

The Japanese Business Community's Initiative to Tackle Climate Change

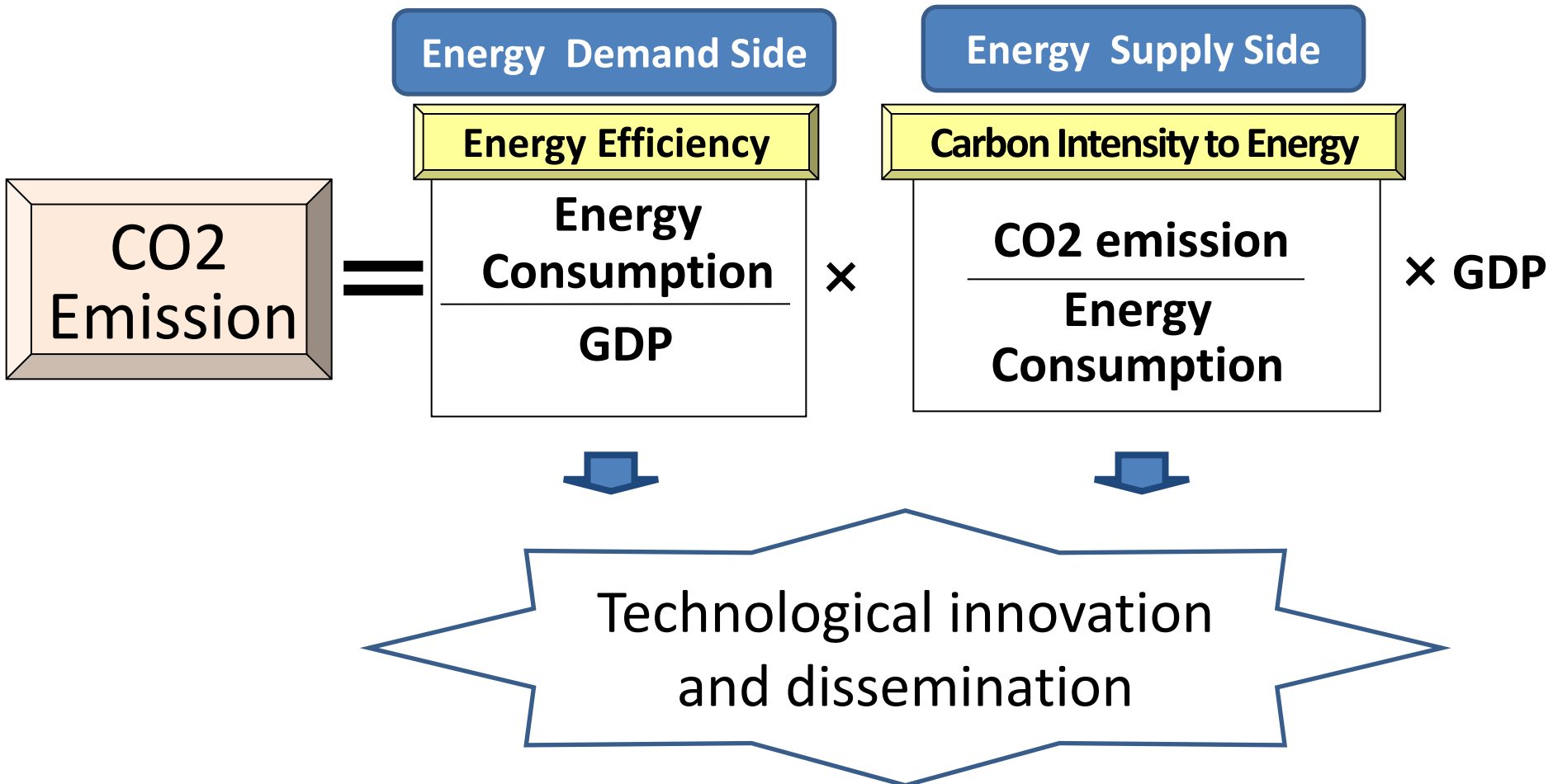
June 2015

1. Basic Concept

-Technology is the Key-

Viewpoint on Climate Protection Measures

➤ Technological innovation is key to reconcile economic growth and emission reduction.



2. What have we done so far?

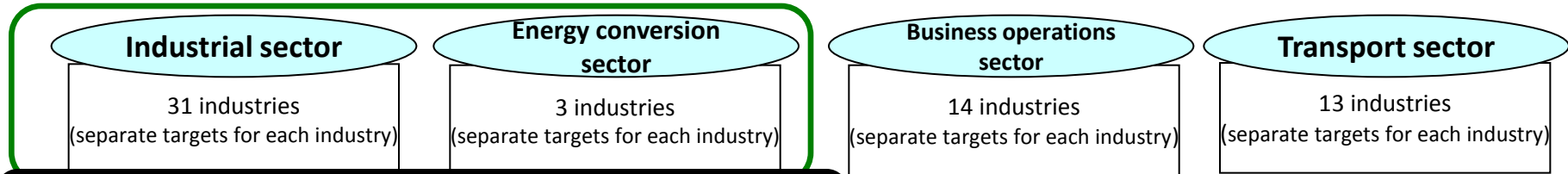
~Promotion of the Keidanren Action Plan~

1997~2012

History of Keidanren's Climate Protection Initiatives

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- Apr. 1991** Keidanren Global Environment Charter released
 - Jun. 1992** United Nations Earth Summit (Rio de Janeiro)
 - Jul. 1996** Keidanren Environment Appeal (implementation policy for Action Plan on the Environment) released
 - Jun. 1997** Keidanren Action Plan on the Environment released
 - Dec. 1997** Kyoto Protocol adopted
 - Dec. 1998** First follow-up on Action Plan on the Environment (annual follow-ups thereafter)
 - Jul. 2002** Establishment of third-party evaluation committee for Keidanren Action Plan on the Environment
 - Dec. 2009** Released Basic Policy of Keidanren Commitment to a Low Carbon Society
 - Jan. 2013** Formulated and released Keidanren Commitment to a Low Carbon Society
 - Apr. 2013 -
Apr. 2015** Keidanren Commitment to a Low Carbon Society initiated
Formulated and released the new initiative: Phase II of Keidanren Commitment to a Low Carbon Society

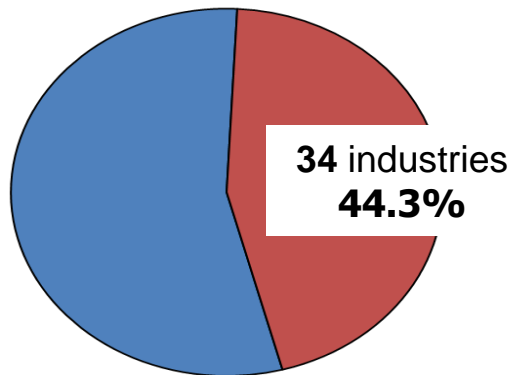
Overview of the Keidanren Action Plan on the Environment



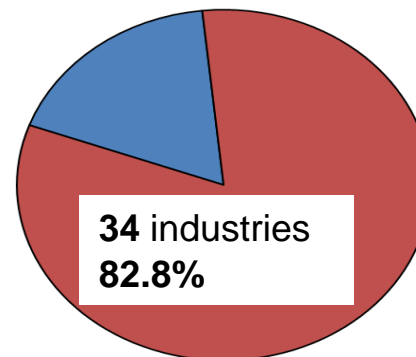
Sector wide target = $\pm 0\%$ change from FY1990 levels (average over FY2008-FY2012)

- (1) **Participants consist of a total of 61 industries or enterprises** from not only the manufacturing sector, a large energy consumer, but also a wide range of other fields including business operations such as logistics and financial services.
- (2) **With regard to manufacturing processes (at the service provision stage)**, four separate **quantitative targets** are set (total CO2 emissions, CO2 emission intensity, total energy consumption, energy consumption rate) and the most appropriate target selected for each process, taking into account differences among industries and business categories.
- (3) When results exceed initial predictions, **more ambitious targets are set**. At the same time, **in some industries large numbers of CDM (clean development mechanism) credits or other credits are purchased** in order to meet targets.
- (4) **Annual reviews by government councils (Central Environment Council, Industrial Structure Council) and third-party evaluation committee.**

Share of Japan's total CO2 emissions, FY1990
(1,143.4 million tons)

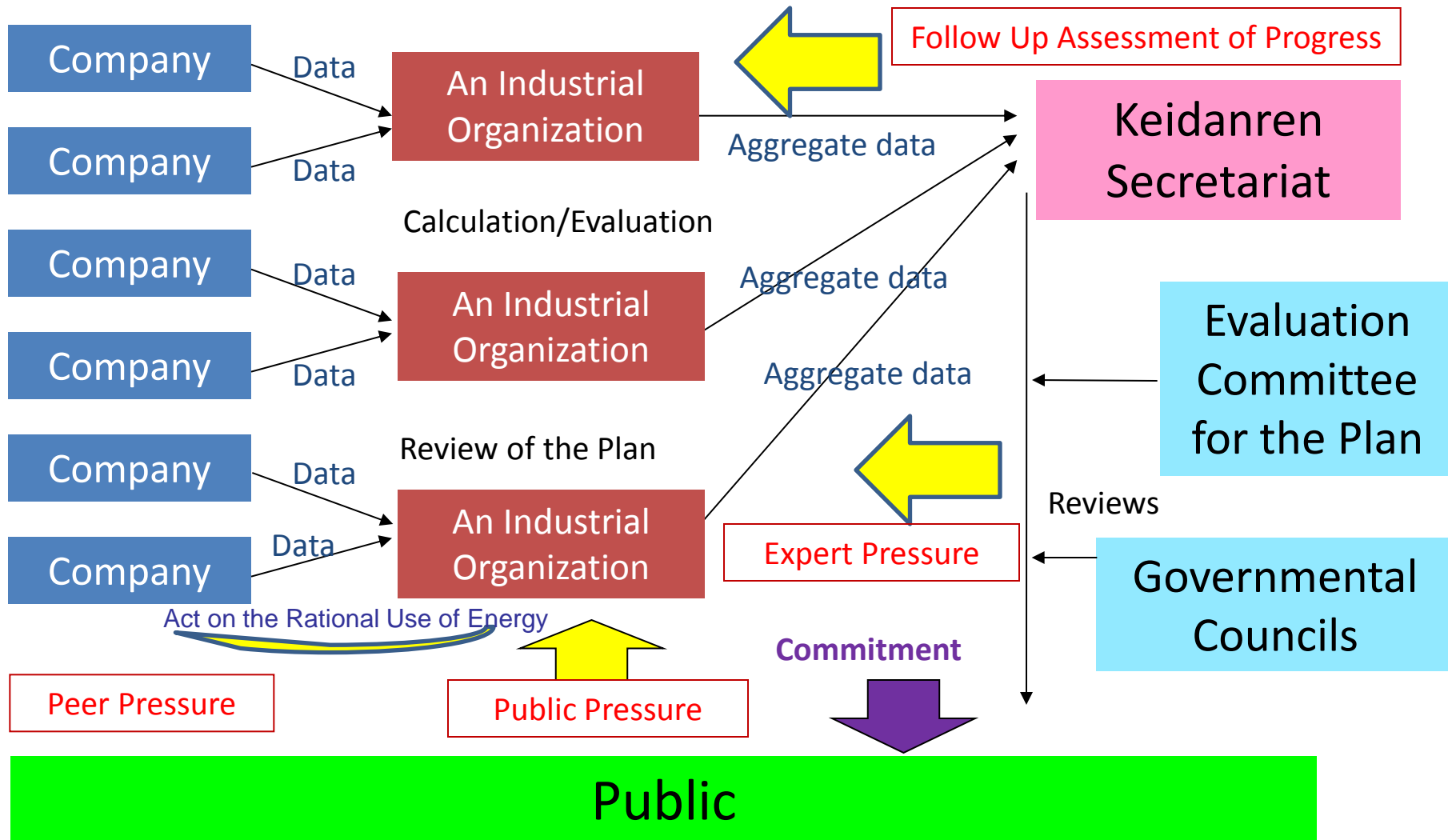


Share of industrial and energy conversion sector CO2 emissions, FY1990
(612.2 million tons)

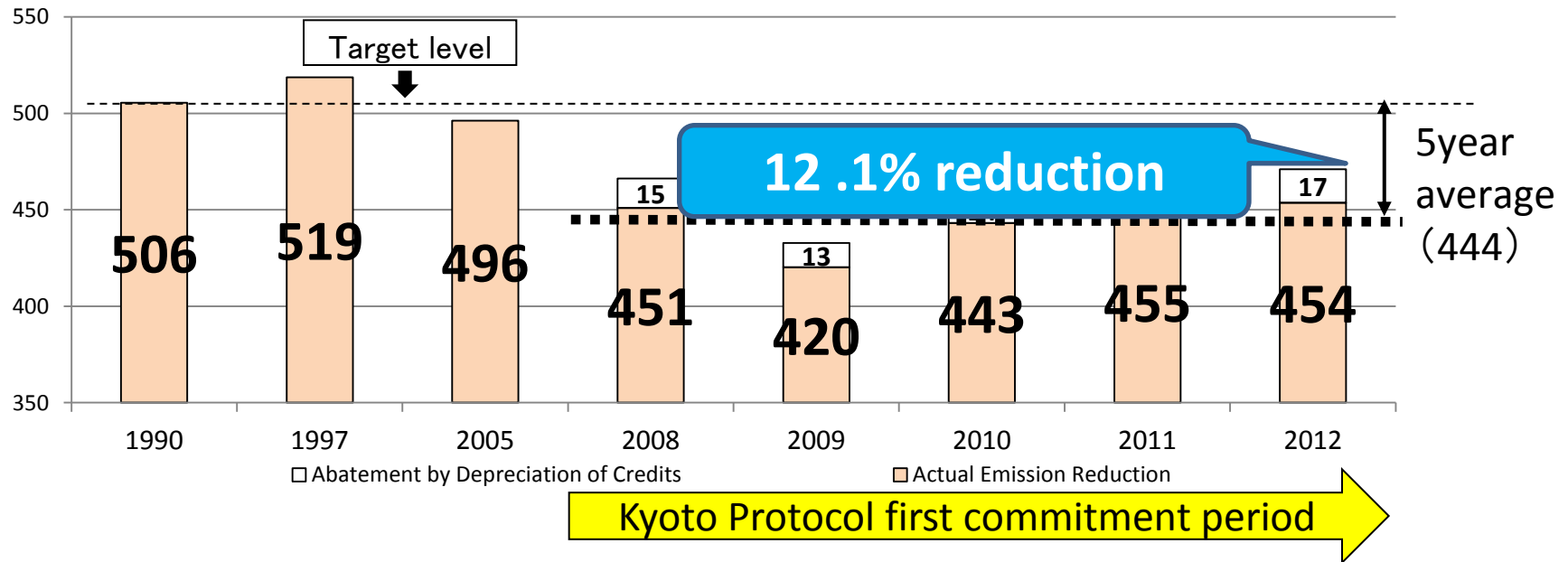


Review Process of Keidanren's Action Plan

The assessment of progress is conducted every year. The overall performance is publicized by Keidanren Secretariat.



Results of Keidanren's Action Plan



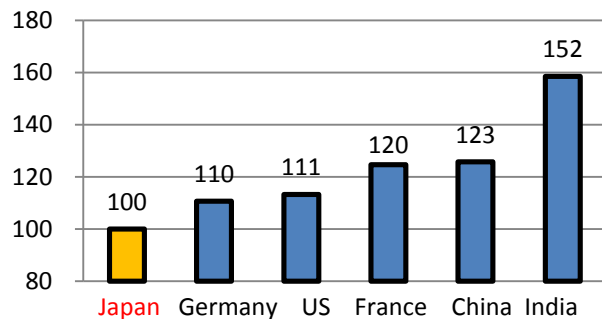
Factors Contributing to Reduction (Average of 2008-2012)	Comparison to FY 1990
Change in production activity	+2.0%
Change in CO2 emission factor	+0.0%
Change in CO2 emissions per unit of output (efficiency improvement)	-14.0%
Total	-12.1%

Efficiency improvement was the driving force to reduce CO2 emissions in KEIDANREN's plan.

International Comparisons of Energy Efficiency in Industrial and Energy-conversion Sectors

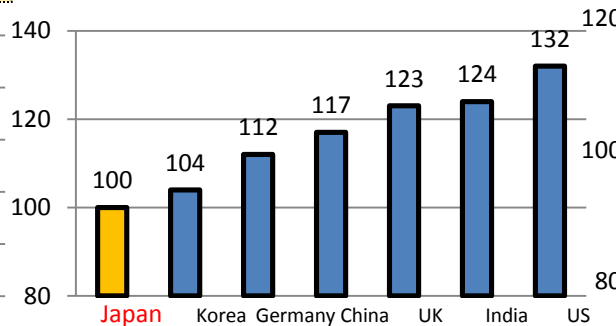
Energy efficiency in key industries is among the world's highest

Energy required to produce 1kWh of electricity through thermal power generation (2011)



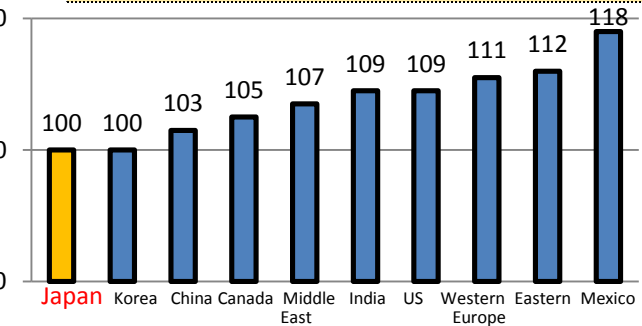
Source: INTERNATIONAL COMPARISON OF FOSSIL POWER EFFICIENCY AND CO2 INTENSITY (2014) (ECOFYS)

Energy required to produce 1 ton of iron (2010)



Source: Research Institute for Innovative Technology for the Earth, "International Comparison of Energy Efficiency"

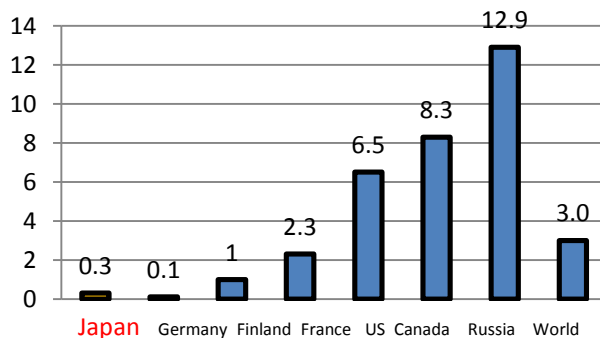
Energy required to produce 1 ton of electrolytic caustic soda (2009)



Source: CMAI "Capacity Database" (2009), Japan Soda Industry Association "Soda Handbook" (2009)

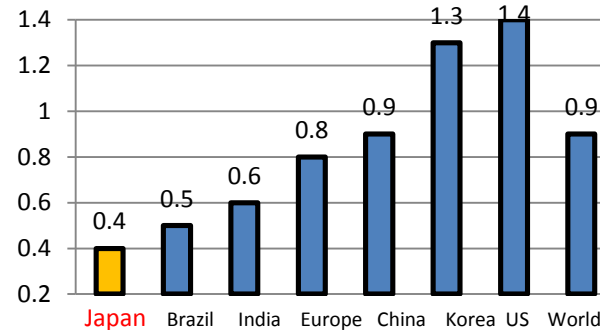
Japanese industries' have introduced best available technologies aggressively.

Energy saving potential by adopting BAT (Pulp and Paper) (GJ/T)



Source: IEA Energy Technology Perspective 2012

Energy saving potential by adopting BAT (Cement) (GJ/T)



Source: IEA Energy Technology Perspective 2010

Industries which raised their targets

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> ➤ All Japan Freight Forwarders Association (twice) ➤ Association of Japanese Private Railways ➤ Brewers Association of Japan ➤ Flat Glass Manufacturers Association of Japan ➤ Four electrical/electronics-related groups ➤ Japan Aluminium Association ➤ Japan Association of Rolling Stock Industries ➤ Japan Automobile Manufacturers Association (three times) | <ul style="list-style-type: none"> ➤ Japan Cement Association ➤ Japan Chemical Industry Association ➤ Japan Copper and Brass Association ➤ Japan Department Stores Association (twice) ➤ Japan Federation of Construction Contractors ➤ Japan Federation of Housing Organizations ➤ Japan Foreign Trade Council ➤ Japan Gas Association (three times) ➤ Japan Mining Industry Association ➤ Japan Paper Association (twice) ➤ Japan Rubber Manufacturers Association (twice) | <ul style="list-style-type: none"> ➤ Japan Sanitary Equipment Industry Association ➤ Japan Sugar Refiners' Association ➤ Japan Trucking Association ➤ Japanese Electric Wire & Cable Makers' Association (three times) ➤ Japanese Ship-owners Association ➤ KDDI ➤ Lime Manufacture Association (twice) ➤ Petroleum Association of Japan ➤ Real Estate Companies Association of Japan; ➤ Scheduled Airlines Association of Japan (twice) |
|---|---|--|

The role of Keidanren Action Plan in Japanese Government's Climate Change Policy

Quoted in the Government's Kyoto Protocol Target Achievement Plan
(Government Decision: 28 March 2008)

"These voluntary action plans by business operators have thus far produced results and the voluntary action plans of Nippon Keidanren are, in particular, playing a central role in countermeasures in the industrial community. The advantages of a voluntary instrument include the ease of selection of superior countermeasures for each actor based on its originality and ingenuity, the likelihood of providing incentives to pursue aggressive targets, and no procedural costs for both the Government and implementing actors. It is expected that these advantages will be further exploited in voluntary action plans by business operators."

IPCC Working Group III Contribution to the Fifth Assessment Report (Chapter15)

The Japanese Voluntary Action Plan (VAP) by Keidanren (Japan Business Federation) was initiated in 1997. The plan is embedded in the regulatory culture in which the government constantly consults with industrial associations. It was reviewed annually in governmental committees, and an independent third party committee was also established to monitor its implementation; the included industries were required to be accountable with their environmental performance constantly. Industrial groups and firms established energy and GHG management systems, exchanged information, being periodically reviewed and acted to improve energy efficiency and cut GHG emissions. Several industry sectors raised the ambition levels with stricter targets during the course of VAP, once they achieved original targets. An econometric analysis found that voluntary actions by the manufacturing sector led to significant energy efficiency investments. The major role of voluntary agreements is to facilitate cooperation among firms, industrial associations, and governments in order to find and implement low cost emissions reduction measures.

The Fifth Assessment Report of IPCC also refers to VAP positively.

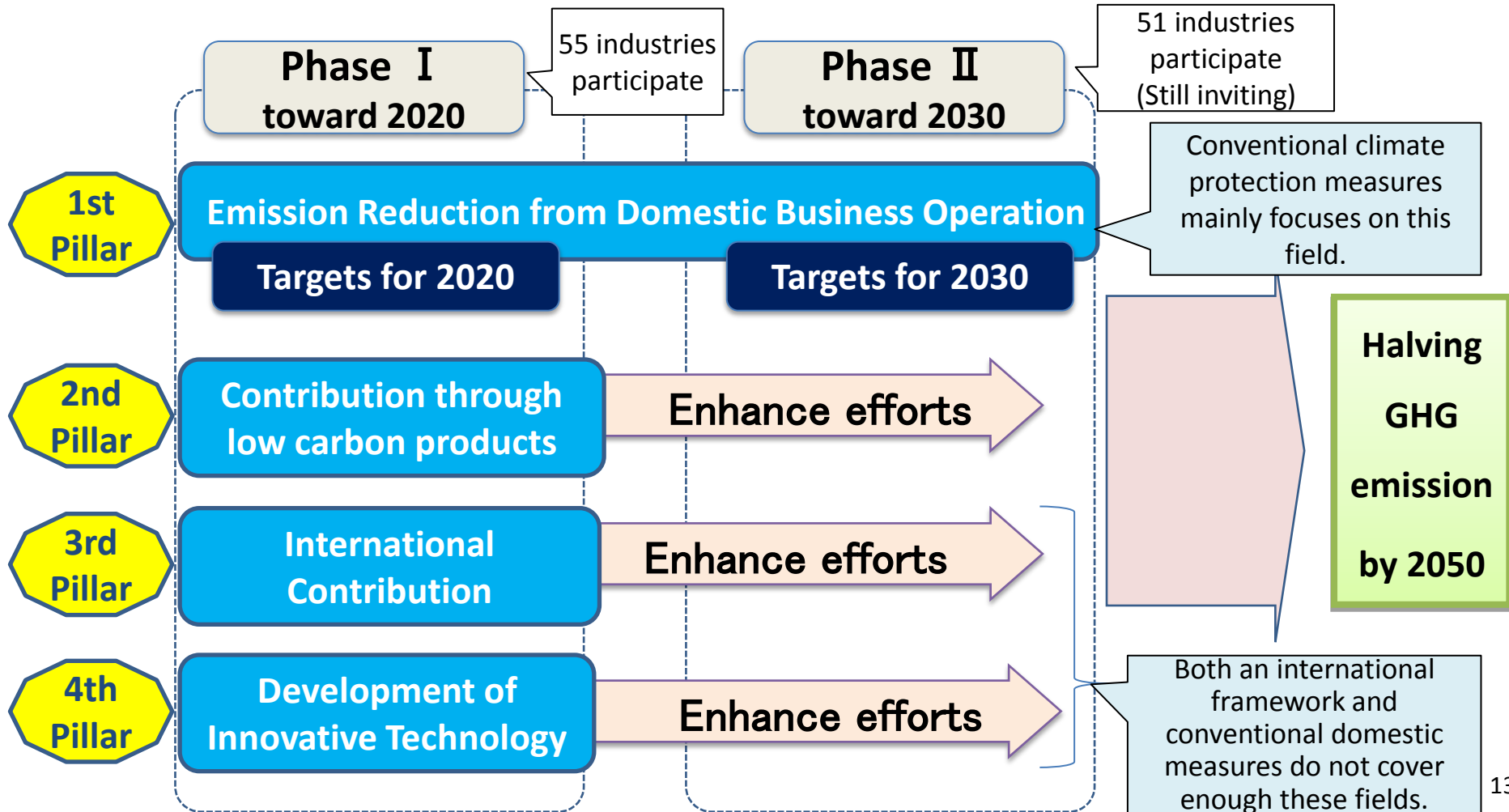
3. Where are we heading?

~ KEIDANREN's Commitment to
a Low Carbon Society ~

2013 ~ 2050

KEIDANREN's Commitment to a Low Carbon Society

1. Participating industries and companies set their own targets.
2. The plan consists of 4 pillars (shown bellow).
3. 55 industries made their plans as for the Phase I toward 2020.
4. Endeavor to expand our efforts for the Phase II toward 2030.



The PDCA Cycle for Keidanren's Commitment to a Low Carbon Society

Plan (At target-setting [plan formulation] stage)

- Participating industries set targets in line with maximum levels they can meet by identifying BATs and related implementation plans, making international comparison of energy efficiency, etc.
- Participating industries are responsible for explaining the adequacy of their targets.

Evaluation Committee

- Participating industries brief the committee on their respective action plans.
- The committee comprehensively assesses and verifies industry action plans.
- Participating industries revise their action plans as necessary with attention to the findings of Evaluation Committee assessments and verification.
- When targets are exceeded: Lift target levels as necessary (without trading the surplus)

Act (At verification follow-up stage)

- ✓ Participating industries comply with full information disclosure, for example, by publishing the names of participating companies on their respective industry websites.
- ✓ The Keidanren website contains links to the websites of industrial organisations participating in the Commitment to a Low Carbon Society.
- ✓ The Commitment to a Low Carbon Society will undergo a sweeping review in fiscal 2016.

Do (At plan implementation stage)

- Each industry implements its action plan.
- Participating industries explore ways to assure certainty in meeting their targets, with consideration for the course of debate over the UN carbon credit framework including bilateral offset mechanisms.
- Action plans of individual industries are compiled by Keidanren and published on its website.

Evaluation Committee

- The committee assesses and verifies progress of each industry's action plan.

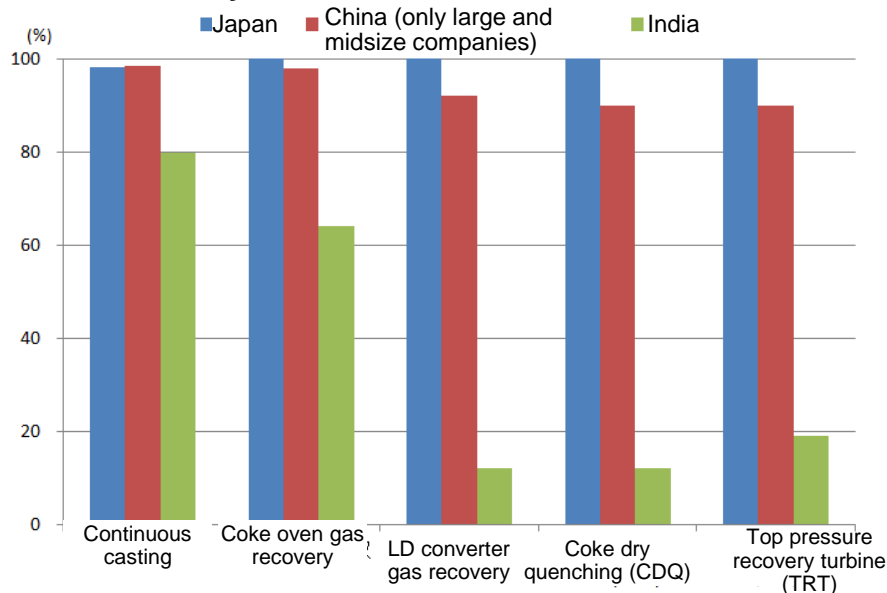
Check (At plan implementation verification stage)

Initiative by the Iron & Steel Industry

Eco Solution: CO₂ Emission Reduction from Increasing Use of Technologies

- There is much potential for increasing the use of major energy conservation technologies in China, which accounts for almost half of global crude steel production, and India, where steel production is expected to continue to grow.
- Major energy conservation technologies developed and used in the Japanese steel industry are already lowering CO₂ emissions overseas as Japanese companies provide these technologies to other countries. CDQ, TRT and other major types of equipment alone are already lowering annual aggregate CO₂ emissions in China, Korea, India, Russia, Ukraine, Brazil and other countries by approximately 50 million tons.

Utilization Rates of Major Energy Conservation Equipment by Blast Furnace Steelmakers



Emission Reductions in Other Countries from Japanese Energy-conserving Equipment

	No. of units	Reduction (10,000 tons/year)
Coke dry quenching (CDQ)	87	1,533
Top-pressure recovery turbines (TRT)	58	1,073
Byproduct gas combustion (GTCC)	45	1,492
Basic oxygen furnace OG gas recovery	21	792
Basic oxygen furnace sensible heat recovery	7	85
Sintering exhaust heat recovery	6	88
Total emission reduction		5,062

CDQ : Coke Dry Quenching
 TRT : Top Pressure Recovery Turbines
 GTCC : Gas Turbine Combined Cycle system

Note: Continuous casting figures for all three countries include blast furnace and EAF steelmakers (Total continuous casting production/Total crude steel production in 2013). For other equipment, figures are for FY2013 in Japan, 2013 for coke oven gas recovery and LD converter gas recovery and 2010 for CDQ and TRT in China, and 2000 for all other categories in India.

Sources

Japan: JISF

China: Coke oven/LD converter gas recovery = China Iron and Steel Association; CDQ = Metallurgy report (Nov. 27, 2012); TRT = Wang Wei Xing (China Metallurgy Association, *Information on Major Steel Companies in 2010, World Metals Report (March 8, 2011)*)

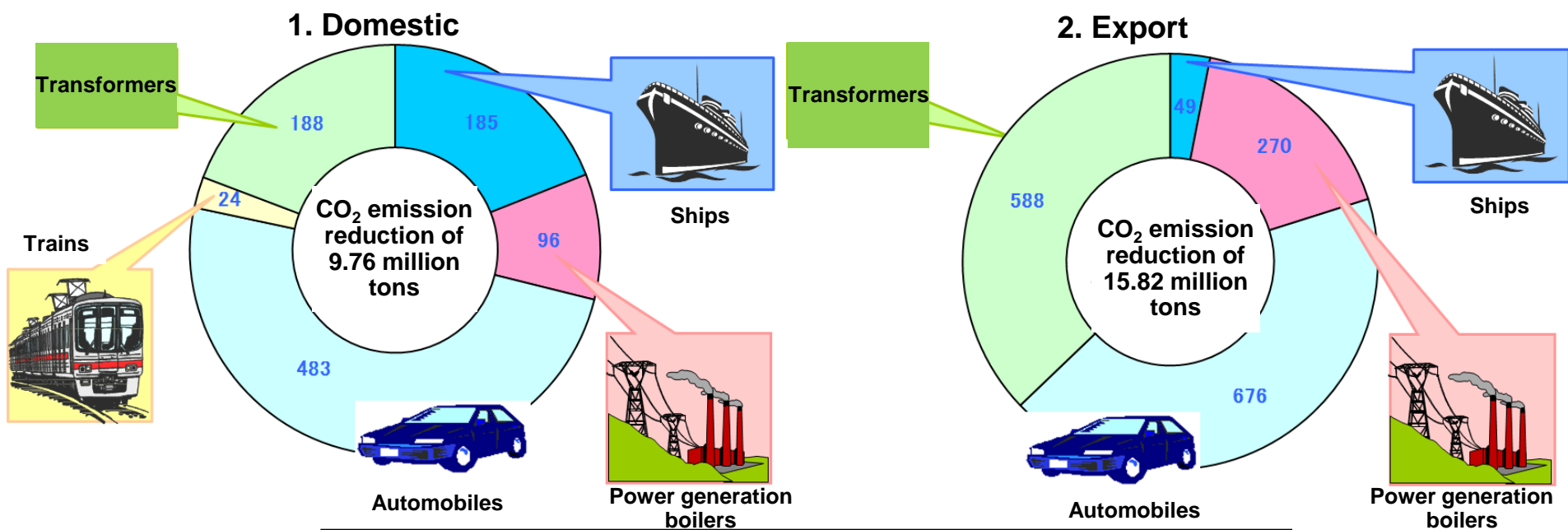
India: Steel edition of Diffusion of energy efficient technologies and CO₂ emission reductions in iron and steel sector (Oda et al. Energy Economics, Vol. 29, No. 4, pp 868-888, 2007)

Initiative by the Iron & Steel Industry

Eco Product Contribution: Quantitative Evaluations – Contributions of Major High-performance Steel Products

- To establish a method to determine the quantitative contribution of high-performance steel, JISF established in FY2001 a committee with the participation of associations of steel-consuming industries, The Institute of Energy Economics, Japan and the Japanese government. The committee has been monitoring contributions every year since then.
- Statistics are for the five major types of high-performance steel for which quantitative data are available (FY2013 production of 7.52 million tons, 6.7% of Japan's total crude steel output). The use of finished products made of high-performance steel cut FY2013 CO₂ emissions by 9.76 million tons for steel used in Japan and 15.82 million tons for exported steel, a total of 25.58 million tons of CO₂.

CO₂ Emission Reductions by the five major types of high-performance steel (FY13)



CO₂ Emission Reductions: 25.58 million tons CO₂ in total (7.52 million tons of high-performance steel)

Source: The Institute of Energy Economics, Japan

*The five categories are automotive sheets, oriented electrical sheets, heavy plates for shipbuilding, boiler tubes and stainless steel sheets. In FY2013, use of the five categories of steel products in Japan was 3.677 million tons and exports were 3.845 million tons for a total of 7.522 million tons.

*Assessments in Japan started in FY1990 and for exports assessments started in FY2003 for automobiles and shipbuilding, in FY1998 for boiler tubes, and in FY1996 for electrical sheets.

The public and private collaborative meeting between Indian and Japanese iron and steel industry

Purpose

To exchange of knowledge and experiences and consequently encourage technology transfer from Japanese to Indian steel industry and thereby contribute to the energy saving in India and in the world.

Members – Public and Private sectors of India and Japan

Public and Private Partnership

India

Public members and observers

Ministry of Steel
Bureau of Energy Efficiency etc.

Private members and observers

India Steel Association (ISA)
(SAIL, RINL, Tata, JSW, Bhushan, BPSL, Essar, Jindal etc.)

Japan

Public members and observers

Ministry of Economy, Trade and Industry/ NEDO / JBIC / JETRO

Private members and observers

The Japan Iron and Steel Federation
(Nippon Steel & Sumitomo Metal, JFE steel, Kobe steel, Nisshin Steel etc.)

The public and private collaborative meeting between Indian and Japanese iron and steel industry

Meetings – since 2011

2011

1st meeting

(Nov. 2011, New Delhi)



2012

2nd meeting

(Nov. 2012, New Delhi)



2013

3rd meeting

(Feb. 2013, Tokyo)



2014

4th meeting

(Feb. 2014, Tokyo)



2015

5th meeting

(Mar. 2015, New Delhi)



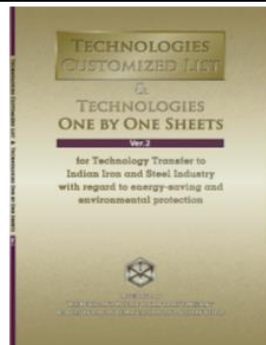
Three Pillars of Energy Saving

ISO14404



Steel Plant Diagnosis using ISO14404 (2013 and 2014)

Technologies Customized List



Technologies Customized List Ver.2 (2014)



Business Seminar with regards to the technologies on TCL (2014)

Energy Management



Site Visit in Japan (2013 and 2014)



Advantages of the Private-Sector-led Initiative

(1) Effective Target Setting

The reduction target of each industrial organization is defined by itself. The target is set based on the best knowledge of emission reduction technologies in the sector and the best prospects production level in the future since the industrial organization is at home in the sector. Private-sector-led initiatives efficiently achieve emission reduction without impeding economic growth.

(2) Encourage Reduction Efforts through Technologies (not buying credit)

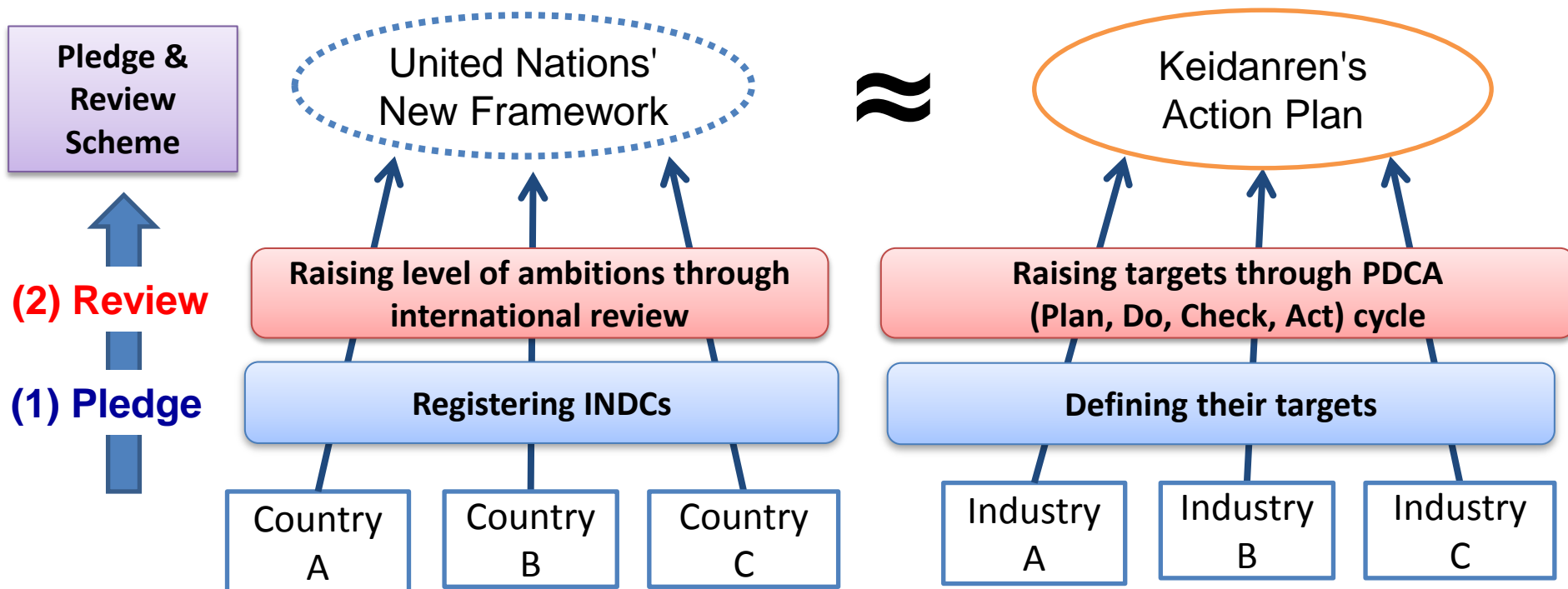
Each industrial organization is not allowed to achieve its target by buying emission credit. It is, also, encouraged to raise its target once the organization achieves it. The organization has to continue to introduce reduction technologies.

Lessons for Paris Agreement

Keidanren's Action Plan has proven the effectiveness of a pledge and review approach.

- (1) The number of participating organizations increased from 36 in 1997 to 61 in 2012.
- (2) 29 of 61 organizations raised their targets (enhanced their ambitions.)

A pledge and review type new international agreement can work well !



4. Keidanren's Opinion

~ on International Framework ~

Opinion on International Framework

Participation by All Major Emitters

- (1) Establishing a fair and effective international framework with the participation of all major emitters.
- (2) A bottom-up approach will be effective in encouraging all countries to act with a view to reducing worldwide GHG emissions.
- (3) From the perspective of ensuring credibility and transparency, it will be possible to further encourage each country to make maximum effort by making it accountable for achieving its own targets and actions and internationally reviewing progress towards such goals.



➤ **International framework applied from 2020 should be based on bottom-up approach, and mutual review process is important.**

Opinion on International Framework

Diffusion of Advanced Technology

Actions which contribute to emission reduction is important.



- (1) Not only the domestic reduction targets, but also actions such as international contributions and innovative technology development, should be evaluated appropriately.
- (2) Technology and financial mechanism should be designed to promote the diffusion of advanced technologies to the developing countries.

Reference

~ Keidanren's Opinion
on Domestic policies ~

Opinion on Domestic Policy

National Target

- (1) Should adopt a bottom-up approach and aggregating individual efforts that will have a direct impact on reductions, instead of being bound to rates of reduction from emission levels of certain baseline years.
- (2) Should make a realistic energy policy that enables the achievement of Japan's growth strategy.
- (3) Should ensure international fairness, feasibility of implementation, and appropriateness of the burden on the people.

Domestic Countermeasures

- (1) Incorporate Keidanren's Commitment to a Low Carbon Society into Government policies (such as the Action Plan for Global Warming Countermeasures, etc.), as the pillar of industrial measures.
- (2) Should not adopt cap-and-trade style domestic emission trading scheme which not only hinder corporate initiatives taken from an LCA perspective but also slow R&D efforts by enabling companies to meet targets by simply purchasing credits.

ETS Should not be Introduced in Japan

1. Hinder corporate initiatives taken from an LCA perspective

- Even if companies produce products which contributes to emission reduction throughout its lifecycle, they may be forced to purchase credits if emission from the productive process increases and exceeds the cap.

2. Hamper technological innovation

- If companies are able to purchase emission credits, they can achieve targets without curbing emissions and may have less R&D motivation.
- If funds allocated to development of innovative technology are instead dedicated to purchasing emission credits, tech investment will suffer

3. It could cause carbon leakage and run counter to global warming

- It could cause carbon leakage and run counter to global warming.

ETS Should not be Introduced in Japan

4. Could interfere with fair competition among enterprises

- Emissions trading schemes characteristically cause disadvantage to companies that step up manufacturing of products that win popular approval, and advantage to companies that cut production because products fail to win approval.



Disadvantage for companies which make preferred products.

5. Could detract from the competitiveness of Japanese industry

- To curb greenhouse gases more than it could be achieved through BAT, there is no alternative but cutting production or purchasing credits. This could severely impact the economy and employment.