FY2011 Evaluation and Verification of the Voluntary Action Plan on the Environment Results and Future Issues

(Provisional Translation)

March 31, 2012

Global Environmental Subcommittee, Environmental Committee, Industrial Structure Council

Expert Committee for Follow-up to the Voluntary Action Plan on the Environment, Global Environment Committee, Central Environment Council

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Subcommittee for Global Environment, Environment Committee, Industrial Structure Council
Expert Committee for Follow-up to the Voluntary Action Plan on the Environment, Central Environmental Council

I. Evaluation and Verification of the FY2011 Voluntary Action Plan on the Environment

1. Evaluation and verification of the Voluntary Action Plan

(1) Global Environmental Subcommittee, Environmental Committee, Industrial Structure Council

- Role of joint conferences with the Expert Committee for Follow-up to the Voluntary Action Plan on the Environment, Global Environment Committee, Central Environment Council

The Kyoto Protocol Target Achievement Plan that was revised in March, 2008 establishes the implementation of regular follow-ups of voluntary action plans by related government councils as a system for evaluating and verifying these plans. Among the objectives of these follow-ups is to promote measures to reduce emissions by individual industries and to steadily implement actions to reduce emissions toward achievement of Japan's commitment to reduce its emissions by 6% under the Kyoto Protocol.

At METI, in accordance with this plan, evaluation and verification of voluntary action plans for 41 individual industries under its jurisdiction based on actual results in FY2010 have just been completed by its seven working groups (WG).

The "Joint Conference between the Global Environmental Subcommittee, Environmental Committee, Industrial Structure Council and the Expert Committee for Follow-up to the Voluntary Action Plan on the Environment, Global Environment Committee, Central Environment Council" is the parent organization of the working groups within the voluntary action plan evaluation/verification system. This Joint Conference is charged with receiving reports on the results of deliberations conducted by each working group, and with arranging the results of evaluation/verification of the 2011 Voluntary Action Plan and issues to be tackled in the future.

(2) Schedule for evaluation and verification of the FY2011 Voluntary Action Plan

○ Working groups (WG) affiliated with the Global Environmental Subcommittee, Environmental Committee, Industrial Structure Council

Resources and Energy WG	Wednesday, November 9, 2011
Paper, Flat Glass and Cement WG	Monday, November 14, 2011
Distribution and Service WG	Tuesday, November 15, 2011
Automobile, Auto Parts, and Auto Body WG	Wednesday, November 16, 2011
Electronics, Electrical Equipment, and Industrial Machinery WG	Thursday, November 17, 2011
Chemicals and Nonferrous Metal WG	Friday, November 18, 2011
Iron and Steel WG	Tuesday, November 22, 2011

○ Joint Conference of the Industrial Structure Council's Global Environmental Subcommittee and the Central Environment Council's Expert Committee for Follow-up to the Voluntary Action Plan

Monday, December 19, 2011

2. Types of “Voluntary Action Plans”

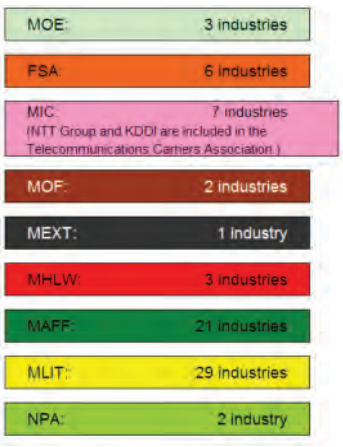
Classification		Industrial sector	Energy-conversion sector	Business/commercial sector	Transport sector
All 62 bodies and corporations participating in Nippon Keidanren have prepared voluntary action plans (including those in the business/commercial and transport sectors).	1	R: Japan Mining Industry Association	R: Federation of Electric Power Companies of Japan	D: Japan Chain Stores Association	MLIT: Japanese Shipowners' Association
	2	R: Limestone Association of Japan	R: Petroleum Association of Japan	D: Japan Franchise Association	MLIT: Japan Trucking Association
	3	R: Japan Petroleum Development Association	R: Japan Gas Association	D: Japan Department Stores Association	MLIT: Scheduled Airlines Association of Japan
	4	I: Japan Iron and Steel Federation		D: Japan Foreign Trade Council, Inc.	MLIT: Japan Federation of Coastal Shipping Associations
	5	C: Japan Chemical Industry Association		R: Japan LP Gas Association	MLIT: Association of Japanese Private Railways
	6	C: Lime Manufacture Association		FSA: Japanese Bankers Association	MLIT: East Japan Railway Company
	7	C: Japan Rubber Manufacturers Association		FSA: Life Insurance Association of Japan	MLIT: West Japan Railway Company
	8	C: Japanese Electric Wire & Cable Makers' Association		FSA: General Insurance Association of Japan	MLIT: Central Japan Railway Company
Of them, 34 industries in the industrial and energy-conversion sectors (±0 percent of industries targeted by Nippon Keidanren)	9	C: Japan Aluminum Association		MLIT: Japan Association of Refrigerated Warehouses	MLIT: Japan Freight Railway Company
	10	C: Japan Copper and Brass Association		MLIT: Japan Hotel Association	MLIT: Kyushu Railway Company
	11	P: Japan Paper Association		MLIT: Real Estate Companies Association of Japan	MLIT: Hokkaido Railway Company
	12	P: Japan Cement Association		MIC: NTT Group	MLIT: All Japan Freight Forwarders Association
	13	P: Flat Glass Manufacturers Association of Japan		MIC: KDDI	MLIT: Shikoku Railway Company
	14	P: Japan Sanitary Equipment Industry Association			
	15	E: 4 electrical/electronics-related groups			
	16	E: Japan Bearing Industrial Association			
	17	E: Japan Society of Industrial Machinery Manufacturers			
	18	E: Japan Machine Tool Builders' Association			
	19	A: Japan Auto Parts Industries Association			
	20	A: Japan Automobile Manufacturers Association; Japan Auto-Body Industries Association			
	21	A: Japan Industrial Vehicles Association			
	22	MOF: Brewers Association of Japan			
	23	MHLW: The Federation of Pharmaceutical Manufacturers' Associations of Japan; Japan Pharmaceutical Manufacturers Association			
	24	MAFF: Japan Dairy Industry Association			
	25	MAFF: Japan Soft Drinks Association			
	26	MAFF: Japan Sugar Refiners' Association			
	27	MAFF: Flour Millers Association			
	28	MLIT: Japan Federation of Construction Contractors			
	29	MLIT: Japan Federation of Housing Organizations			
	30	MLIT: The Shipbuilders' Association of Japan and the Cooperative Association of Japan Shipbuilders			
	31	MLIT: Japan Association of Rolling Stock Industries			
	32	P: Japan Federation of Printing Industries (*)			
Non-Nippon Keidanren member industries that have prepared voluntary action plans	1	P: Textile Finishers' Association	R: Power Producers and Suppliers	D: Meeting of Large Household Appliance Retailers	MLIT: Japan Passenger Boats Association
	2	P: Japan Glass Bottle Association		D: Japan DIY Industry Association	MLIT: Japan Federation of Hire-Taxi Associations
	3	P: Japan Prefabricated Construction Suppliers & Manufacturers Association		D: Japan Information Technology Services Industry Association	MLIT: ihon Bus Association
	4	E: Japan Construction Equipment Manufacturers Association		D: Japan Chain Drugs Stores Association	MLIT: Japan Harbor Transportation Association
	5	MOF: Japan Tobacco Inc.		D: Japan Leasing Association	
	6	MAFF: Japanese Starch and Sweeteners Industry Association		D: Japan Council of Shopping Centers	
	7	MAFF: Japan Baking Industry Association		MOE: National Federation of Industrial Waste Management Associations	
	8	MAFF: Japan Beet Sugar Industry Association		MOE: Japan Newspaper Publishers & Editors Association	
	9	MAFF: Japan Frozen Food Association		MOE: Zenkoku Pet Kourigyou Kyoukai	
	10	MAFF: Japan Oilseeds Processors Association		FSA: National Association of Shinkin Banks	
	11	MAFF: All Nippon Kashi Association		FSA: Community Bank Shinyo Kumiai	
	12	MAFF: Japan Ham and Sausage Processors Cooperative Association		FSA: Japan Securities Dealers Association	
	13	MAFF: All Japan Coffee Association		MHLW: Japanese Consumers' Co-operative Union	
	14	MAFF: Japan Convenience Foods Industry Association		MHLW: Japan Medical Association	
	15	MAFF: Japan Soy Sauce Brewers Association		MIC: Telecommunications Carriers Association	
	16	MAFF: Japan Canners Association		MIC: Telecom Services Association	
	17	MAFF: Japan Mayonnaise and Dressing Association		MIC: National Association of Commercial Broadcasters in Japan	
	18	MAFF: Nihon Hamburg & Hamburger Association		MIC: NHK (Japan Broadcasting Corporation)	
	19	MAFF: Japan Rice Millers Association		MIC: Japan Cable and Telecommunications Association	
	20	MLIT: Japan Boating Industry Association		MIC: Japan Satellite Broadcasting Association	
	21			MIC: Japan Internet Providers Association	
	22			MEXT: Association of Private Universities of Japan	
	23			MAFF: Japan Processed Foods Wholesalers Association	
	24			MAFF: Japan Foodservice Association	
	25			MAFF: Nihon Hamburg & Hamburger Association	
	26			MLIT: Japan Warehousing Association Inc	
	27			MLIT: Japan Ryokan Association	
	28			MLIT: Japan Tourist Hotel Association	
	29			MLIT: Japan Automobile Service Promotion Association	
	30			NPA: Zennichiyuren	
	31			NPA: All Nippon Amusement Machine Operators' Union	

【Legend】 Working group (WG)

R: Resources and Energy WG
C: Chemicals and Nonferrous Metal WG
E: Electronics, Electrical Equipment, and Industrial Machinery WG
I: Iron and Steel WG
P: Paper, Flat Glass and Cement WG
A: Automobile, Auto Parts and Auto Body WG
D: Distribution WG

(*) The Japan Federation of Printing Industries is not subject to the Nippon Keidanren target (±0%).

【Follow-ups by ministries】



Extract from the Kyoto Protocol Target Achievement Plan (revised in March 2008)

Chapter 3, Section 2 1 (1) 1) A. Efforts in the Commercial Sector (Manufacturers, etc.) (a) Promotion and Enhancement of Voluntary Action Plans by Industry

In the industrial and energy-conversion sectors, in 1997 the Japan Business Federation (hereinafter "Nippon Keidanren") took the lead in formulating the Voluntary Action Plan on the Environment, and established the target of limiting carbon dioxide emission in FY2010 to under ±0 of FY1990 levels. Moreover, in addition to the Nippon Keidanren Voluntary Action Plan on the Environment, individual industries under the Nippon Keidanren umbrella as well as non-Nippon Keidanren member industries are formulating plans for reducing emissions of greenhouse gases in all sectors, including the business/commercial sector and transport sector (hereinafter, these individual industry-level plans are referred to as "voluntary action plans"). These voluntary action plans now cover approximately 80% of the industrial and energy conversion sectors and approximately 50% of all sectors.

As of the end of March 2008, 50 industries in the industrial sector, 32 industries in the business/commercial sector, 17 industries in the transport sector, and four industries in the energy-conversion sector have established targets that include quantitative targets. These targets are being evaluated and verified by related councils and other bodies.

(Omission)

In order for Japan to achieve its reduction commitment under the Kyoto Protocol, it is extremely important for industry to advance efforts to limit emissions, including efforts to improve energy intensity and carbon dioxide emission intensity, so that the targets of these voluntary action plans in the industrial and energy-conversion sectors are achieved. Therefore, concerning the targets and content of voluntary action plans of industry, while taking into account the fact that the voluntary nature of the plans must be respected, it is also important that they meet social demands through

a) New formulation of voluntary action plans in industries for which plans have yet to be prepared,
b) Quantification of targets in areas in which plan targets are qualitative,
c) Implementation of rigorous government-led plan evaluation and verification, and
d) Raising of targets when the current situation already exceeds target levels.

It is also important that the targets of the Nippon Keidanren Voluntary Action Plan on Environment be fully achieved, and that individual industrial classifications are encouraged to make active efforts toward achievement of their own voluntary targets.

In order to improve the transparency, reliability, and probability of target achievement of voluntary action plans, the government will implement regular follow-ups through related councils as a system for evaluating and verifying these plans.

In addition to standpoints presented above (a to d), evaluation/verification by the government will be based on the following perspectives:

- Given that the first commitment period of the Kyoto Protocol is a five-year period that extends from 2008 to 2012, establishment of voluntary action plan targets than can be achieved during an average period of five years shall be encouraged.
- Maximum effort to indicate concretely the content of future measures to make up for shortfalls in target achievement (including application of the Kyoto Mechanisms) as well as effects of these measures shall be encouraged. Whenever possible, presentation of concrete forecasts of amount of credit acquisition and acquisition timing shall be promoted with regard to businesses that apply the Kyoto Mechanisms when target achievement appears difficult. Moreover, when acquired credit is to be applied to target achievement, transfer to the government's account shall be free of charge.
- Confirmation and review of division of responsibility among the companies that make up each industry shall be encouraged in order to enhance the probability of target achievement.
- Given that the Kyoto Protocol targets total emission of greenhouse gases, active study of use of carbon dioxide emissions as a performance indicator by industries that only use intensity shall be encouraged.
- For carbon dioxide emissions of businesses that participate in voluntary action plans, even more active information disclosure that includes utilization of emissions data of individual business establishments based on the Law Concerning the Promotion

of Measures to Cope with Global Warming and qualitative presentation of examples of leading efforts shall be promoted.

- Given that fundamental reinforcement of measures in the business/commercial sector, household sector, and transport sector is required, Nippon Keidanren will encourage quick, comprehensive, and cross-industry establishment of targets for reducing carbon dioxide emissions in the offices of participating industries and member companies, and will likewise encourage promotion of approaches that include expanded use of environmental household bookkeeping in the households of member companies' employees.
- Maximum effort to quantify industry efforts in the business/commercial and transport sectors as well as contribution to emissions reduction by the consumer and transport sectors, including quantification that is based on product LCA, shall be encouraged.
- International comparisons that are derived from highly reliable data as well as active external communication of approaches that are based on voluntary action plans shall be encouraged in all industries. Such actions will be for the purpose of disseminating information on volunteer action plan-based approaches to both international interests and domestic consumers in easy-to-understand forms.

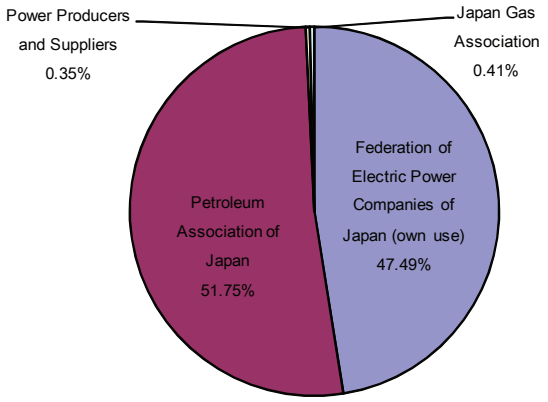
3. CO_2 Emissions by Industry in Fiscal 2010

(1) Actual CO_2 Emissions by Actual Emission Factors

Energy-conversion sector (4 industries)

(Emission unit: 10,000t-CO_2)

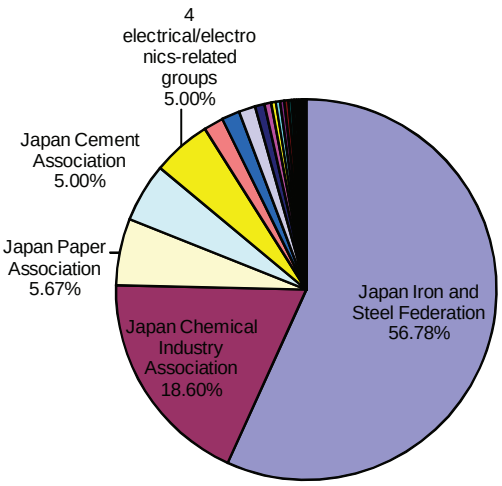
	Industry (energy-conversion sector)	CO_2 emissions	Ratio
1	Federation of Electric Power Companies of Japan (own use)	3,650	47.49%
2	Petroleum Association of Japan	3,978	51.75%
3	Power Producers and Suppliers	27	0.35%
4	Japan Gas Association	32	0.41%
	Total	7,686	100.0%



Industrial sector (26 industries)

(Emission unit: 10,000t-CO_2)

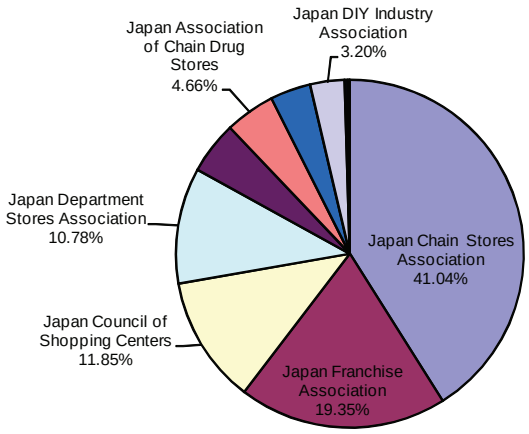
	Industry (industrial sector)	CO_2 emissions	Ratio
5	Japan Iron and Steel Federation	18,785	56.78%
6	Japan Chemical Industry Association	6,154	18.60%
7	Japan Paper Association	1,875	5.67%
8	Japan Cement Association	1,654	5.00%
9	4 electrical/electronics-related groups	1,654	5.00%
10	Japan Auto Parts Industries Association	557	1.68%
11	Japan Automobile Manufacturers Association;	505	1.53%
12	Japan Mining Industry Association	466	1.41%
13	Lime Manufacture Association	266	0.80%
14	Japan Rubber Manufacturers Association	191	0.58%
15	Japan Aluminum Association	131	0.40%
16	Textile Finishers' Association	122	0.37%
17	Flat Glass Manufacturers Association of Japa	114	0.34%
18	Japan Federation of Printing Industries	117	0.35%
19	Japan Glass Bottle Association	83	0.25%
20	Japanese Electric Wire & Cable Makers' Association	75	0.23%
21	Japan Bearing Industrial Association	70	0.21%
22	Japan Copper and Brass Association	55	0.17%
23	Japan Society of Industrial Machinery Manufac	51	0.16%
24	Japan Construction Equipment Manufacturers Association	46	0.14%
25	Limestone Association of Japan	30	0.09%
26	Japan Petroleum Development Association	24	0.07%
27	Japan Sanitary Equipment Industry Associatior	23	0.07%
28	Japan Machine Tool Builders' Association	23	0.07%
29	Japan Prefabricated Construction Suppliers & Manufacturers Association	11	0.03%
30	Japan Industrial Vehicles Association	5	0.01%
	Total	33,086	100.0%



Business/commercial sector (11 industries)

(Emission unit: 10,000t-CO_2)

	Industry (business/commercial sector)	CO_2 emissions	Ratio
31	Japan Chain Stores Association	601.6	41.04%
32	Japan Franchise Association	283.69	19.35%
33	Japan Council of Shopping Centers	173.7	11.85%
34	Japan Department Stores Association	158	10.78%
35	Meeting of Large Household Appliance Retailers	71.54	4.88%
36	Japan Association of Chain Drug Stores	68.26	4.66%
37	Japan Information Technology Services Industry Association	55.1	3.76%
38	Japan DIY Industry Association	46.9	3.20%
39	Japan Foreign Trade Council, Inc.	4.1	0.28%
40	Japan LP Gas Association	2.15	0.15%
41	Japan Leasing Association	0.75	0.05%
	Total	1,465.79	100.0%



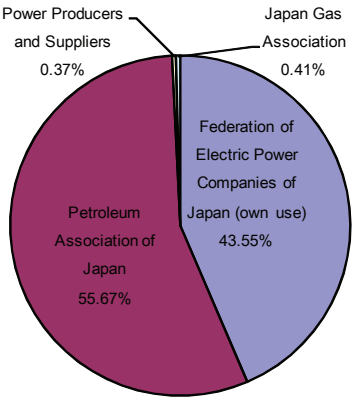
*Japan Rubber Manufacturers Association and Japan Gas Association have adopted 0.69kg-CO_2/kWh as a calculation method of the CO_2 reduction effect brought by the reduction of purchased electric power resulting from introduction of cogeneration. In addition, the Japan Gas Association calculates CO_2 emissions using a power-receiving end coefficient. However, this table adopts a generating end coefficient from the viewpoint of common evaluation (the same is applied to the tables in pages 5 and 6).

(2) CO_2 Emissions with credits etc. reflected

Energy-conversion sector (4 industries)

(Emission unit: 10,000t-CO_2)

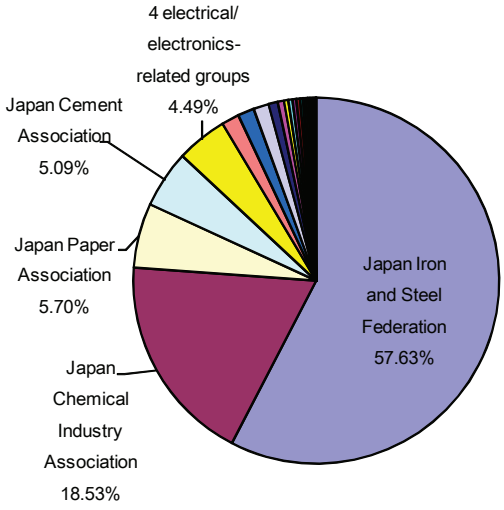
	Industry (energy-conversion sector)	CO_2 emissions	Ratio
1	Federation of Electric Power Companies of Japan (own use)	3,100	43.55%
2	Petroleum Association of Japan	3,963	55.67%
3	Power Producers and Suppliers	26	0.37%
4	Japan Gas Association	29	0.41%
	Total	7,118	100.0%



Industrial sector (26 industries)

(Emission unit: 10,000t-CO_2)

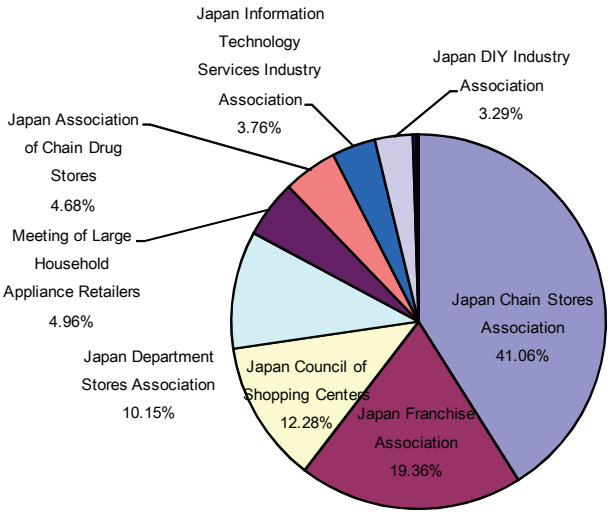
	Industry (industrial sector)	CO_2 emissions	Ratio
5	Japan Iron and Steel Federation	18,603	57.63%
6	Japan Chemical Industry Association	5,980	18.53%
7	Japan Paper Association	1,840	5.70%
8	Japan Cement Association	1,643	5.09%
9	4 electrical/electronics-related groups	1,449	4.49%
10	Japan Auto Parts Industries Association	504	1.56%
11	Japan Automobile Manufacturers Association; Japan Auto-Body Industries Association	467	1.45%
12	Japan Mining Industry Association	438	1.36%
13	Lime Manufacture Association	263	0.81%
14	Japan Rubber Manufacturers Association	180	0.56%
15	Japan Aluminum Association	123	0.38%
16	Textile Finishers' Association	118	0.37%
17	Flat Glass Manufacturers Association of Japan	111	0.34%
18	Japan Federation of Printing Industries	106	0.33%
19	Japan Glass Bottle Association	81	0.25%
20	Japanese Electric Wire & Cable Makers' Association	66	0.20%
21	Japan Bearing Industrial Association	62	0.19%
22	Japan Copper and Brass Association	50	0.15%
23	Japan Society of Industrial Machinery Manufacturers	46	0.14%
24	Japan Construction Equipment Manufacturers Association	42	0.13%
25	Limestone Association of Japan	28	0.09%
26	Japan Petroleum Development Association	24	0.07%
27	Japan Sanitary Equipment Industry Association	21	0.07%
28	Japan Machine Tool Builders' Association	20	0.06%
29	Japan Prefabricated Construction Suppliers & Manufacturers Association	10	0.03%
30	Japan Industrial Vehicles Association	4	0.01%
	Total	32,278	100.0%



Business/commercial sector (11 industries)

(Emission unit: 10,000t-CO_2)

	Industry (business/commercial sector)	CO_2 emissions	Ratio
31	Japan Chain Stores Association	511	41.06%
32	Japan Franchise Association	240.98	19.36%
33	Japan Council of Shopping Centers	152.8	12.28%
34	Japan Department Stores Association	126.3	10.15%
35	Meeting of Large Household Appliance Retailers	61.69	4.96%
36	Japan Association of Chain Drug Stores	58.22	4.68%
37	Japan Information Technology Services Industry Association	46.8	3.76%
38	Japan DIY Industry Association	40.9	3.29%
39	Japan Foreign Trade Council, Inc.	3.5	0.28%
40	Japan LP Gas Association	1.83	0.15%
41	Japan Leasing Association	0.63	0.05%
	Total	1,244.65	100.0%



(Reference) CO_2 Emissions by fixed emission factors

Energy-conversion sector (4 industries)

(Emission unit: 10,000t-CO_2)

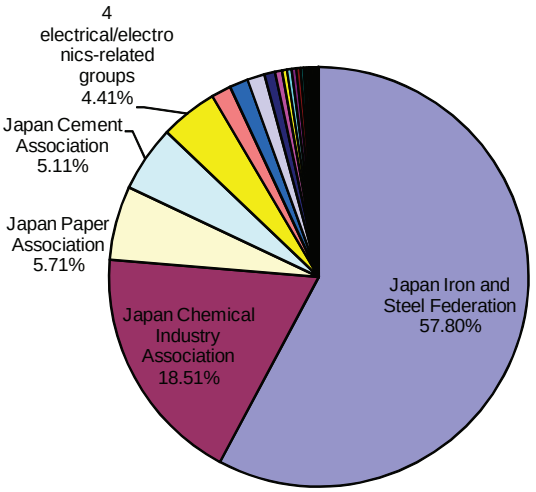
	Industry (energy-conversion sector)	CO_2 emissions	Ratio
1	Federation of Electric Power Companies of Japan (own use)	-	0.00%
2	Petroleum Association of Japan	3,963	99.28%
3	Power Producers and Suppliers	-	0.00%
4	Japan Gas Association	28.6	0.72%
	Total	3,991.6	100.0%

<Omitted>

Industrial sector (26 industries)

(Emission unit: 10,000t-CO_2)

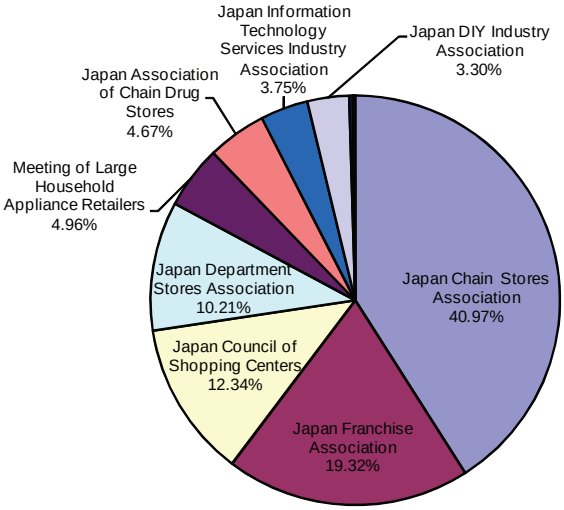
	Industry (industrial sector)	CO_2 emissions	Ratio
5	Japan Iron and Steel Federation	18,563	57.80%
6	Japan Chemical Industry Association	5,946	18.51%
7	Japan Paper Association	1,834	5.71%
8	Japan Cement Association	1,640.3	5.11%
9	4 electrical/electronics-related groups	1,416.4	4.41%
10	Japan Auto Parts Industries Association	485.9	1.51%
11	Japan Automobile Manufacturers Association;	460	1.43%
12	Japan Mining Industry Association	432.3	1.35%
13	Lime Manufacture Association	262	0.82%
14	Japan Rubber Manufacturers Association	178.3	0.56%
15	Japan Aluminum Association	121.3	0.38%
16	Textile Finishers' Association	117.6	0.37%
17	Flat Glass Manufacturers Association of	110.7	0.34%
18	Japan Federation of Printing Industries	104	0.32%
19	Japan Glass Bottle Association	79.5	0.25%
20	Japanese Electric Wire & Cable Makers' Association	64.2	0.20%
21	Japan Bearing Industrial Association	60.2	0.19%
22	Japan Copper and Brass Association	49	0.15%
23	Japan Society of Industrial Machinery Manufac	45.8	0.14%
24	Japan Construction Equipment Manufacturers Association	41.0	0.13%
25	Limestone Association of Japan	27.2	0.08%
26	Japan Petroleum Development Association	23.89	0.07%
27	Japan Sanitary Equipment Industry Association	21	0.07%
28	Japan Machine Tool Builders' Association	19.8	0.06%
29	Japan Prefabricated Construction Suppliers & Manufacturers Association	9.86	0.03%
30	Japan Industrial Vehicles Association	4.12	0.01%
	Total	32,117.37	100.0%



Business/commercial sector (11 industries)

(Emission unit: 10,000t-CO_2)

	Industry (business/commercial sector)	CO_2 emissions	Ratio
31	Japan Chain Stores Association	493.3	40.97%
32	Japan Franchise Association	232.59	19.32%
33	Japan Council of Shopping Centers	148.6	12.34%
34	Japan Department Stores Association	122.9	10.21%
35	Meeting of Large Household Appliance Retailers	59.75	4.96%
38	Japan Association of Chain Drug Stores	56.24	4.67%
37	Japan Information Technology Services Industry Association	45.2	3.75%
36	Japan DIY Industry Association	39.72	3.30%
39	Japan Foreign Trade Council, Inc.	3.4	0.28%
40	Japan LP Gas Association	1.76	0.15%
41	Japan Leasing Association	0.61	0.05%
	Total	1,204	100.0%



*0.305kg-CO_2/kWh (generating end)

II. Results of FY 2011 Evaluation and Verification Utilization

1. Target achievement

(1) Evaluation based on actually emitted amount (hereinafter referred to as actual emissions)

Evaluation was made based on actual emissions, where actual emission factors were used concerning power emission factors. In this evaluation, it was found that 27 industries among 41 industries achieved their gargets. In the last fiscal year, 27 industries achieved their targets, as with the previous year.

(2) Evaluation based on emissions after start using Kyoto Mechanism Credits

For those who try to achieve their targets of voluntary actions plans, it is allowed to make use of Kyoto Mechanism Credits and so forth. In cases where, for example, emission factors reflecting credits or the like were used regarding power emission factors, 29 industries among 41 industries achieved their targets. Compared with cases where actual emission factors were used, two more industries were successful. These industries were able to achieve the targets because of improvement in power emission factors that was brought by the use of Kyoto Mechanism Credits.

Target-achieving industries	29 industries (target achievement rate: 70.7%)
Target-missing industries	12 industries
Total	41 industries

<For reference> In case of fixed emission factor (3.05 t-CO2/10,000 kWh)

As a result of performing an evaluation using a fixed power emission factor, it was found that 29 industries achieved their targets, as with using an emission factor reflecting credits, etc.

(3) Overall outline

According to the results in FY2010, the number of industries achieving their targets decreased by one from the last fiscal year. This was because although the industries continued efforts such as technological innovation, introduction of energy-saving facilities and high-efficiency facilities, fuel conversion, and improvement in facility administration, the activities decreased due to sharp economic downturn in the second half of fiscal 2008 followed by slight economic recovery. Twelve industries could not achieve their targets. It is important to keep encouraging these target-missing industries to achieve the targets.

Among the twelve industries that failed to achieve the targets, 11 industries had adopted emission intensity to formulate their targets. It is still wanted that they keep improving their efficiency even in such slight economic recovery as fiscal 2010.

2. Transition of CO_2 emissions

(1) Actual emissions

Concerning transition of actual CO_2 emissions, activities decreased due to sharp economic downturn in the second half of fiscal 2008 followed by slight economic recovery, and emissions increased from the previous fiscal year in many industries. The total emissions also increased by 23,946 thousand tons.

(Emission unit: 10,000t-CO_2)

Sector	FY2010					FY2009	Base year
	CO_2 emissions	Change				CO_2 emission	CO_2 emission
		Comparison with FY09	Rate (%)	Comparison with base year	Rate (%)		
Energy-conversion	7,686.9	+ 134.4	+ 1.8	+ 1,391.8	+ 22.1	7,552.5	6,295.1
Industry	33,085.5	+ 2,207.8	+ 7.2	▲ 3,640.7	▲ 9.9	30,814.8	36,726.3
Business/commercial	1,465.8	+ 52.4	+ 3.7	+ 533.5	+ 57.2	1,413.4	932.3
Total	42,238.2	+ 2,394.6	+ 6.0	▲ 1,715.5	▲ 3.9	39,780.7	43,953.7

(Note 1) Emissions in FY2010 are actual emissions without using Kyoto Mechanism Credits etc.
(Note 2) The emissions from electricity and PPS of the energy-conversion sector are calculated from the amount of own use.

(2) Emissions with Kyoto Mechanism Credits in use

When evaluation was made based on emissions with Kyoto Mechanism Credits in use, it was found that the emissions of many industries increased from the previous fiscal year. In total, emissions increased by 23,235 thousand tons.

(Emission unit: 10,000t-CO_2)

Sector	FY2010					FY2009	Base year
	CO_2 emissions	Change				CO_2 emission	CO_2 emission
		Comparison with FY09	Rate (%)	Comparison with base year	Rate (%)		
Energy-conversion	7,118.3	+ 113.7	+ 1.6	+ 823.2	+ 13.1	7,004.6	6,295.1
Industry	32,278.1	+ 2,182.4	+ 7.3	▲ 4,448.1	▲ 12.1	30,095.7	36,726.3
Business/commercial	1,244.7	+ 27.4	+ 2.3	+ 312.4	+ 33.5	1,217.3	932.3
Total	40,641.1	+ 2,323.5	+ 6.1	▲ 3,312.6	▲ 7.5	38,317.6	43,953.7

(Note 3) Emissions in FY2010 are calculated based on emission factors of the electric power industry reflecting Kyoto Mechanism Credits etc. and depreciations and purchases of Kyoto Mechanism Credits.
(Note 4) The emissions from electricity and PPS of the energy-conversion sector are calculated from the amount of own use.

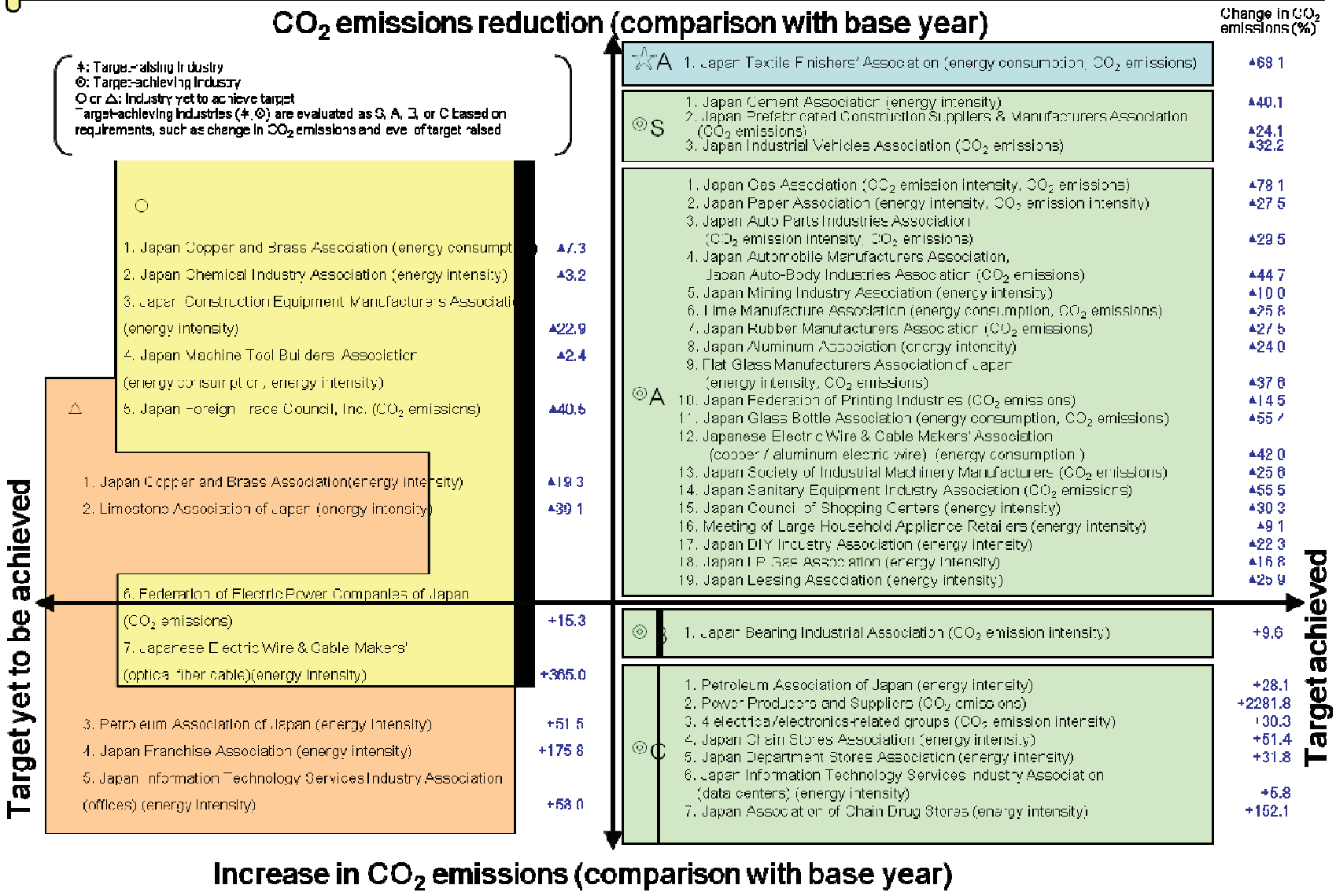
(3) Overall outline

In comparison with the results of FY2009, all sectors increased their emissions in terms of actual emissions. In addition, emissions using Kyoto Mechanism Credits also increased from FY2009 in all sectors.

On the other hand, only the industry sector reduced the emissions from those of the base year. In total, however, emissions were reduced by over 30 million tons. The industry sector had been making efforts to reduce the emissions according to its voluntary action plans. Their efforts should be appreciated. It is important to continue appropriately encouraging individual sectors to reduce the emissions.

FY2010 Results of Evaluation/Verification of Voluntary Action Plans

Status of Each Industry's Target Achievement and Changes in CO_2 Emissions from the Base Year



4. Perspectives of evaluation/verification

Based on items identified in the past evaluations and verifications, further evaluation and verification were made from the following points of view.

(1) Basic standpoint

- The Kyoto Protocol Target Achievement Plan states that Japan's reduction commitments under the Kyoto Protocol can be achieved if every one of the nation's citizens does his or her best to pursue policies that are based on the plan. For this purpose, improving probability of target achievement in the voluntary action plans of individual industries is an important part.
- The following items, identified through evaluation and verification, have repeatedly been pointed out, and the next fiscal year will be the final fiscal year. For these reasons, if these matters cannot be addressed without reasonable grounds, it would affect the evaluation of the efforts in the form of voluntary action plans, and therefore, positive responses must be given where possible. Then, concerning matters difficult to address in a short period, it is necessary to take sufficient actions as the tasks in the voluntary efforts in fiscal 2013 onward.

(2) Major specific standpoints

1) Improving probability of target achievement for industries that have yet to achieve their targets

For industries that have yet to achieve their target levels at the current time (FY2010 performance), we will evaluate the range of their non-achievement of targets (i.e., the intensity and amounts required for achievement), and, wherever possible, identify the content and effect of future measures to compensate for their non-achievement in quantitative and specific terms. As for industries utilizing the Kyoto Mechanism Credits, in cases wherein the achievement of targets is unlikely, we ask them to present forecasts of the amount of credits to be purchased and the timing of said purchases as specifically as possible.

2) Evaluation with the power emission factor fixed

To appropriately evaluate the emission efforts of each industry, the emissions and intensity with a power emission factor being fixed are evaluated.

3) Setting targets that are combined with CO_2 emissions

In light of the fact that the Kyoto Protocol targets CO_2 emissions, industries that define their targets in terms of CO_2 emission intensity only should also study the use of CO_2 emissions as a performance indicator. Industries that set new targets in terms of CO_2 emissions will be evaluated positively.

4) Relations with Global Warming Act

As for CO_2 emissions, which are a precondition for evaluation of each industry's voluntary action plan, industry-by-industry formulation and management is, in principle, being conducted. On the other hand, according to the mandatory greenhouse gas accounting and reporting system based on the Act on Promotion of Measures to Cope with Global Warming (Global Warming Act), all corporations (business operators) whose emissions are above a certain level are required to make their CO_2 emissions public.

Based on this, the evaluation and verification of voluntary action plans, the industries are required by the Global Warming Act to provide CO2 emissions for all business establishments on a list of corporations (business establishments) participating in the voluntary action plans. Industries that have actively disclosed information will be commended.

Moreover, we will identify the proportion of business establishments covered by the Act Concerning the Rational Use of Energy (the "Energy Saving Act") and the Global Warming Act among those corporations participating in the voluntary action plans for each industry.

5) Raising target levels of target-achieving industries

As for industries whose current performance exceeds the level of the quantitative targets set (29 industries), we encourage them to raise their targets by considering economic situations and industry-specific circumstances.

5. Evaluation of each evaluation/verification perspective

(1) Improving probability of target achievement for industries that have yet to achieve their targets

Industries that have not achieved their target levels have been asked, from the standpoint of enhancing probability of target achievement, to give quantitative explanations about the content and effects of their future measures (including utilization of the Kyoto Mechanism) to compensate for shortcomings in meeting their targets (i.e., intensities and amounts required for achievement).

Looking at target-missing industries covered by Fiscal 2011 evaluation/verification, as a whole, effectiveness percentages of future measures against shortfalls are demonstrated, and these industries are judged as being able to achieve their targets if steady progress is achieved in implementing measures mentioned in their voluntary action plans. (Some industries have named the impacts of the Great East Japan Earthquake and the subsequent Fukushima No. 1 Nuclear Power Plant accident as an uncertain factor in achieving their targets. Therefore, it is necessary to keep an eye on the state of their efforts (see IV. 9. on page 64).)

In this context, the Federation of Electric Power Companies and the Power Producers and Suppliers each submitted a report on depreciation of the Kyoto Mechanism Credits etc. Depreciation of the Kyoto Mechanism Credits by electric power companies would affect the target achievements by other industries and the increase in the probability of the achievements, from the viewpoint of increasing the probability of target achievement and through improvement of power emission factors. On the other hand, the Federation of Electric Power Companies of Japan indicated “260 million tons” as the amount of Kyoto Mechanism Credits, etc. planned to be used in FY2008 to FY2012, in its evaluation and verification in the last fiscal year. However, this field was left blank this fiscal year. This was because the federation “could not forecast it since the supply-demand outlook in the future was uncertain.” However, they should take appropriate responses based on the credit depreciation in power emission factor as described above and the contents of various arguments on future energy policies.

Further, results of domestic credit depreciation were also reported this fiscal year. In the Kyoto Protocol Target Achievement Plan, it is aimed to further improve domestic credits as a measure to reduce emissions at small and medium-sized companies. Therefore, it is expected that domestic credits will be actively used in various industries in the future.

Amount of depreciation of Kyoto Mechanism Credits etc.

Industry	Actual results in FY2010	Actual results in FY2009	Actual results in FY2008	Total
Federation of Electric Power Companies of Japan	57 million t-CO_2	52 million t-CO_2	64 million t-CO_2	173 million t-CO_2
Power Producers and Suppliers	137 thousand t-CO_2	238 thousand t-CO_2	85 thousand t-CO_2	460 thousand t-CO_2

Depreciations of domestic credits

Industry	Actual results in FY2010	Actual results in FY2009	Actual results in FY2008	Total
Federation of Electric Power Companies of Japan	Approx. 17,000t-CO_2	–	–	Approx. 17,000t-CO_2
Power Producers and Suppliers	18,001t-CO_2	–	–	18,001t-CO_2
Japan Prefabricated Construction Suppliers & Manufacturers Association	26t-CO_2	5t-CO_2	–	31t-CO_2

In addition, amounts of Kyoto Mechanism Credits etc. planned to be acquired (used) were also reported. Thirteen industries*, which was a larger number of industries compared with the last fiscal year's 12 industries, announced that they were going to study utilization of Kyoto Mechanism Credits etc. if they would have difficulty achieving their targets.

Amount of Kyoto Mechanism Credits etc. planned to be acquired (used)

Industry	Amount of Kyoto Mechanism, etc. planned to be acquired (used) (*2) (5 years from FY2008 to FY2012)
Federation of Electric Power Companies of Japan	−(*3)
Japan Iron and Steel Federation	Approx. 35 million t-CO_2
Power Producers and Suppliers	742,001t-CO_2
Japan Prefabricated Construction Suppliers & Manufacturers Association	44,294t-CO_2 (domestic credits only)
Japan Federation of Printing Industries	600t-CO_2 (domestic credits only)

(*) Petroleum Association of Japan, Japan Gas Association, Japan Cement Association, 4 electrical/electronics-related groups, Japan Auto Parts Industries Association, Japan Franchise Association, Japan Information Technology Services Industry Association, Japan Society of Industrial Machinery Manufacturers, Japan Association of Chain Drug Stores, Japan Machine Tool Builders' Association, Japan Industrial Vehicles Association, Japan Prefabricated Construction Suppliers & Manufacturers Association
(*2) Including depreciations in FY2008, FY2009 and FY2010.
(*3) At the Resources and Energy WG for this fiscal year, the federation reported: "we cannot forecast it since the supply-demand outlook in the future is uncertain."

(2) Evaluation in cases where the power emission factor is fixed

In this fiscal 2009, it was started to make evaluations in cases where the power emission factor is fixed. The purpose of these evaluations was to appropriately evaluate the efforts made by individual sectors to reduce the emissions.

There were 17 industries, among 41 industries, that increased the amount of their activities compared with the base year. Of them, eight industries reduced the amount of emissions by considerably improving the intensity. As for the other nine industries, they increased the amount of emissions; but all industries improved the performance in terms of intensity.

On the other hand, all of the 22 industries, which reduced the amount of their activities, reduced the amount of their emissions. In addition, 15 industries showed improvement in terms of intensity, too.

Consequently, a major number of industries, including the industries having reduced the amount of their activities, were successful to improve the intensity. Their voluntary actions plans as a whole should be given positive evaluation after all efforts having been made so far to reduce emissions.

(3) Setting targets that are combined with CO_2 emissions

In light of the fact that the Kyoto Protocol's target is CO2 emissions, industries that define their targets only in terms of CO2 emission intensity have been asked to also study the use of CO2 emissions as a performance indicator. There was no industry that set a new CO2 emission target this fiscal year. It will be important to encourage the setting of targets that are combined with CO2 emissions, based wherever possible on quantitative production output forecasts.

Changes in target-setting in terms of CO_2 emissions during the past seven years

	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
No. of industries setting targets based on CO_2 emissions	9 (a. Japan Industrial Vehicles Association and b. Japan Sanitary Equipment Industry Association participated in METI follow-up)	10 (a. Japan Society of Industrial Machinery Manufacturers changed its targets to those applying CO_2 reductions.)	10	13 (a. Flat Glass Manufacturers Association of Japan and b. Lime Manufacture Association set new targets applying CO_2 emissions c. Japan Foreign Trade Council, Inc participated in METI follow-up)	12 (Integrated preparation of voluntary action plans by Japan Automobile Manufacturers Association and Japan Auto-Body Industries Association)	14 (a. The Japan Federation of Printing Industries and b. the Japan Prefabricated Construction Suppliers & Manufacturers Association participated in evaluation and verification by METI.)	14 (*)	14
(Total of participating industries)	30	32	33	39	39	41	41	41

(*) The Japan Rubber Manufacturers Association has unified the previous, multiple target indexes (energy intensity, CO2 emissions) into CO2 emissions (also raised the target).

(4) Relations with Global Warming Act

As for CO_2 emissions, etc., which are preconditions for evaluation of each industry's voluntary action plan, industry-by-industry formulation and management are, in principle, being conducted.

Since fiscal 2007, industries have been asked to include CO_2 emissions in their list of corporations (business-establishment level) participating in the voluntary actions plans in line with the mandatory greenhouse gas accounting and reporting system under the Global Warming Act. Outlined below is the status of submission of such lists pertaining to 37 industries, apart from four industries* that reported that they have no business establishments subject to the Act.

Twenty-four industries did not state CO2 emissions by business establishment or corporation in the list for reasons that include difficulty in collecting data due to a large number of business establishments. In the future, it is desirable that they should state CO2 emissions from the viewpoint of securing transparency.

It should be noted that the number of business establishments covered by the Global Warming Act in the voluntary action plans, out of all industries participating in voluntary action plans, was also identified. (Refer to attachment "1 Proportion of Business Establishments covered by the Global Warming Act out of those Corporations Participating in the Voluntary Actions Plans.")

○ Submission of Lists of Corporations Participating in the Voluntary Action Plans in each Industry

Note: The figures shown in parenthesis following the names of industries represent the number of business establishments participating in voluntary action plans.

1) Industries disclosing CO_2 emissions by business establishment (15 industries)

Japan Gas Association (211), Japan Mining Industry Association (22), Japan Aluminum Association (15), Flat Glass Manufacturers Association of Japan (7), Japanese Electric Wire & Cable Makers' Association (187), Japan Bearing Industrial Association (69), Japan Copper and Brass Association (15), Japan Society of Industrial Machinery Manufacturer (116), Japan Construction Equipment Manufacturers Association (37), Limestone Association of Japan (89), Japan Sanitary Equipment Industry Association (24), Japan Machine Tool Builders' Association (30), Japan Industrial Vehicles Association (7), Japan Foreign Trade Council, Inc. (31), Japan LP Gas Association (13)

2) Industries disclosing CO_2 emissions by corporation (3 industries)

Petroleum Association of Japan (14), Japan Automobile Manufacturers Association and Japan Auto-Body Industries Association (151), Japan Glass Bottle Association (6)

3) Industries not disclosing CO_2 emissions (18 industries)

- Industries submitting a list of business establishment only (four industries)

Japan Iron and Steel Federation (178), Japan Paper Association (104), Japan Cement Association (32), Japan Prefabricated Construction Suppliers & Manufacturers Association (47)

- Industries submitting a list of corporations only (14 industries)

Federation of Electric Power Companies of Japan (12), Power Producers and Suppliers (38), Japan Chemical Industry Association (203), 4 electrical/electronics-related groups (1,338), Japan Auto Parts Industries Association (662), Lime Manufacture Association (93), Japan Rubber Manufacturers Association (26), Japan Petroleum Development Association (20), Japan Chain Stores Association (60), Japan Council of Shopping Centers (68), Japan Department Stores Association (91), Meeting of Large Household Appliance Retailers (2,260), Japan Information Technology Services Industry Association (79), Japan Federation of Printing Industries (101)

- Industries not submitting any lists (one industry)

Japan Textile Finishers' Association (49)

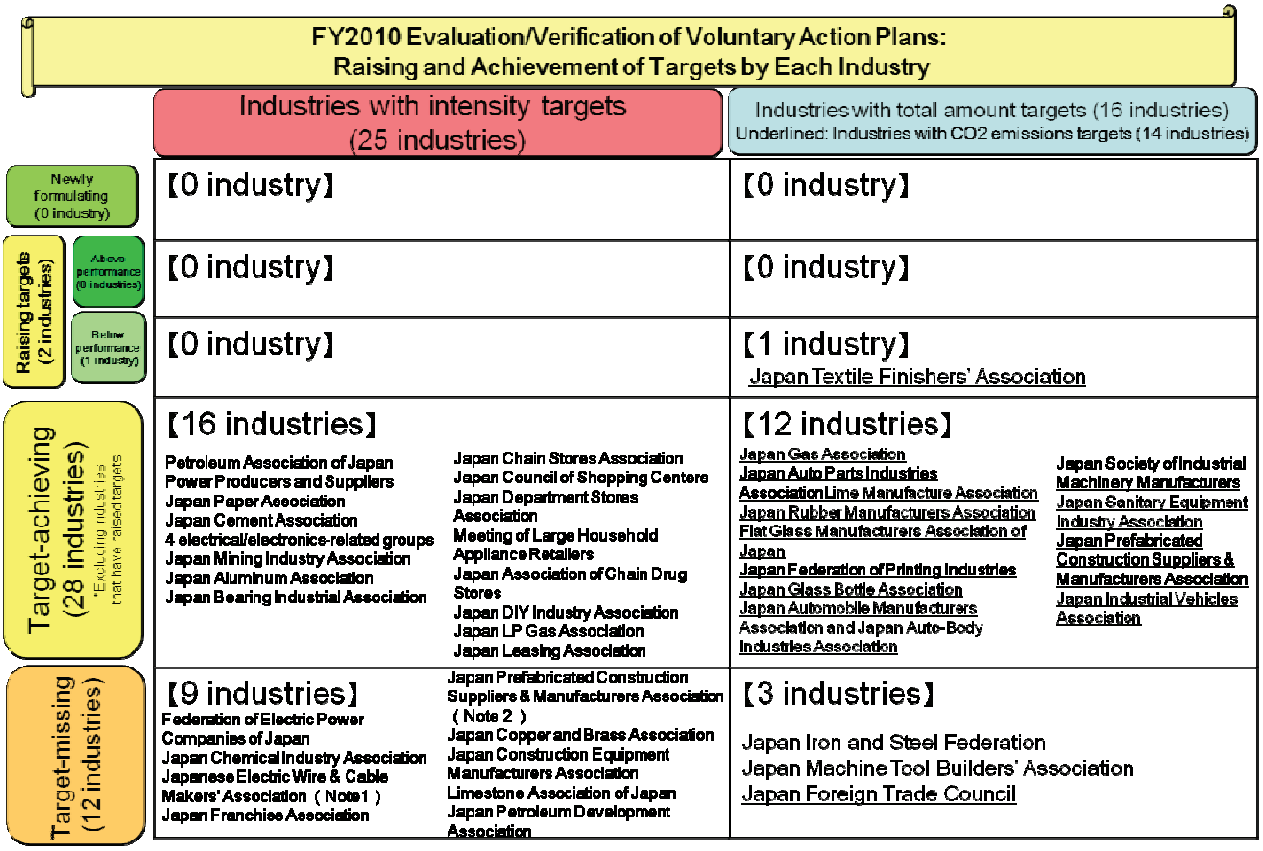
*** Industries with no business establishment subject to the Global Warming Act (4 industries) (only a company list was submitted)**

Japan Franchise Association (21), Japan Association of Chain Drug Stores (72), Japan DIY Industry Association (27), Japan Leasing Association (97)

(5) Raising target levels of target-achieving industries

In the evaluation/verification for FY2010, one out of the 29 industries that have already achieved their targets raised their targets. The other 28 industries did not raise their target levels because economic perspective was not clear or for some other reasons.

(Chart 2)



(Note1) The Japanese Electric Wire & Cable Makers' Association set its targets for metal (copper and aluminum) wires and for optic fiber cables. For metal (copper and aluminum) wires, a target was set in terms of total amount, and the target was achieved.

(Note2) Japan Information Technology Services Industry Association set its targets for offices and for data centers. For data centers, a target was set in terms of intensity, and the target was achieved.

(Note3) In total, 41 industries were within the scope of the METI follow-up in this fiscal year.

The additional reduction effect of target-raising (one industry) in the evaluation and verification of FY2011 was estimated to be about 390 thousand tons/year as a trial calculation at present.

Outline of target raising etc. in FY 2011

1) Reduction effect by target raising

	Industry	Performance indicator	Existing target	New target	Reduction effect (Calculated at present time) (10,000 t-CO_2)
1	Japan Textile Finishers' Association	CO_2 emissions	50% reduction over FY1990 level	61% reduction over FY1990 level	39.4

2) Reduction effect by new formulations

(Not applicable for this fiscal year)

Total 39.4

(10,000 t-CO_2)

Japan's policy on renewable energy deployment to mitigate climate change

Global Environment Bureau
Ministry of the Environment, Japan

Contents

- Recent discussion on energy and environment
- Renewable energy (RE) introduction potential in Japan
- Feed-in tariff from July 2012
- Floating offshore wind turbine demonstration project
- R&D projects for Geothermal energy

Discussion for the future energy and environmental policy

- June 2012 : options for the energy and environmental strategy in terms of nuclear power policy, energy mix and climate change were prepared
- September 2012: through national debate, the innovative strategy for energy and environment was established
- The Central Environment Council has discussed the options concerning climate change, integrally with ones concerning energy mix

Discussion points on climate change policy after 2013

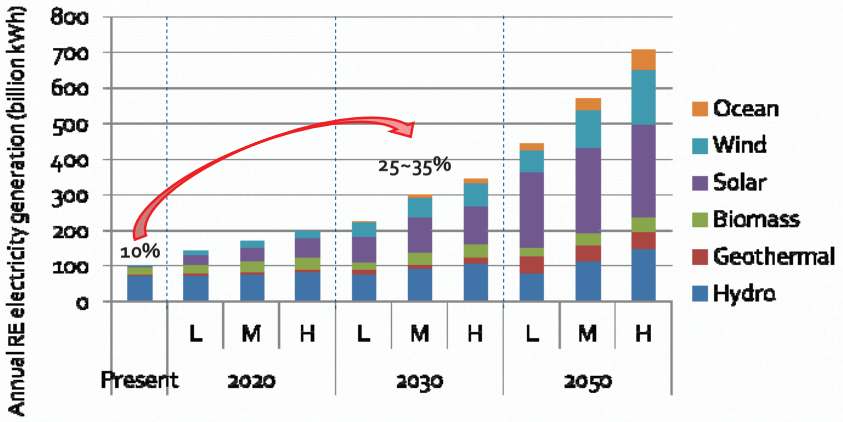
1. Eyeing the long-term goal shared in the world
- ➢ Hold the increase of global average temperature below 2°C
- ➢ Achieve the goal of 50% reduction of global emission and 80% reduction of emission in developed countries by 2050
- ➢ Set out new targets towards 2020 and 2030 with no preconditions

2. Indicating explicit direction of aiming at realization of low carbon society which leads the world and takes future in advance
- ➢ The world's highest energy-saving technology unsurpassed by others
- ➢ Improve renewable energy up to the world's best standards
- ➢ Contribute to the global emission reduction by these technologies

3. Showing necessary measures for realization of low carbon society which leads the world and takes future in advance
- ➢ Show measures which support global warming countermeasures

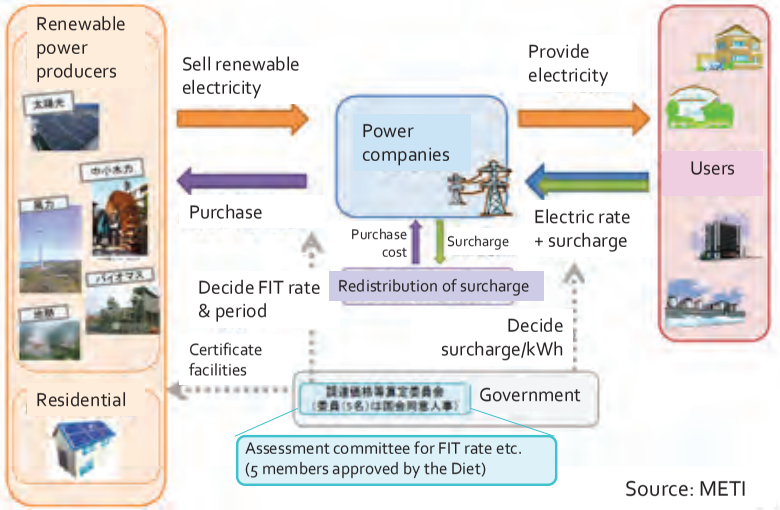
→ **Realization of World's Leading "Green Growth Country"**

Provisional calculation of RE introduction in electricity



L = low, M = middle, H = high : Intensity of measures and efforts

Feed-in Tariff (FIT) from July 2012



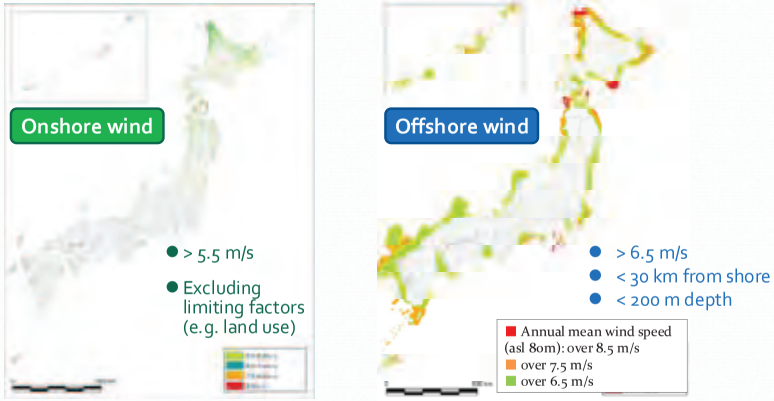
Source: METI

Feed-in tariff rate and period

Source	Capacity or Category	Rate, tax incl. (JPY per kWh)	Period (year)
PV	≥ 10 kW	42.00 yen	20
	< 10 kW	42.00 yen	10
Wind	≥ 20 kW	23.10 yen	20
	< 20 kW	57.75 yen	
Geothermal	≥ 15000 kW	27.30 yen	15
	< 15000 kW	42.00 yen	
Hydropower	1000 - 30000 kW	25.20 yen	20
	200 - 1000 kW	30.45 yen	
	< 200 kW	35.70 yen	
Biomass	Biogas	40.95 yen	20
	Lumber, unused	33.60 yen	
	Lumber, general	25.20 yen	
	Waste biomass	17.85 yen	
	Lumber, recycled	13.65 yen	

(1 USD ≈ 80 JPY)

Large RE introduction potential in Japan



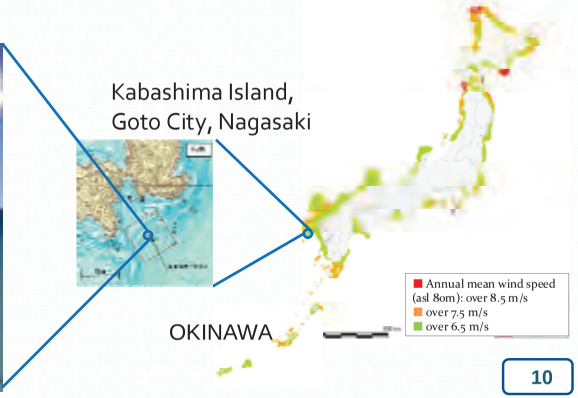
Onshore	283 million kW
Offshore, fixed (< 50 m depth)	299 million kW
Offshore, floating (> 50 m depth)	1,273 million kW

Floating offshore wind turbine demonstration project

- Background:
  - Japan has 6th largest sea space (as EEZ), thus large potential for offshore wind
  - Japanese sea generally has steep seabed → suitable for floating platform (depth > 50m)
- Objective: demonstrating the first full-scale (2MW) floating offshore wind turbine in Japan
- Duration: FY2010-2015
- Location: Kabashima Island, Goto City, Nagasaki

Project work plan

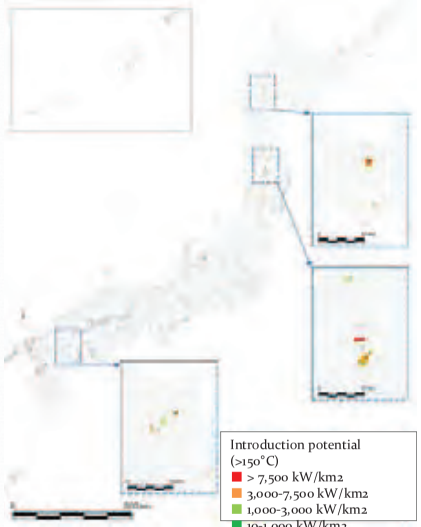
- A **small-scale 100kW turbine** was installed in June 2012 and has been in operation since August 31
- A **full-scale 2MW turbine** will be in operation in summer 2013



Geothermal potential

- Special protection zones and special zones of national parks are excluded from introduction potential, while 1.5 km inside from a border of these zones are acceptable for a directional drilling
- Large introduction potential in Hokkaido, Tohoku, Hokuriku and Kyushu

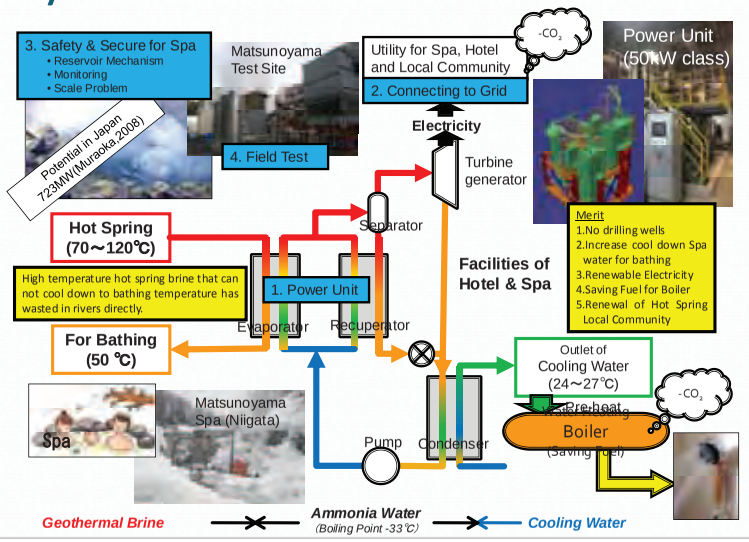
Capacity (GW)	Abundance	Introduction potential
>150 °C	24	6.4
53 – 150 °C	9.6	7.8
Total	33	14



R&D for geothermal development in harmony with nature environment

- Climate Change Research and Development Program is a competitive fund of MOE
- Currently, three R&D projects on geothermal
  - Development and demonstration of hot spring power generation system (GERD)
  - Development for control drilling system for highly deviated geothermal wells (GERD)
  - Development of an advanced geothermal reservoir management system for the harmonious utilization with hot spring resources (AIST)

Hot spring power generation system



Thank you for your attention

Technical Training in Japan on Climate Change Mitigation Actions
under JICA Technical Cooperation Project
"Capacity Development Project on Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia"

Visit to Isogo Thermal Power Station, Electric Power Development Co., Ltd. (J-Power)

Agenda

- Date and time: 2:00pm - 4:00pm, Wednesday, 7 November, 2012
- Venue: Isogo Thermal Power Station, Electric Power Development Co., Ltd. (hereinafter mentioned as "J-Power")

*Consecutive Japanese-Serbian verbal interpretation is provided for each of following parts.

*Photographs with flash at the walkway on 9th floor are not allowed. (In other sections, photographs with or without flash are allowed.)

1. **Opening remarks, etc…**…… 5 minutes

   - Greeting and explanation on the aim of visit to Isogo Thermal Power Station, J-Power (by JICA Expert Team)
   - Introduction of trainees (the same as above)

2. **Introduction on corporate activities by J-Power**…… 45 minutes

   By Mr. Shuji Kudo

   Senior Manager, Plant Engineering Group, Isogo Thermal Power Station, Electric Power Development Co., Ltd.

   *Movie on corporate activities by J-Power (20 minutes) and supplementary explanation of its contents in Serbian (around 10 minutes) are included.

3. **Tour of Building for 1st turbine generator of Isogo Thermal Power Station**…… 45 minutes

   - 5th floor
   - Floor for turbines (2nd and 3rd floor)
   - Operation center (8th floor)
     *We can see the center facilities from the walkway on the 9th floor.
   - Roof (the top floor)
   - Surrounding area of boiler burners
   - Desulfurization equipment (At the side of building for 1st turbine generator)

4. **Questions and answers, etc.**…… 25 minutes

Technical Training in Japan on Climate Change Mitigation Actions
under JICA Technical Cooperation Project
"Capacity Development Project on Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia"

Visit to East Nippon Expressway Company Limited (Nexco East)

Agenda

- Date and time: 9:50pm - 3:30pm, Thursday, 8 November, 2012
- Venue: Conference room of the Headquarter and Iwatsuki Road Control Center, East Nippon Expressway Company Limited (hereinafter mentioned as "Nexco East")

*Consecutive Japanese-Serbian verbal interpretation is provided for each of following parts.

1. **Opening remarks, etc**…… 5 minutes

   - Greeting and explanation on the aim of visit to Nexco East (by JICA Expert Team)
   - Introduction of trainees

2. **Lecture by Nexco East**…… 90 minutes

   - Movie on corporate activities by Nexco East

   - Lecture: "NEXCO East's Approach toward Sustainable Environment"

     By Mr. Tomoya Matsuda

3. **Transition to Pasar Hanyu (Tohoku Expressway)**…… 90 minutes

4. **Lunch and tour of Pasar Hanyu...**…… 60 minutes

   - Lunch: ROYAL Hanyu Yoshokuken
   - Tour: Shopping area of Pasar Hanyu

5. **Transition to Iwatsuki Road Control Center**…… 30 minutes

6. **Tour of Iwatsuki Road Control Center**…… 60 minutes

   - Lecture on general information on the control center
   - Tour on measures and actions by the control center at the site of traffic management system (Tour of facilities and equipment)

NEXCO East:
Approach toward Sustainable Environment

Providing you the best way

NEXCO 東日本

Environmental policy of NEXCO East

Environmental Policy

NEXCO East considers environmental actions as key issues and aims to be a company, as a responsible member of a society, that contributes to global environmental conservation and sustainable society development. At the same time, we promote to improve living environment and natural environment along our roads in order to acquire trust from the society.

Environmental Guiding Principles

NEXCO East will take following initiatives based on our Environmental Policy.

I. Environmental conservation

1. Climate change control

Contribute to CO_2 emission reduction through improved expressway networks, promotion of ETC system, reduced congestion and forestation.

2. Recycle-based sustainable society

Contribute to establishment of recycle-based sustainable society by promoting 3R activities (reduce, reuse, and recycle) as well as green product procurement

3. Reduced environmental impact

Reduce negative impacts; on living environment along the roads; on natural environment, and; by all business activities

II. Technological development

Strive to utilize the available technologies and develop new technologies in order to contribute to sustainable and effective global warming control as well as sustainable recycle-based society establishment.

III. Environmental management

1. Environmental management

Manage environment sustainably and effectively by conducting annual analysis and assessment of environmental actions.

2. Communication

Publish the result of environmental management in CSR Report and enhance communication with society.

Collaborate with local residents, local government and national government in socio-environmental activities.

3. Employee training

Raise environmental awareness through employee trainings.

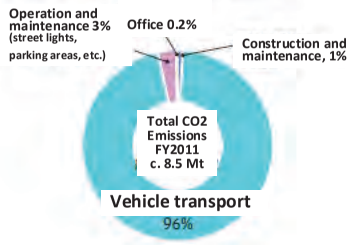
CO_2 emissions by expressway business

・Amount of CO2 emission during FY2011 within NEXCO East area is estimated to be about 8.5 million tons.

・Above amount makes up about 0.7% of the total CO2 emissions of Japan in FY2010, which is 1,192 million tons of CO2-e.

・96% of the emissions from NEXCO East are generated by customers who drive vehicles.

Composition of CO2 emissions by business segment



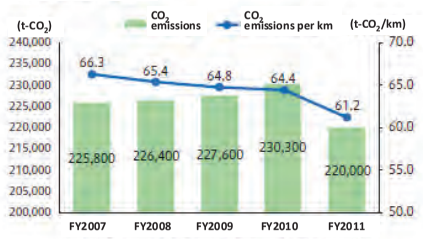
CO_2 emissions in expressway operation and maintenance

・CO2 emissions increase as total extension of expressway length increases (slight decrease per km of expressway).

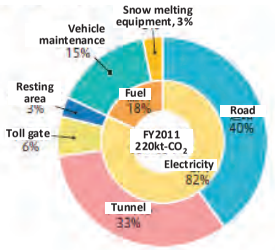
・More than 80% of the emissions are generated through electricity consumption by street lighting, tunnel lighting, etc.

・More energy efficient equipment have been introduced in order to combat global warming and to reduce energy consumption.

CO2 emission trend



Composition of CO2 emissions from O&M



Contribution to global warming control

1. Environmental improvement through improved expressway network
2. CO2 emission reduction by reduced congestion at toll gates
3. Introduction of energy efficient and high-visibility lighting
4. Forestation at foreslope
5. Introduction of Eco-interchanges and Eco-areas
6. Environmental measures at resting spaces
7. Introduction of rapid charging station and electric vehicles (EV)
8. Installation of photovoltaic panels

Contribution to global warming control (1)

- Environmental improvement through improved expressway network

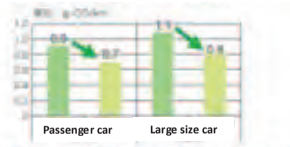
Vehicles can drive at stable speed on well-maintained expressways. CO2 emissions and NOx, SPM emissions are reduced compared to driving on local streets.

Additional 58km of expressway network was maintained in FY2011.

It is estimated that improved driving conditions as well as reduced congestion at local streets have reduced about 50,000 t-CO2/ year.

Vehicle travel speed and CO_2 emission

CO_2 emission on local streets and expressway



Source: National Institute for Land and Infrastructure Management

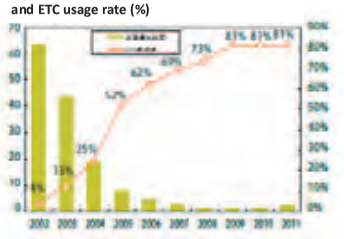
Contribution to global warming control (2)

- CO2 emission reduction by reduced congestion at toll gates

95% congestion reduction at toll gates compared with 2002 level, through introduction of ETC (electronic toll collection) and increasing number of ETC-equipped vehicles.

Above measures are expected to reduce about 4,540 tons of GHG per year.

Toll gate congestion (10,000 vehicle-hours) and ETC usage rate (%)



Contribution to global warming control (3)

- Introduction of energy efficient and high-visibility lighting

By switching lighting in tunnels from high-pressure sodium lamp to Hf (high-frequency fluorescent lamp), drivers have a visibility closer to natural colors and energy efficiency is also achieved.

LED (light-emitting diode) is also introduced for tunnel lighting, leading to further electricity consumption reduction.

high-pressure sodium lamp (conventional)

Hf (high-frequency) lamps (present)

LED lighting in a tunnel

Contribution to global warming control (4)

- Forestation at foreslope

Trees are planted at foreslope in order to enhance CO2 absorption and fixation.
Total forested area is about 3,600 ha at the end of FY2011, which is expected to absorb/ fix 38,000 tons of CO2 per year.



"Green Corridor" in expressway networks

Trees are planted in about 35% of the road (total forested area: about 6,500ha)
Green areas are integrated with the existing surrounding forests and act as a passage for various living organisms. They can also act as an alternative to the lost green areas, and help reduce habitats of local living creatures.

Soon after construction (c. 1980)

31 years later (2011)

Contribution to global warming control (5)

- Maintenance of greens at expressway

Trees in/ along the expressways are "living matter" and planting is not the only thing that has to be done.
It is important to maintain trees and keep them in a healthy condition in order to have them fully function as greenery measures.
Tree check, grass cut, and tree thinning maintenance activities are systematically conducted.

Planting check

Tree maintenance

Maintenance of cedar trees

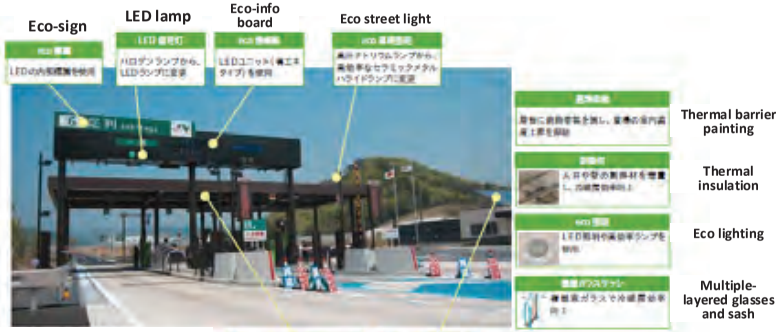
Too thick and dense condition prevents growth of trees and limits CO2 fixation capacity.

Tree thinning is carried out and appropriate space is made between trees to prevent this condition as well as to prevent tree damage.

Contribution to global warming control (6)

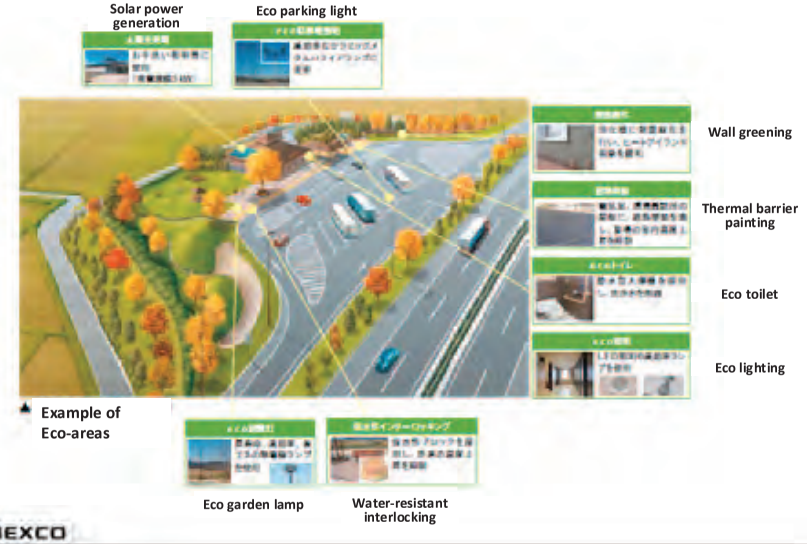
- Introduction of Eco-interchanges and Eco-areas

"Environment-friendly" facilities are developed in new interchange and resting areas where renewable solar power generation system and energy efficiency facilities are installed.



Example of Eco-interchange

Contribution to global warming control



Example of Eco-areas

Contribution to global warming control (7)

- Environmental measures at resting spaces

Plastic shopping bags that emit less CO2 are introduced in all shops. Each shop uses reused chopsticks to promote effective use of natural resources.
One parking area (PA) has introduced lighting system powered by wind and PV hybrid system.




- Introduction of rapid charging station and electric vehicles (EV)

Installed 6 units of rapid charging facilities in Kanagawa and Niigata in order to promote electric vehicles (EV). Also introduced 4 EVs for commercial use.



Contribution to global warming control (8)

- Installation of photovoltaic panels

Installed solar power generation units with total capacity of 320kW (as of the end of FY2011). Some units are installed behind the sound insulation walls as space is often limited for installation along roads.


Joint research on solar power generation


Flexible round panels


Integrated with exterior walls


Double-side panels

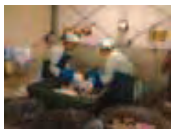
Contribution to sustainable recycle-based society establishment

- Recycle of wastes
- Recycle of construction by-products
- Green recycling

Contribution to sustainable recycle-based society (1)

Recycle of waste

Expressway parking area and resting space promote waste recycling by providing separated waste boxes for each waste type.
Almost 100% of the collected waste bottles, cans and pet bottles are recycled.

Recycle of construction by-product

Promoting recycle of construction waste by-products such as construction soil, concrete bricks, construction sludge.
99% of such by-products were recycled in FY2011.


Crushing concrete for reuse as embankment material


Separated for reuse

Contribution to sustainable recycle-based society (2)

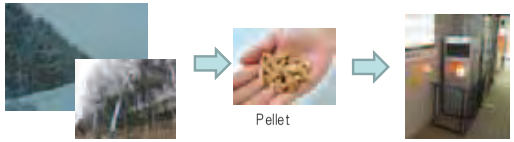
Green recycling

About 100,000 m³ of wood waste is generated annually mainly through clipping and grass cutting. These wastes are reused as fertilizer and chip for construction works. “Green recycling” is promoted in such a way.

Contribution to sustainable recycle-based society (3)

Utilization of woody biomass

Wood pellets are produced from thinning wood wastes, and these pellets are used as a fuel for a pellet stove.
Wood pellets are carbon neutral resource and can substitute fossil fuels. Use of this resource contributes to healthy growth of forest and global warming prevention.



Introduction of biodiesel (BDF) vehicles

Street patrol vehicles and maintenance vehicles use BDF, generated from used cooking oil.

Reduction of environmental impact

- Reduced impacts along road
- Reduced impacts on natural environment

Reduction of environmental impact (1)

Reduced impacts along road

In order to reduce impacts on environment along roads, such measures as sound insulation walls, environmental zone, advanced pavement technology, and sound absorption plates have been introduced.


sound insulation walls


environmental zone


sound absorption plates beneath overpass

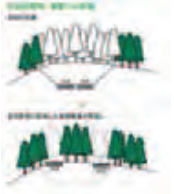

advanced pavement technology

Reduction of environmental impact (2)

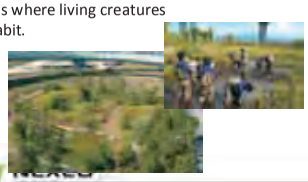
Reduced impacts on natural environment

Road alignment change
Conserving local environment by preventing mountain skirt alteration through shifting road alignment.

Preservation of existing forests
Saving existing trees in order to preserve natural environment and enhance harmonization with surrounding landscape.



Biotope
Creating biotopes in road premises where living creatures can inhabit.



Preservation of raptores
Carrying out construction while monitoring flying and breeding conditions of rare species such as hawks.

Reduction of environmental impact (3)

Reduced impacts on natural environment

Planting local saplings
In constructing roads near natural environment, local indigenous trees are collected and planted in foreslope.
About 118 ha, or 170,000 local saplings, were planted by the end of FY2011.

Animal accident countermeasures

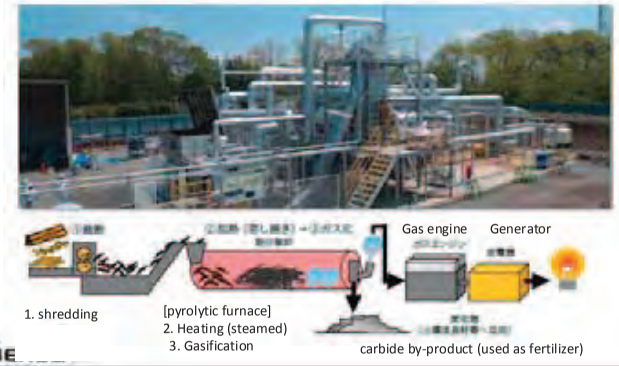
Development of new environmental technology

- Biogas power generation using plant waste

Development of new environmental technology

Biogas power generation using plant waste

Biomass plant wastes generated by grass-cutting and tree-thinning activities along expressways are recycled as fertilizer and chips. Moreover, in order to further utilize these biomass resources, commercialization of biogas power generation technology is being researched.



Capacity Development Project on
Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia

Technical Training in Japan on Climate Change Mitigation Actions

(28 October- 10 November, 2012)

Ana REPAC
Ministry of Energy, Development and Environmental Protection
Republic of Serbia

1. Personal Goal and Achievement

■ Personal Goal

- To learn Japan's advanced mitigation policies and measures, and to analyze the possibility whether and how they can be applied to Serbia in the future.

■ Achievement

- Gained better and more profound understanding on Japan's current and future plans, developed actions and new technologies in order to combat Climate Change

2. Knowledge and Experience Gained (1)

■ **Program/ destination:** Ministry of the Environment

■ **Lessons learnt:**

- Japan's Climate Change Policies
- BOCM (JCM)

■ **How to use gained knowledge/ experience to duties in the Ministry**:

- To initiate the Development of Climate Change Strategy/Action plan on national level
- To promote enhancement of cooperation with Japan's Government in BOCM (JCM)
- To initiate the capacity building for MRV system
- To promote NAMAs projects in order to find a way for their implementation

2. Knowledge and Experience Gained (2)

■ **Program / destination:** Ministry of Economy, Trade and Industry (Agency for Natural Resources and Energy) "Japan's Policy on Energy Conservation and Renewable Energies"

■ **Lessons learnt:**

- Innovative Strategy for Energy and the Environment
- Japan's Energy Efficiency Policy
- Smart Communities

■ **How to use gained knowledge/ experience to duties in the Ministry**

- To build capacities of municipalities on Climate Change and possibilities for mitigation
- To initiate the action plans on EE increase in existing residential and public buildings

2. Knowledge and Experience Gained (3)

- **Program / destination:** Yokohama City Government, Minato-mirai 21 district heating company
- **Lessons learnt:**
  - Yokohama Smart City Project
  - Local Energy Management (CEMS)
- **How to use gained knowledge/ experience to duties in the Ministry:**
  - To initiate the development of Regulations on introduction of heat billing system on the basis of measured consumption in district heating systems
  - To initiate the development of Action Plan on introduction of small scale biomass boilers in public buildings
  - To initiate the development of a system of biomass collection in local communities

3. Other remarks

In front of Climate Change Division, I would like to say how proud we are for the results of NAMAs project and would like to show our gratefulness to JICA for the kind cooperation.

I would like to thank my Japanese colleagues for our fruitful cooperation on NAMAs project.

I would also like to show my personal gratefulness to JICA for giving me the chance to be in Japan for the second time.

Thank you very much!

Ana Repac

Climate Change Division

Ministry of Energy, Development and Environmental Protection

ana.repac@merz.gov.rs

Capacity Development Project on
Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia

Technical Training in Japan on Climate Change Mitigation Actions

(28 October- 10 November, 2012)

Predrag Milanovic
Ministry of Energy, Development and Environmental Protection
Republic of Serbia

1. Personal Goal and Achievement

- Personal Goal

  Improve understanding of mitigation actions and policies through the those actions are implemented

- Achievement

  I got a better view of how the whole system works and what are the tools for guiding processes in the direction of CO_2 reduction

2. Knowledge and Experience Gained (1)

- Program / destination
  - Agency for Natural Resources and Energy
  - Ministry of Economy, Trade and Industry
- Lessons learnt
  - Current policies and measures in Japan towards climate change mitigation
  - Concept of Innovative Strategy for Energy
  - Promotion of RES
- How to use gained knowledge/ experience to duties in the Ministry
  - One stop service
  - Revision Serbian feed-in tariff system
    - Promoting small PV systems (10 kW)
    - Limitation of 30 MW per project
  - Improvement of statistical data collecting and processing
  - Voluntary action plan

2. Knowledge and Experience Gained (2)

- Program / destination
  - Toshiba Corporation
- Lessons learnt
  - Concept of Smart Community (μEMS, CEMS, HEMS, BEMS)
  - Trends in Photovoltaic Power Generation
- How to use gained knowledge/ experience to duties in the Ministry
  - Trends in organizing Power Grid
    - Reducing influence of RES power plants on grid stability
  - Optimizing system with smart counter and cloud processing (μEMS)

2. Knowledge and Experience Gained (3)

- Program/ destination
  - Electric Power Development Co. (J-Power)
- Lessons learnt
  - Advanced technologies for coal fired power generation
- How to use gained knowledge/ experience to duties in the Ministry
  - Ability of symbiosis between high efficient energy production and the environment
  - The most impressive visit during our stay in Japan
    - Organization of the technical process

Thank you very much!

Capacity Development Project on
Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia

Technical Training in Japan on Climate Change Mitigation Actions

(28 October- 10 November, 2012)

Aleksandar Pavlovic
Ministry of Traffic

1. Personal Goal and Achievement

- Personal Goal
  - Increase my knowledge on Climate Change and GHG emissions reductions
  - Introducing the importance of reducing GHG emissions in transport sector in my Ministry
- Achievement
  - I gained new knowledge in the field of Climate Change and GHG emission reductions in the Transport sector and the ways of their possible implementation

2. Knowledge and Experience Gained (1)

- Program / destination

  Efforts of the Ministry of land, infrastructure, Transport and Tourism to Reduce Greenhouse Gas Emissions in the Transport Sector
- Lessons learnt
  - Promotion of measures to combat Climate Change
  - Promotion optimum utilization of vehicles
  - Measures to ensure traffic flow
  - Regulations in the energy Use Law (Transportation sector)
- How to use gained knowledge/ experience to duties in the Ministry
  - Strengthening the promotion of the use of public transportation
  - Strengthening the promotion of eco driving
  - Strengthening the promotion of construction of bicycle roads and bicycle lanes
  - To propose the development of a Regulation on transport operators to be obliged to prepare an energy conservation plan and to report their energy consumption regularly

2. Knowledge and Experience Gained (2)

- Program/ destination

  Environmental policy of NEXCO East
- Lessons learnt
  - Contribution to global warming control in Transport sector
  - Contribution to sustainable recycle-based society
  - Reduction of environmental impact of the Transport sector
- How to use gained knowledge/ experience to duties in the Ministry
  - Promotion of environmental improvement through improved expresway network
  - Promotion of maintenance of greens at expressway
  - Promotion of recycle of construction by-products, utilization of woody biomass
  - Promotion of reduced impacts on natural environment in Transport sector

3. Other remarks

Japan is a country of long history, advanced technology and vivid ecology.

Thank you, very much

Aleksandar Pavlovic
Ministry of Traffic

Capacity Development Project on
Nationally Appropriate Mitigation Actions (NAMAs)
in the Republic of Serbia

Technical Training in Japan on Climate Change Mitigation Actions

(28 October- 10 November, 2012)

Dr Dimitrije Lilic
Ministry of Energy, Development and Environmental Protection

1. Personal Goal and Achievement

- Personal Goal
  - Energy efficiency, renewable energy sources and environmental protection – an integrated approach.
  - Information and new knowledge about advanced technologies in energy efficiency that are used in Japan as a measure to mitigate climate change
  - Information and new knowledge about the Japanese system evaluation of the impact of climate change mitigation, including MRV systems.
- Achievement
  - Ability to plan and promote appropriate measures to mitigate climate change in Serbia
  - Ability to develop an appropriate system to MRV for Serbian NAMA project

2. Knowledge and Experience Gained (1)

- **Program / destination**

Promotion Activities of Energy Conservation in Japan (*Energy Conservation Center -ECCJ, Japan*)

- Venue: JICA Tokyo International Center Japan, 01 November 2012

- **Lessons learnt**

1. Energy Conservation Policy of Japan

1.1. Law and Regulations

Energy Conservation Low established 1979: Fields: 1. Manufacturing plants & Business Establishments; 2. Transportation; 3. Residental buildings and structures (*Specification; Obligation; Standards, ZEB; Labeling-Stars*); 4. Machinery and equipment (*Labeling;Top Runner Program for 23 items*)

1.2. Promotion measures (Subsidies -including R&D; Tax reduction – for activities; Preferential interest rate, etc.)

1.3. Voluntary action (by public and private sectors)

2 Activities of ECCJ

Role (ECCJ-METI); Main activities by sectors; International Cooperation

- **NOTE: Slide 7: How to use gained knowledge/experience to duties in the Ministry**

2. Knowledge and Experience Gained (2/1)

- **Program / destination**

Environmental Measures for Housing and Buildings (*Housing Bureau, Ministry of Land, Infrastructure, Transport and Tourism*)

- Venue: JICA Tokyo International Center Japan, 01 November 2012

- **Lessons learnt**

- **GHG Emission targets in Japan:** 1. *Mid-term target* ***-25%*** *in 2020 and 2. Long-term target* ***-80% in 2050,*** *compared 1990 (1,261 million tons)*
- **In housing and building sector,** for period 1990-2010, **increased:** *final energy consumption for* ***35 %*** *and* CO_2 *emission for* ***31.9%*** *in commercial sector and* ***34.8%*** *in households.*
- **Main Causes of the Increase in Enrgy Consumption in:**
  - Housing – changes in lifestyle, number of hosholds and electric devices
  - Buildings - changes in usage, incresing floor space and business hours
- **Past Energy Savings Efforts in Housing and Buildings (1979-2012):**
  1. Regulation based on Energy Saving Act
  2. Labeling and information offering on energy savings
  3. Insentives

2. Knowledge and Experience Gained (2/2)

- **Lessons learnt**
- **Development and Promotion of Comprenhesive Assesment System for Built Environment Efficiency (CASBEE)**
- **Assistance Measures related to Energy Efficiency Housing and Buildings:**

  - ***Budget:*** *Program to promote zero-energy housing; Program on advanced CO_2 saving housing and buildings; Housing eco-point program;*

  - ***Loan:*** *Flat 35S (lower housing loan interest rate for EE housing)*

  - ***Taxation:*** *Taxation system to promote EE renovation; Low-carbon emmisions building certification program*
- **Establishing Council for Promoting Housing and Living for Low-Carbon Society** *(Jointly established by METI, MLIT and MOE) -2010*
- **Low Carbon City Promotion Act**
- **Setting Standard Primary Energy Consumption in accordance with Floor Space per Use**
- **Etc.**
- **NOTE: Slide 7: How to use gained knowledge/experience to duties in the Ministry**

2. Knowledge and Experience Gained (3)

- **Program / destination**

  Visit to Sony Corporation - ***Sony Group's Environmental Targets and Environmental Considerations for Office Buildings***
- Venue: Sony City Osaki, 02 November 2012
- **Lessons learnt**
- **"Road to Zero" -** *Sony Group's new environmental plan to achieve "Zero Environmental Load' in its business activities and product life cycle*
- **Measure for Reducing GHG Emissions from Offices:** *Improvement of efficiency, fuels, business processes, operations, etc. ; Reduction of energy use in every aspects of business activities; Utilization of renewable energy*
- **Environmentally friendly Measures at Sony City Osaki:** *Solar heating panels; Solar power generation panel; "BIOSKIN"- an evaporative cooling system for building exterior; LED for common use space; Integrated high-efficient heat source system; Afforestation around the building.*
- **Technologies Introduced to Sony City:** *Double skin structure; Blind control by solar radiation sensor; High efficient lighting devices and control; Use of sewage heat ; high-efficient Integrated heat source system.*
- **NOTE: Slide 7: How to use gained knowledge/experience to duties in the Ministry**

How to use gained knowledge/ experience to duties in the Ministry

In the process of:

- *The implementation of already existing programs and activities* of the Government of the Republic of Serbia.
- *Following international policies and activities* in the areas of energy efficiency and wider use of renewable energy sources and environmental protection.
- *Creating a national policy* in the areas of energy efficiency, wider use of renewable energy sources and environmental protection.
- *Creating new relevant laws and regulations.*
- *Implementing and monitoring the implementation of the relevant legislation in practice.*
- *Cooperation with domestic, foreign and international institutions.*
- *Implementation of new domestic and international relevant projects.*
- *Encouraging and directing national actors* in the field of research, development and production.
- *Providing information and awareness at the national level* on improving energy efficiency and wider use of renewable energy sources and environmental protection.
- *Finding a solutions for the financing* of specific projects and activities, and so on.

3. Other remarks

Personal impression about Japan during my stay here

- *Friendly and hospitable people*
- *Culture and traditions worthy of respect*
- *Developed care about the people*
- *Organized state*
- *Tokyo is modern, clean, nice and orderly megapolis. I assume that the other parts of Japan even more beautiful.*
- *Technologically highly developed country*
- *Country - a desirable partner*