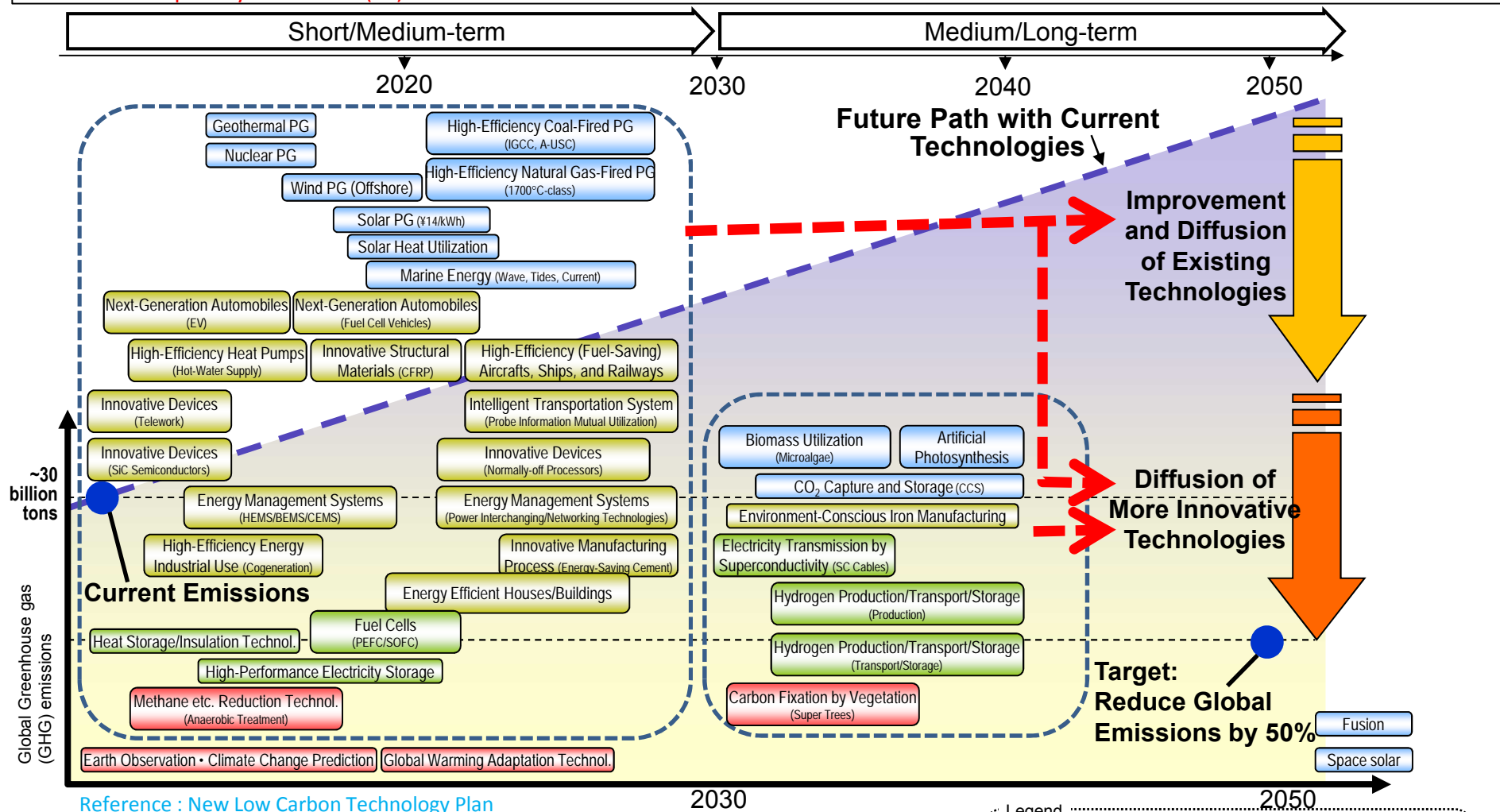
Assist establishment of systems for energy-saving measures, renewable energy application, HRD, etc., in emerging countries.

Strategic Utilization of Public Funds

Utilize public financing to promote global expansion of high-efficiency thermal and nuclear power generation, low-carbon society, etc.

Global Contribution of Japan's Environmental and Energy Technologies

- Japan will continue to develop advanced environmental and energy technologies in the short/medium-term to medium/long-term, and will contribute to halving global greenhouse gas emissions by 2050 through global diffusion of such technologies.
- Steadily implement the revised Low Carbon Technology Plan as well as globally cooperate to develop and diffuse the technologies to cover approximately 80% of the reduction needed to halve global GHG emissions by 2050.
- Aim to invest USD110 billion of both public and private finance over five years on the premise of achieving national and regional primary balance surplus by Fiscal Year (FY) 2020.



*1 The horizontal position of environmental and energy technologies indicates approximate time of practical diffusion based on the roadmap of each technology.

*2 "Future path with current technologies" indicates approximate transition of global GHG emissions assuming no change in efficiencies for existing technologies (e.g., generating efficiency of coal-fired generation)

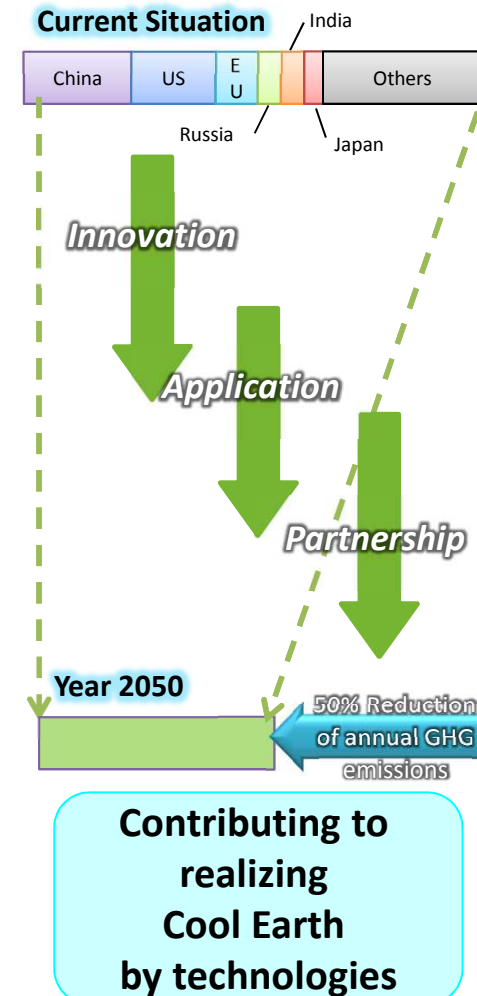
*3 The downward arrows for "Improvement and diffusion of existing technologies" and "Diffusion of innovative technologies" indicate both contributions are required to reduce global GHG emissions; they do not specify the amount of reduction by each contribution.

ACE: Actions for Cool Earth

Japan's Diplomatic Strategy for Countering Global Warming

Basic Concept

- Warming of the climate system is unequivocal.
(IPCC Fifth Assessment Report)
- Concrete actions are needed for:
 - **50% reduction of global GHG emissions**
 - **80% reduction for developed countries by 2050**
- Actions for “Cool Earth” are:
 - Innovation of Low Carbon Technologies
 - Application of existing technologies
 - Partnership with various stakeholders
- Overcoming the aftermath of the Great East Japan Earthquake and the nuclear accident.



Action1 : Innovation



Carbon Fiber Filament and its application

Innovative technology development is indispensable.
Japan will lead the technological breakthrough.

- Endeavor to invest USD110 billion of both public and private finance over five years for research and development in energy and environment.
- Implement the Low Carbon Technology Plan.
 - approx. 80% cover of the reduction to halve global GHG emissions by 2050.
 - (e.g., CCS, innovative structural materials, locally appropriate technology)
- Host “Global Energy and Environment Innovation Forum” annually with the participation of leading persons.

Action2: Application

Low carbon technologies

→ **produce immediate effect
on GHG emission reduction**



Exterior view of GOSAT (@JAXA)

➤ **Double the number of partner countries to the Joint Crediting Mechanisms (JCM) over the next three years.**

✓ Support project formulation through JCM Special Financing Scheme (JSF) and “Leapfrog” fund.

➤ **Build basis for international diffusion of technologies.**

✓ Promote international standardization (e.g., LED lighting)

➤ **Launch a new satellite to observe GHGs in FY2017.**

✓ Monitor nation-by-nation or megacity-by-megacity GHG emission levels
→ verify and propose countermeasures.

Action3: Partnership

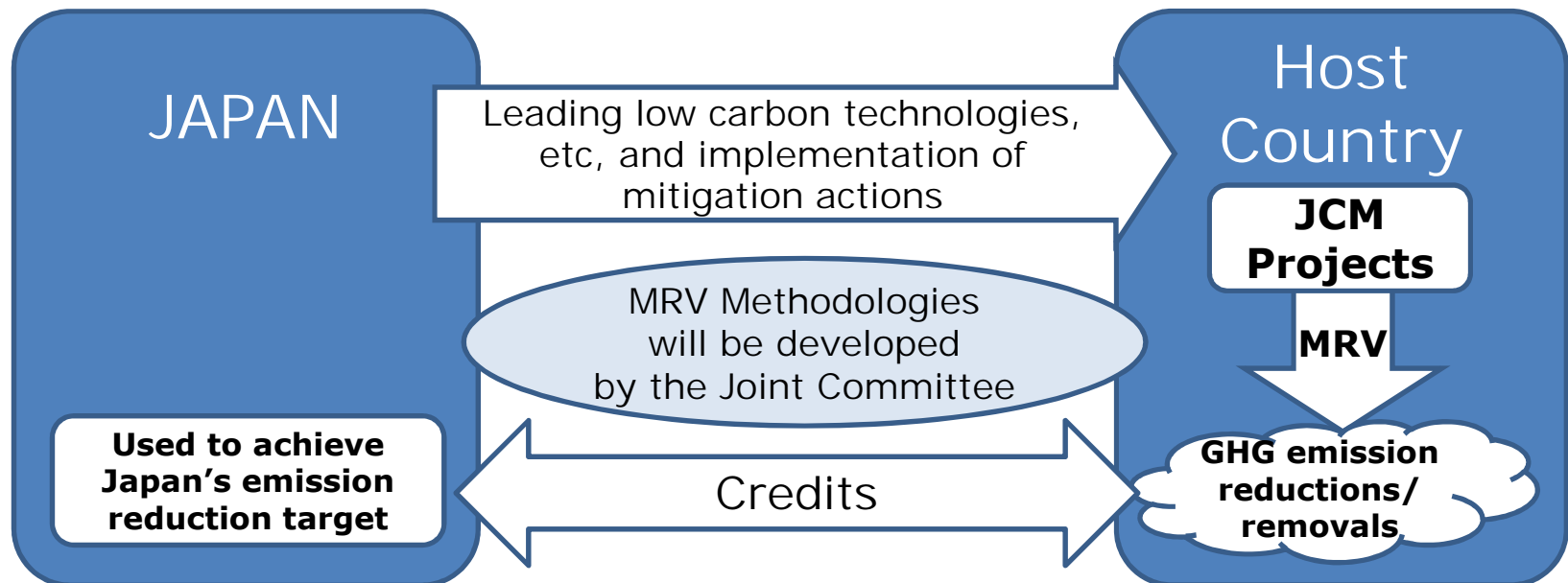


Support developing countries and establish a win-win relations.

- **1,600 billion yen (approx. USD 16 billion) of both public and private finance to developing countries over the 3 years since 2013**
 - ✓ Focus on disaster risk reduction and utilize new schemes
e.g., Stand-By Emergency Credit for Urgent Recovery (SECURE) etc.
 - ✓ Promote the substantial scale-up of private climate finance by utilizing public financial instruments.
- **Japan will lead the discussion to develop a new international framework for climate change beyond 2020.**

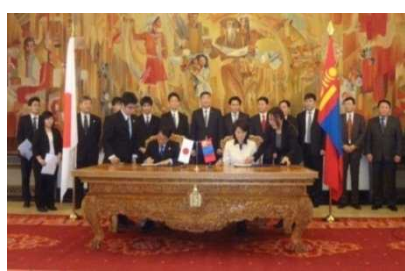
Basic Concept of the Joint Crediting Mechanism

- Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluating contributions to GHG emission reductions or removals from Japan in a quantitative manner, by applying measurement, reporting and verification (MRV) methodologies, and use them to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals, complementing the CDM.



Countries with which Japan has signed on bilateral documents

- Japan has held consultations for the JCM with developing countries since 2011 and signed the bilateral document for the JCM with Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica and Palau.



Mongolia
On January 8, 2013
(Ulaanbaatar)



Bangladesh
On March 19, 2013
(Dhaka)



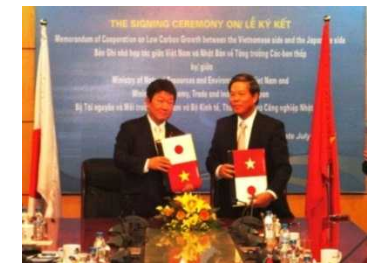
Ethiopia
On May 27, 2013
(Addis Ababa)



Kenya
On June 12, 2013
(Nairobi)



Maldives
On June 29, 2013
(Okinawa)



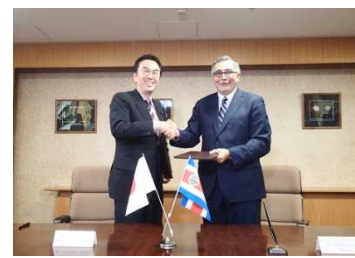
Viet Nam
On July 2, 2013
(Hanoi)



Lao PDR
On August 7, 2013
(Vientiane)



Indonesia
On August 26, 2013
(Jakarta)



Costa Rica
On December 9, 2013
(Tokyo)



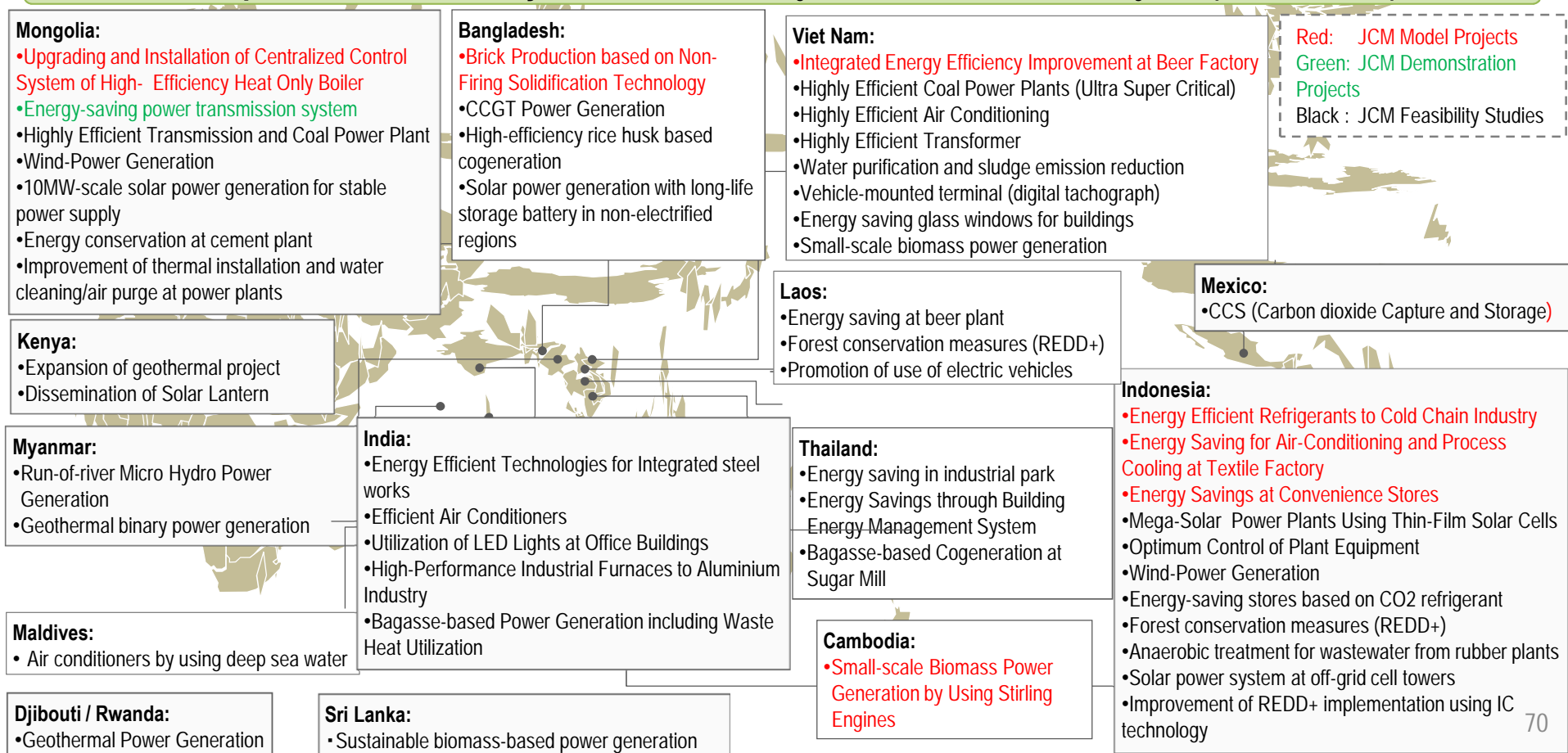
Palau
On January 13, 2014
(Ngerulmud)

- Japan held the 1st Joint Committee with Mongolia, Bangladesh, Ethiopia, Kenya, Viet Nam and Indonesia respectively.

Approaches for promoting JCM project formulation

- Implementation of JCM Demonstration Projects and Financing Program for JCM Model Projects
- Establishment of the JCM Special Financing Scheme (JSF) in collaboration with JBIC and NEXI
- Establishment of a fund to assist emission reduction projects which cooperate with projects assisted by JICA, etc.
- Assistance to cities and islands as a whole
- Utilization of the consultative meetings of relevant ministries, agencies, and organizations.

Example of JCM Feasibility Studies/Model Projects /Demonstration Projects (2010 to 2013)



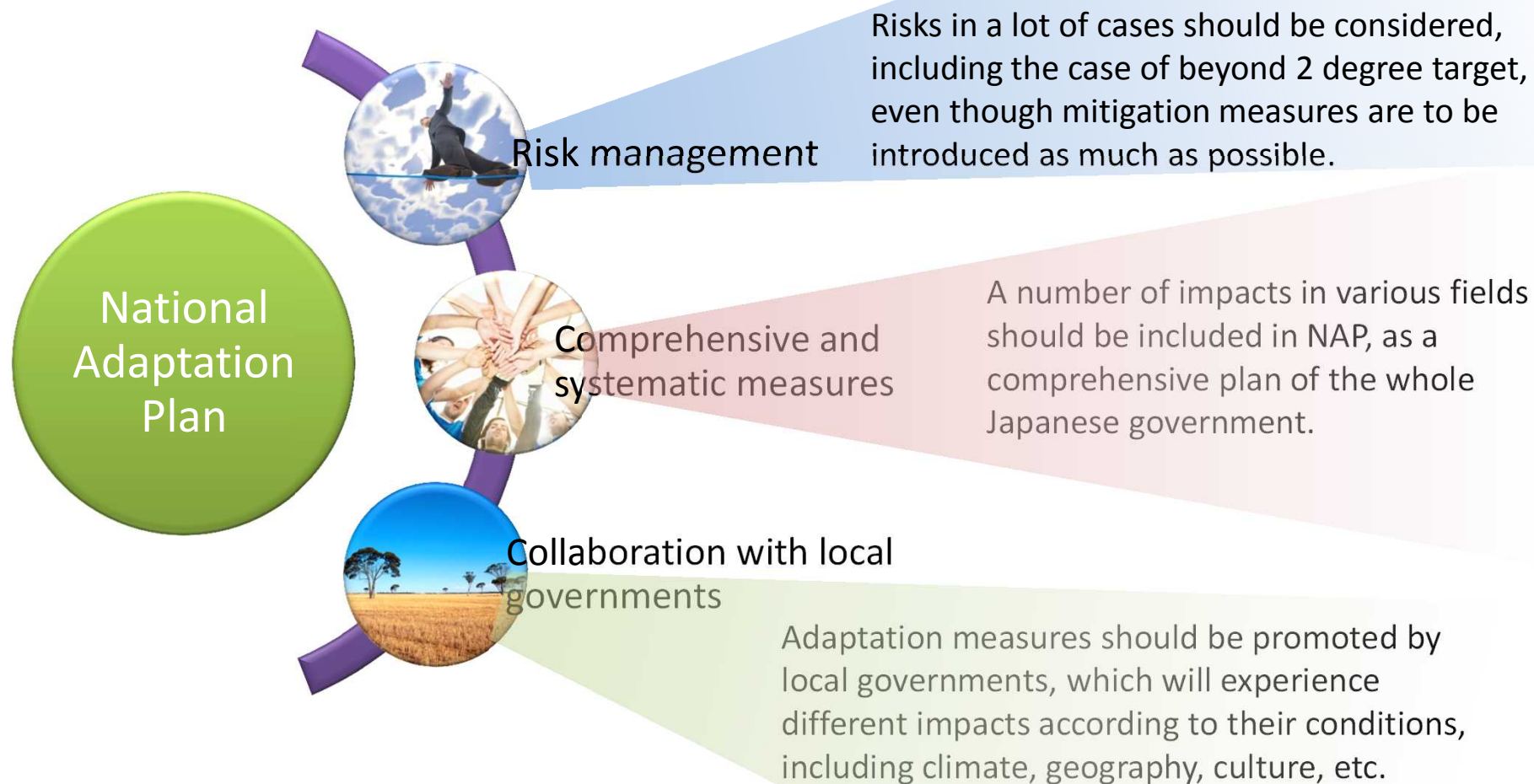
Adaptation plan

Countermeasures for adaptation to climate change by MOEJ

	R and D	Achievements
1994～ 2001		“Climate change impact in Japan”
2008	Project for comprehensive projection of climate change impacts (2005-09)	“Wise adaptation to climate change”
2009		“Comprehensive report on observation and prediction of climate change”
2010	Comprehensive Research on Climate Change Impact Assessment and Adaptation Policies (2010-14)	“Approaches to climate change adaptation”
2011		“Statistic report and portal site for climate change impact”
2012		“New comprehensive report on observation and prediction of climate change”

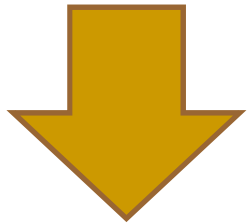
Steps towards establishing National Adaptation Plan

Three basic concepts of National Adaptation Plan



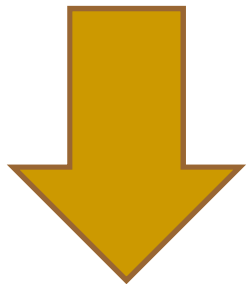
Steps towards Adaptation Plan

Establish “Expert Committee on Climate Change Impact Assessment” at 114th Global Environmental Subcommittee, Central Environmental Council (July, 2013)



- Further detailed projection of climate change in Japan to monitor extreme events
- Assessment on climate change impacts in Japan
- Analysis on risk information

Summarize climate change impacts, risk assessment and future issues (around Jan, 2015)



- Extraction of priority areas/issues in short term (- 10 years), middle term (10-30 years) and long term (30-100 years)
- Review by each ministry

Develop an adaptation plan as a government-wide integrated effort (summer, 2015)

※ Regular review (every 5 years)