Keidanren
Policy & Action

Main points of
KEIDANREN's Commitment to a Low Carbon Society
Fiscal 2018 Follow-up Results Summary

<Performance in fiscal 2017> [final version]
(Tentative translation)

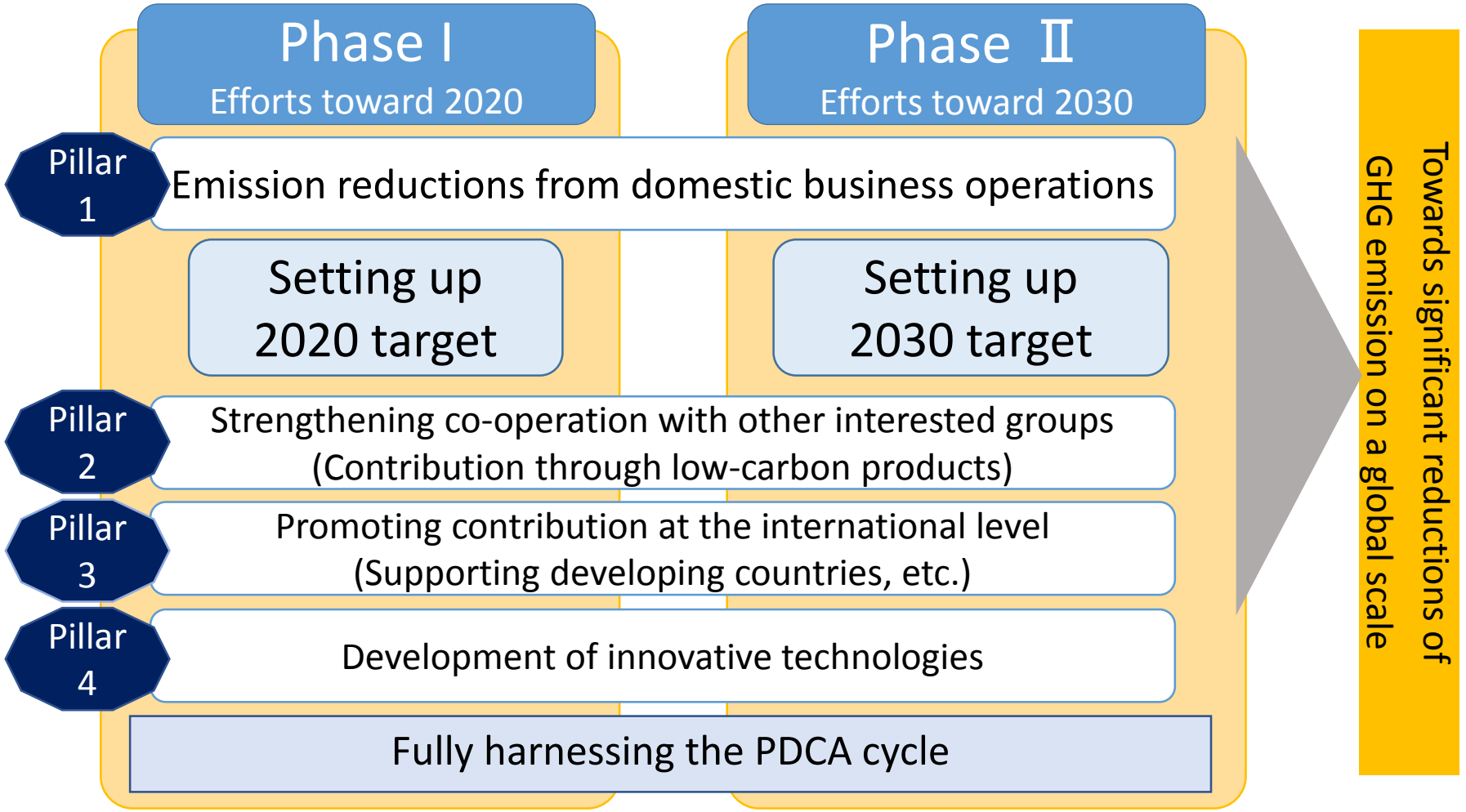
March 29, 2019

KEIDANREN
(Japan Business Federation)

Outline of KEIDANREN's Commitment to a Low Carbon Society

Contributing to global long-term global warming countermeasures on a global scale through a Plan consisting of four pillars.

*62 participating industries

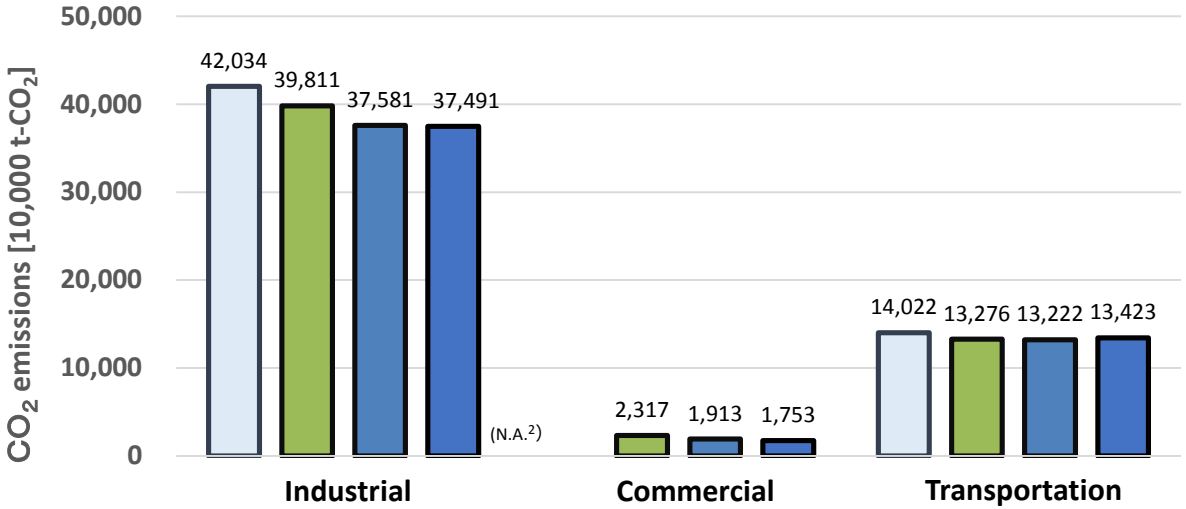


Pillar 1: Emission reductions from domestic business operations - CO2 emissions results -

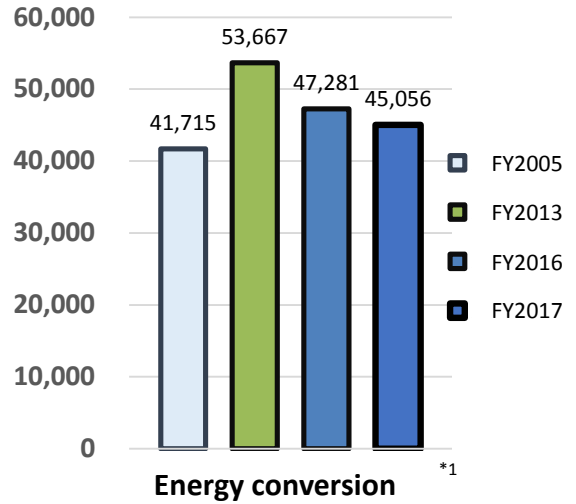
<CO_2emissions in FY2017>

(1) Relative to previous fiscal year (fiscal 2016): reductions achieved in the industrial, energy conversion* and commercial sectors, but not in the transportation sector.

(2) Relative to FY2013: reductions achieved in the industrial, energy conversion and commercial sectors, but not in the transportation sector



<CO_2 emissions after power distribution>



<CO_2 emissions before power distribution>

Sector	Target industries/ participating ind.	FY2017 emissions	Relative to FY 2005	Relative to FY 2013	Relative to previous FY (FY2016)
Industrial	31/31 industries	374.91Mt-CO_2	-11.0%	-5.8%	-0.2%
Commercial	14/16 industries	17.53 Mt-CO_2	― ※2	-24.6%	-8.4%
Transportation	12/12 industries	134.23 Mt-CO_2	-8.2%	+1.1%	+1.5%
Energy conversion*1	3/3 industries	450.56 Mt-CO_2	+8.0%	-16.0%	-4.7%

*1 Emissions before power distribution are provided for the energy conversion sector; and emissions after power distribution, for other sectors

*2 Emissions in the commercial sector in fiscal 2005 are not provided due to the status of data collection.

Pillar 1: Emission reductions from domestic business operations - Factor analysis of change in emissions (1): relative to previous FY -

<Change in emissions due to change in economic activity (①)>

Increase in industrial, commercial and transportation ← economic fluctuation, increased demand,etc.

<Change in emissions due to energy decarbonization (②)>

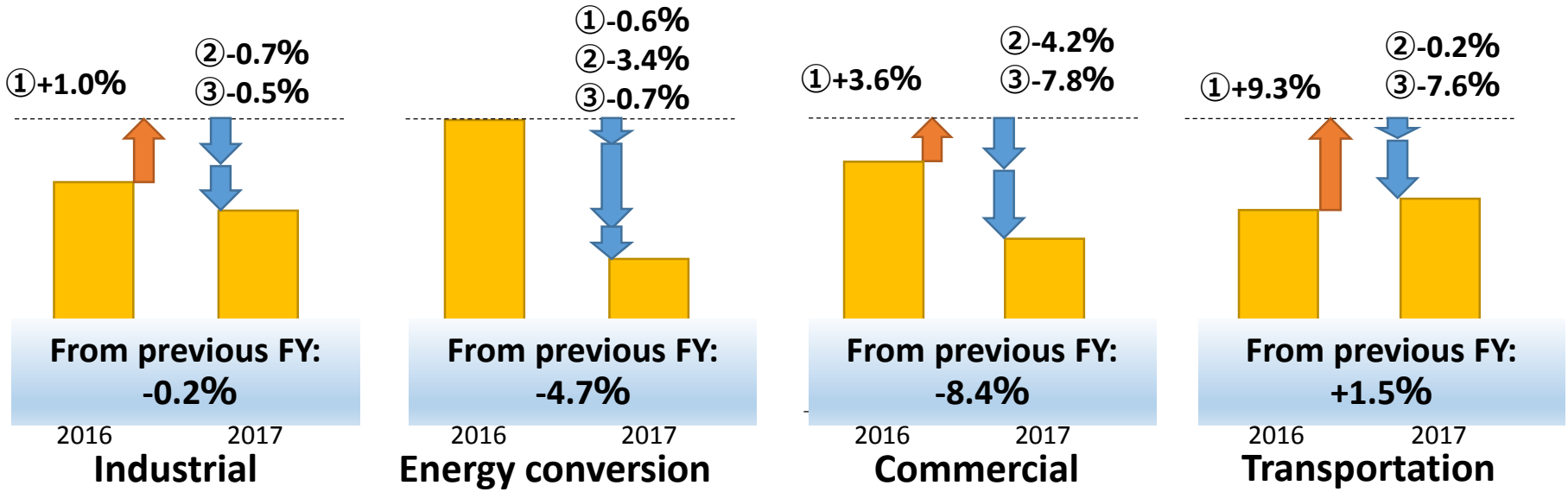
Reductions in all sectors ← restarting nuclear power plants, high-efficiency thermal power plants, utilizing renewable energy, etc.

<Change in CO2 emissions due to energy saving efforts (③)>

Reductions in all sectors ← efficiency and operational improvements in manufacturing, buildings, telecommunication equipment, etc.

Factor analysis of change
－relative to previous FY －

〈Factors of CO_2 emission changes are broken down into the following:
①: Change in economic activity
②: Change in CO2 emission factor (Change due to energy decarbonization)
③: Change in energy consumed per unit of economic activity (Change due to energy saving efforts)



Pillar 1: Emission reductions from domestic business operations –
Probability of target achievement and rate of progress-

- Implement effective measure through the PDCA cycle
- Renew to more ambitious targets, according to status of achievement
- Consider and account for target levels that will enable maximum social commitment

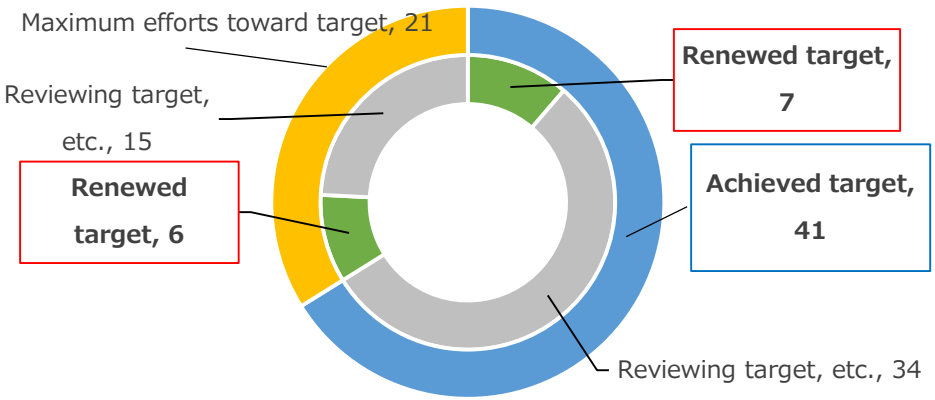
Phase I (FY2020) target

41/62 industries have already achieved their targets

- **13 industries** have renewed their targets

(6 industries renewed their target fiscal year 2018)

<Status of target achievement and review>



*Industries that have renewed their targets have been counted under their current achievement status.
*Industries that are currently reviewing their targets will enhance their efforts toward Phase II and continue to take measures, including renewing their Phase II target, with a view to long-term .

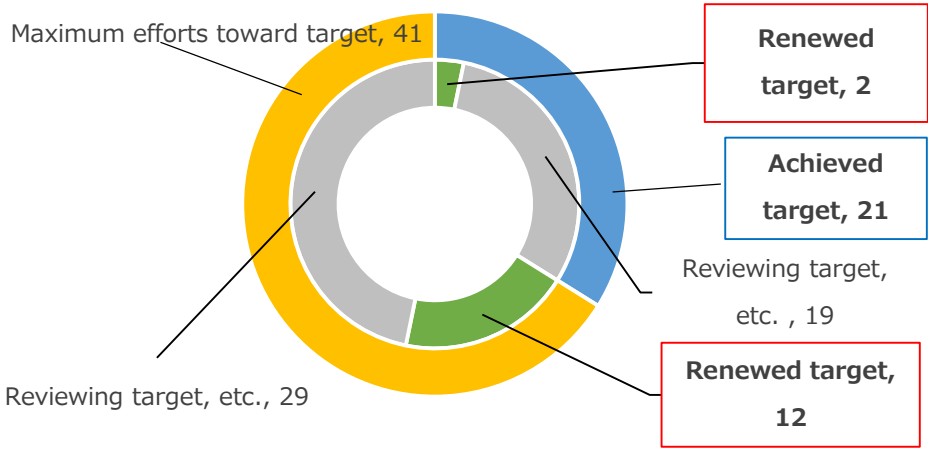
Phase II (FY2030) target

21/62 industries have already achieved their targets

- **14 industries** have renewed their targets

(8 industries renewed their target fiscal year 2018)

<Status of 2030 target achievement and review>



*Industries that have renewed their targets have been counted under their current achievement status.
*It is important for industries that are currently reviewing their targets to continue analyzing trends, and to to make efforts to consider and account for maximum target levels.

Pillar 2: Strengthening co-operation with other interested groups

(1) Many industries contribute to achieving avoided emissions along the value chain (procurement, provision of products and services, use, disposal, etc.)

(2) Active communication through the quantification of reductions and Keidanren's concept book in order to raise public recognition of products and services that contribute to society-wide emission reductions

<Examples of emissions reduction efforts along the value chain>

Procurement of products that emit less before manufacturing

Biomass polyethylene containers (Federation of Pharmaceutical Manufacturers' Associations of Japan)
Utilization of bioplastics (Japan Federation of Printing Industries)

Provision of products and services that emit less during use

Double glazing glass (Flat Glass Manufacturers Association of Japan)
High mileage tires (Japan Chemical Industry Association, Japan Rubber Manufacturers Association)
High-function steel (The Japan Iron and Steel Federation)
High-strength thin copper alloy strips (Japan Copper and Brass Association)

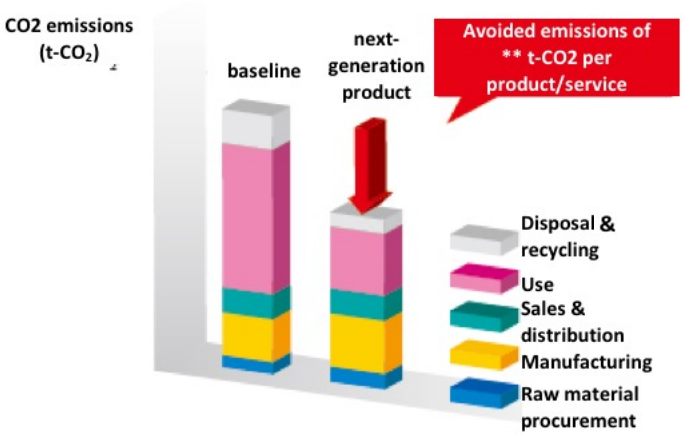
Provision of lightweight products that emit less during transport

Lightweight paper and cardboard (Japan Paper Association)

Disposal of products (3R:Reuse, Reduce, Recycle)

Effective utilization of waste and byproducts (Japan Cement Association)

<Approach to avoided $C0_2$ emissions>



Pillar 3: Promoting contribution at the international level

(1) Many industries contribute to reducing global GHG emissions through overseas transfer of our advanced energy-saving and low-carbon technologies and overseas deployment of our products and services.

(2) Industries promote the quantification of emissions avoided through international contribution, as done in measures taken under Pillar 2.

<Examples of avoided emissions overseas>

Overseas transfer of technologies and knowhow

Seawater desalination technologies by reverse osmosis membrane (Japan Chemical Industry Association)
CDQ (coke dry quenching) and TRT (top-pressure recovery turbine plant)
(The Japan Iron and Steel Federation)
Hydropower generation at corporate mines
(Japan Mining Industry Association)
Aluminum recycling
(Japan Aluminium Association)
Permanent magnet synchronous motor technologies for railcars
(Japan Association of Rolling Stock Industries)
LNG upstream business (natural gas development and extraction, liquefaction and shipping bases)
(The Japan Gas Association)
CO2 recovery and EOR (Enhanced Oil Recovery)
(Japan Petroleum Development Association)
IPP (independent power producer)
(Japan Foreign Trade Council)

Provision of low-carbon products and services

Lightweight paper
(Japan Paper Association)
High efficiency thermal power generation and renewable power generation technologies, IT products, solutions
(Liaison Group of Japanese Electrical and Electronics Industries for Global Warming Prevention)
Next-generation vehicles
(Japan Automobile Manufacturers Association)
Power cables for Superconducting Maglev
(The Japanese Electric Wire & Cable Makers' Association)
ICT services
(Telecommunications Carriers Association)

Pillar 4: Development of innovative technologies

(1) The creation of completely new innovations is key to achieving significant greenhouse gas reductions in the medium- to long-term, as drastic reductions cannot be achieved along the lines of conventional measures.

(2) Medium- to long-term R&D that the private sector finds difficulty in committing to alone will be continued through collaboration with the Government.

<Examples of innovative technologies and services>

Deployment started

Cellulose nanofiber (Japan Paper Association)
Industrial fuel cell vehicles (FCVs) (Japan Industrial Vehicles Association)
Smart energy networks (The Japan Gas Association)

2020 and beyond

Fuel cell railcars (Japan Association of Rolling Stock Industries)
GaN & SiC semiconductor power devices (Telecommunications Carriers Association)
High-efficiency petroleum refining technologies (Petroleum Association of Japan)
LNG bunkering technologies (The Japan Gas Association)

2030 and beyond

Improved solar panel efficiency (Liaison Group of Japanese Electrical and Electronics Industries for Global Warming Prevention)
High-temperature superconductive cables (The Japanese Electric Wire & Cable Makers' Association)
Innovative cement manufacturing process (Japan Cement Association)

<Examples of innovative technology development in partnership with the Government>

Electric power industry

Various demonstration research under NEDO's "Next Generation Floating Offshore Wind Turbine Technologies Demonstration Research"

City gas industry

Supplying hydrogen to hydrogen stations and efforts to lower the costs of hydrogen production devices with a view to the target under METI's "Strategic Road Map for Hydrogen and Fuel Cells"

Challenges and measures to be taken

Issues needed enhanced efforts

(1) Pillar 1: (Emission reductions from domestic business operations)

- Promotion of sustained efforts toward industry-specific targets
- Accounting for the validity and progress of targets

(2) Pillar 2,3 (Strengthening co-operation with other interested groups/Promoting contribution at the international level)

- Promotion of avoided emissions through advanced world-class energy-saving products and services
- Further promotion of “visualization” of avoided emissions

(3) Pillar 4 (Development of innovative technologies)

- Promotion of social deployment of innovative technologies
- Promotion of R&D led by industry-government-academia collaboration that will serve substantial reductions in the long-term