

The Paris Agreement and Energy-Climate Policies in Japan

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- Japan's emission trends: Let's see how effective Japan's climate policy has been.
- Overview of Japan's climate (and energy) policy
- Japanese NDC (2030 climate target) under the Paris Agreements
- Its challenges and hopes...

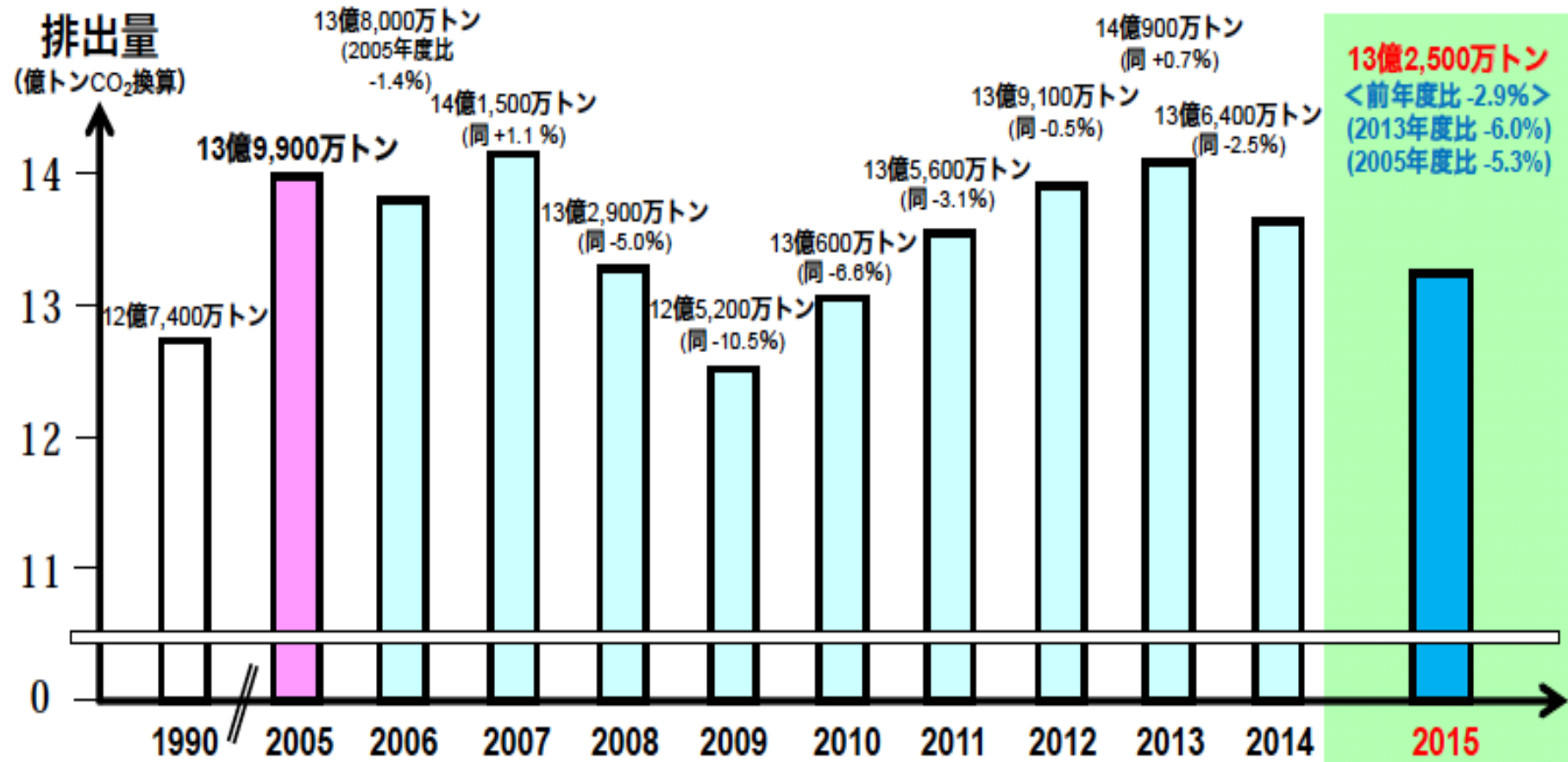
Japan's GHG emission trends (1)

Emission in 2013: 1.409 GtCO₂eq

Emission in 2014: 1.364 GtCO₂eq (-2.5% below 2013)

Emission in 2015: 1.325 GtCO₂eq

(-2.9% below 2014; -6.0% below 2013; -5.3% below 2005)

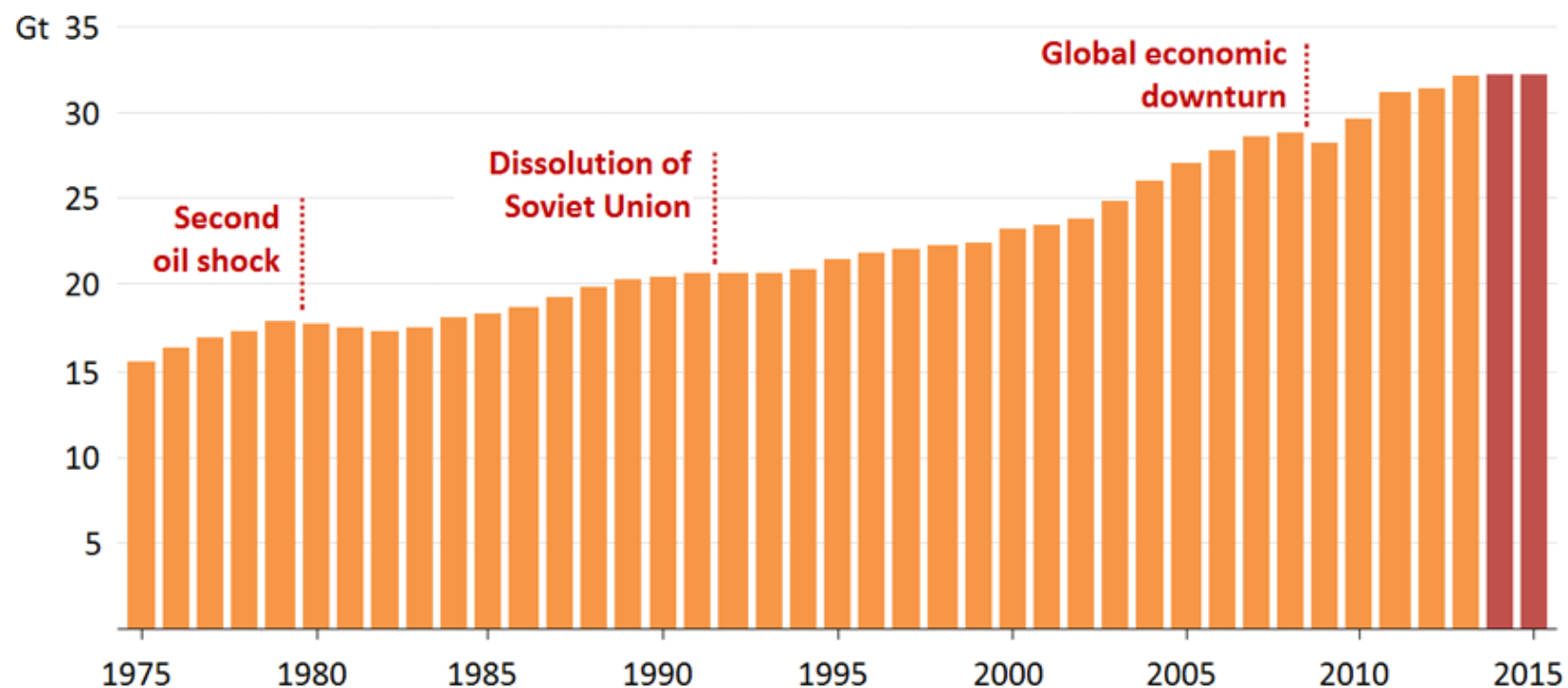


Source : MOE, 2017

Global energy-related CO₂ emissions

De-coupling of emission growth with economic growth?

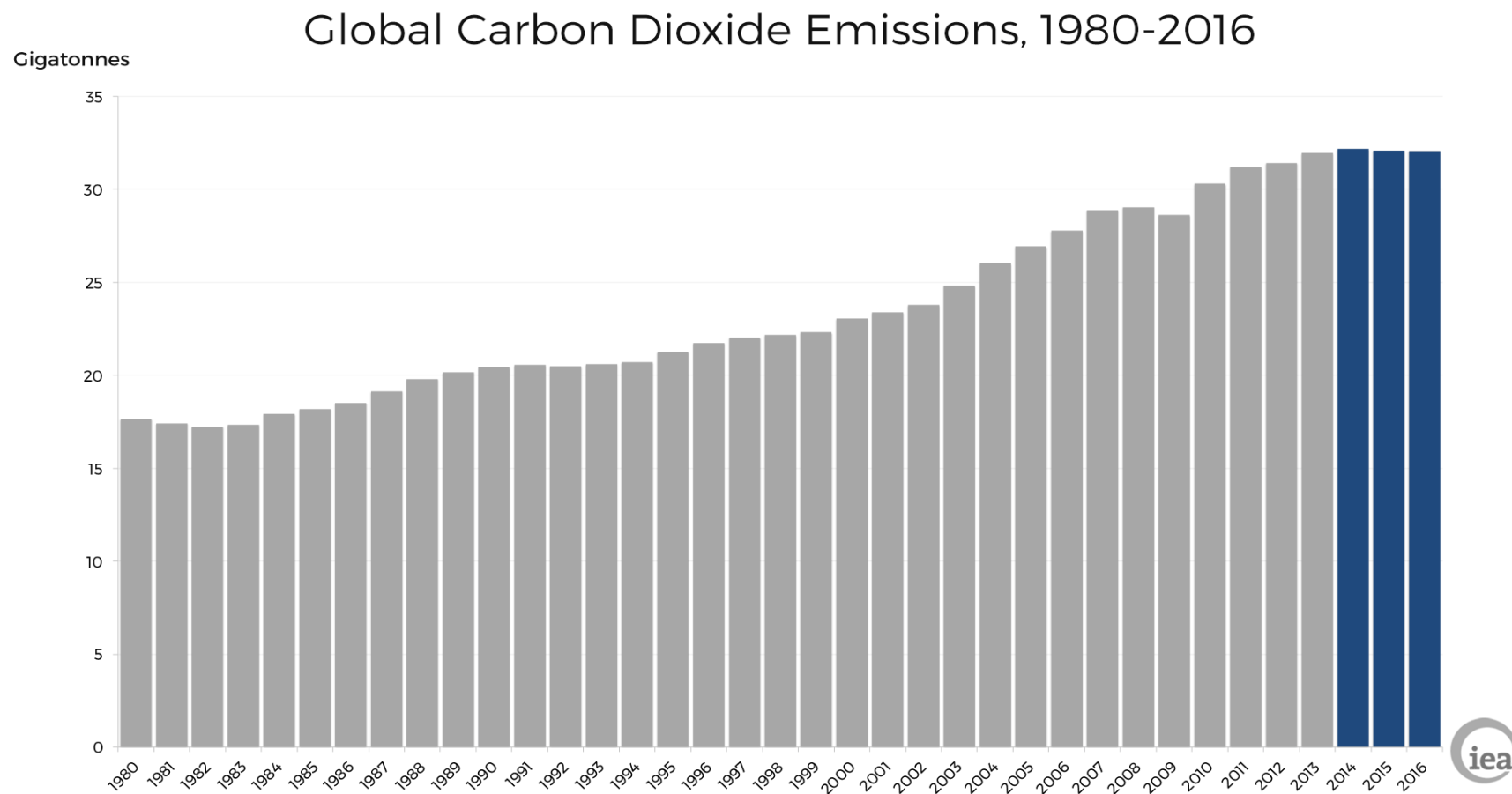
Global energy-related CO₂ emissions



IEA analysis for 2015 shows renewables surged, led by wind, and improvements in energy efficiency were key to keeping emissions flat for a second year in a row

Source : IEA, 2016

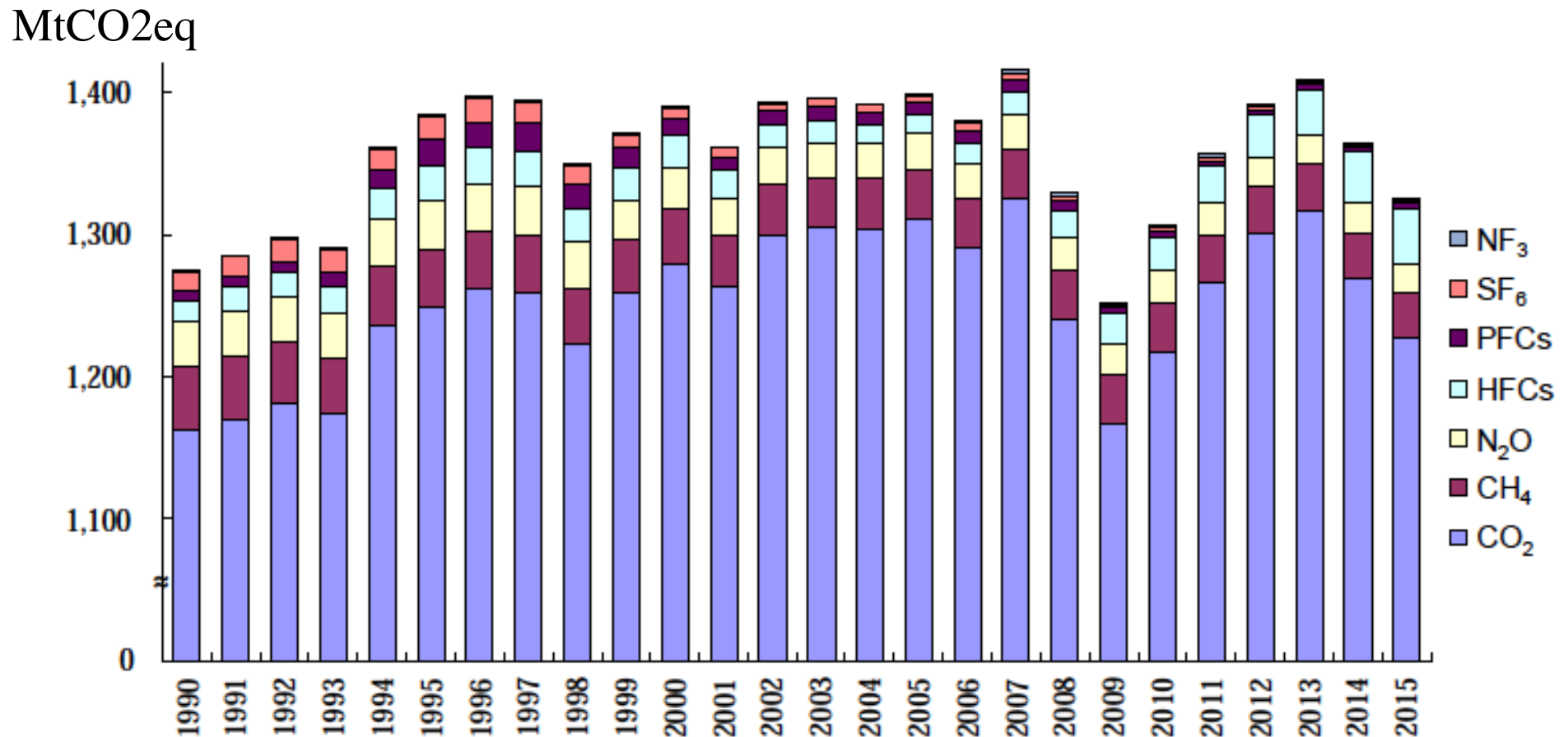
Global energy-related CO2 emissions



Source : IEA, 2017

Japan's GHG emission trends (2)

CO₂ Emission has **continued to increase, except 2008 to 2011** due to economic recession even during the KP1.



Source : MOE, 2017

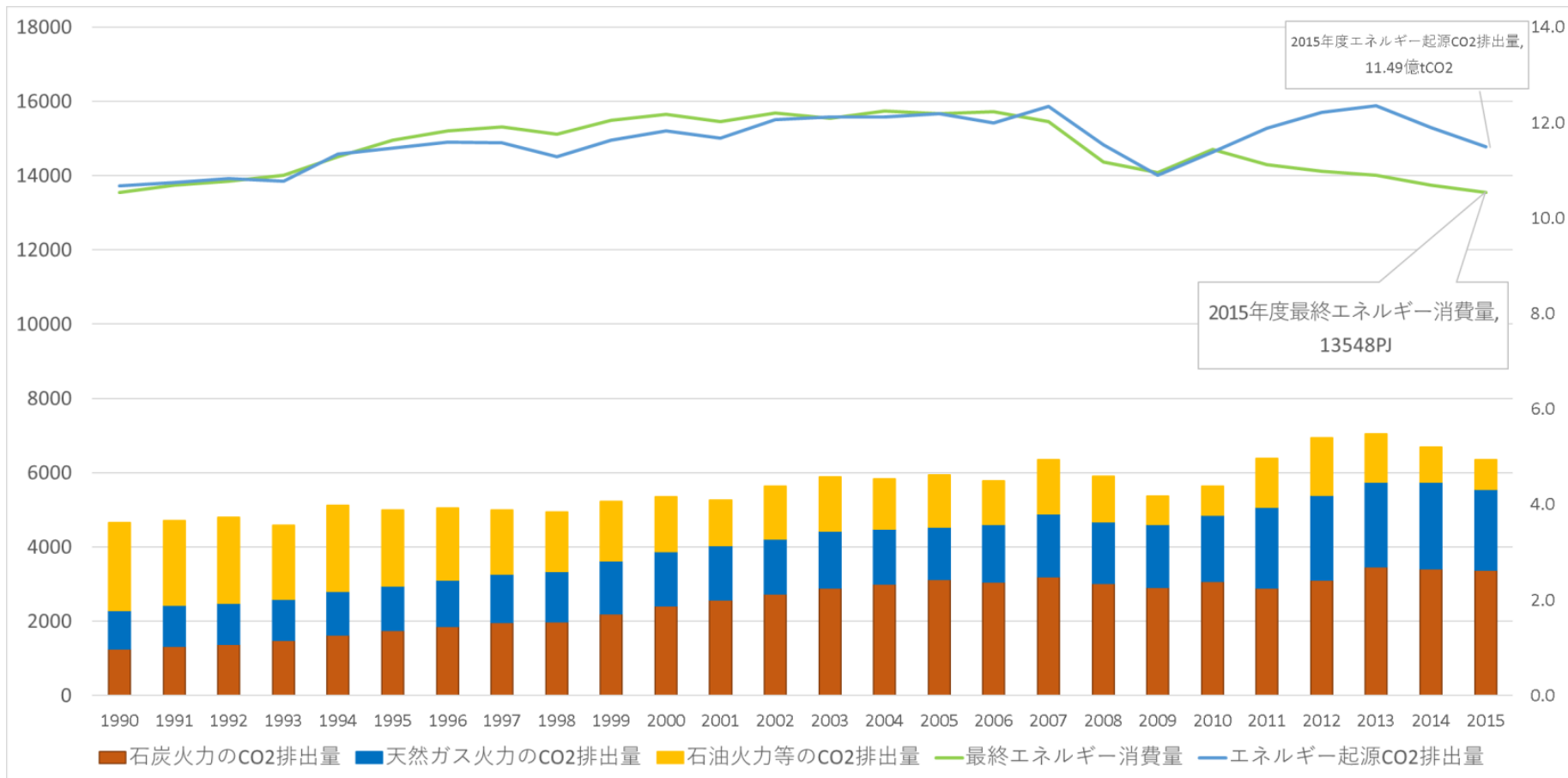
Japan's GHG emission trends (3)

Final energy consumption has decreased since 2007, to the level of 1990 in 2015.

Energy related CO2 emission has increased above 1990 level.

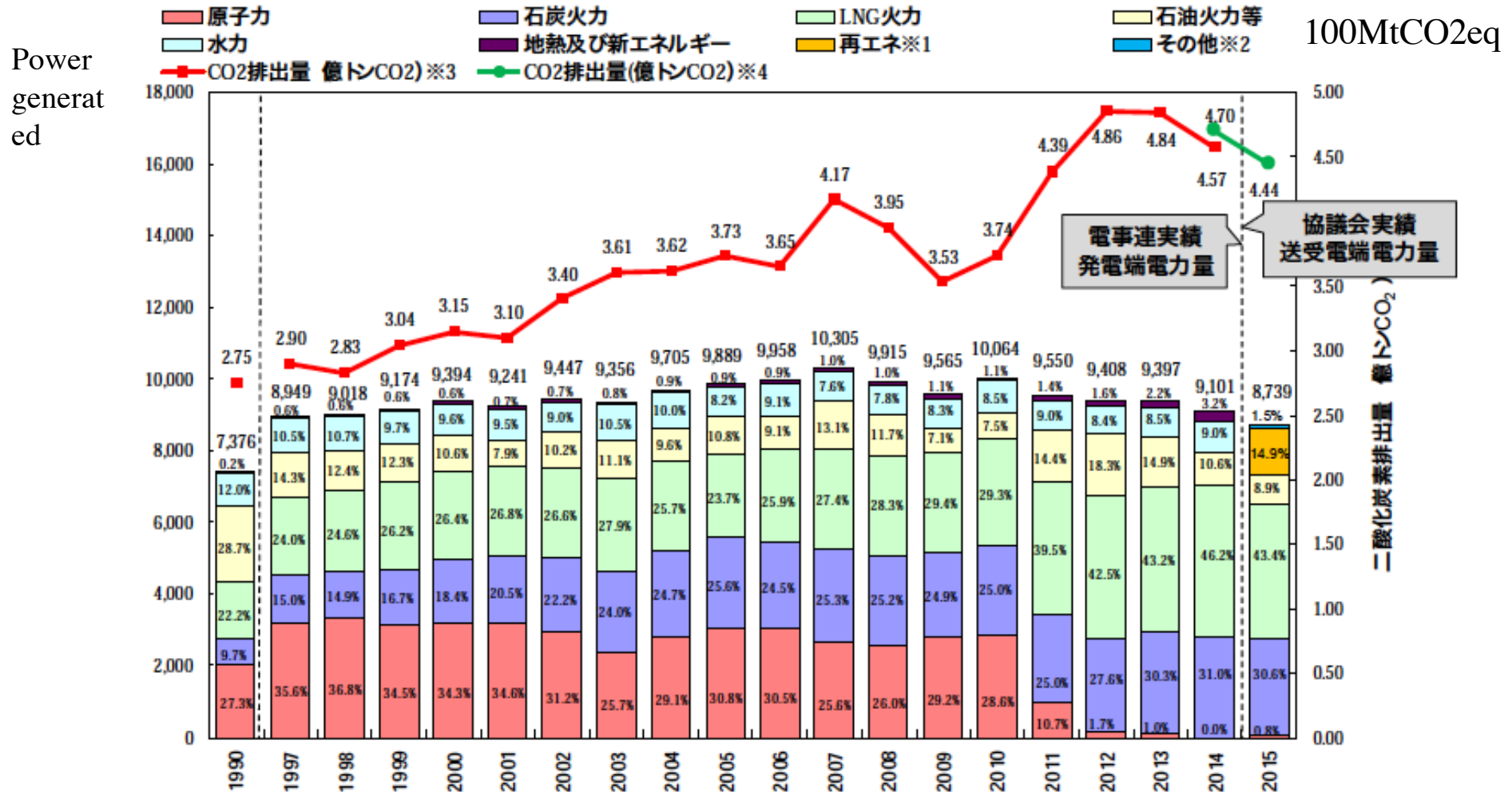
PJ

100MtCO₂eq



Japan's GHG emission trends (4)

Total electricity generated has decreased since 2010.

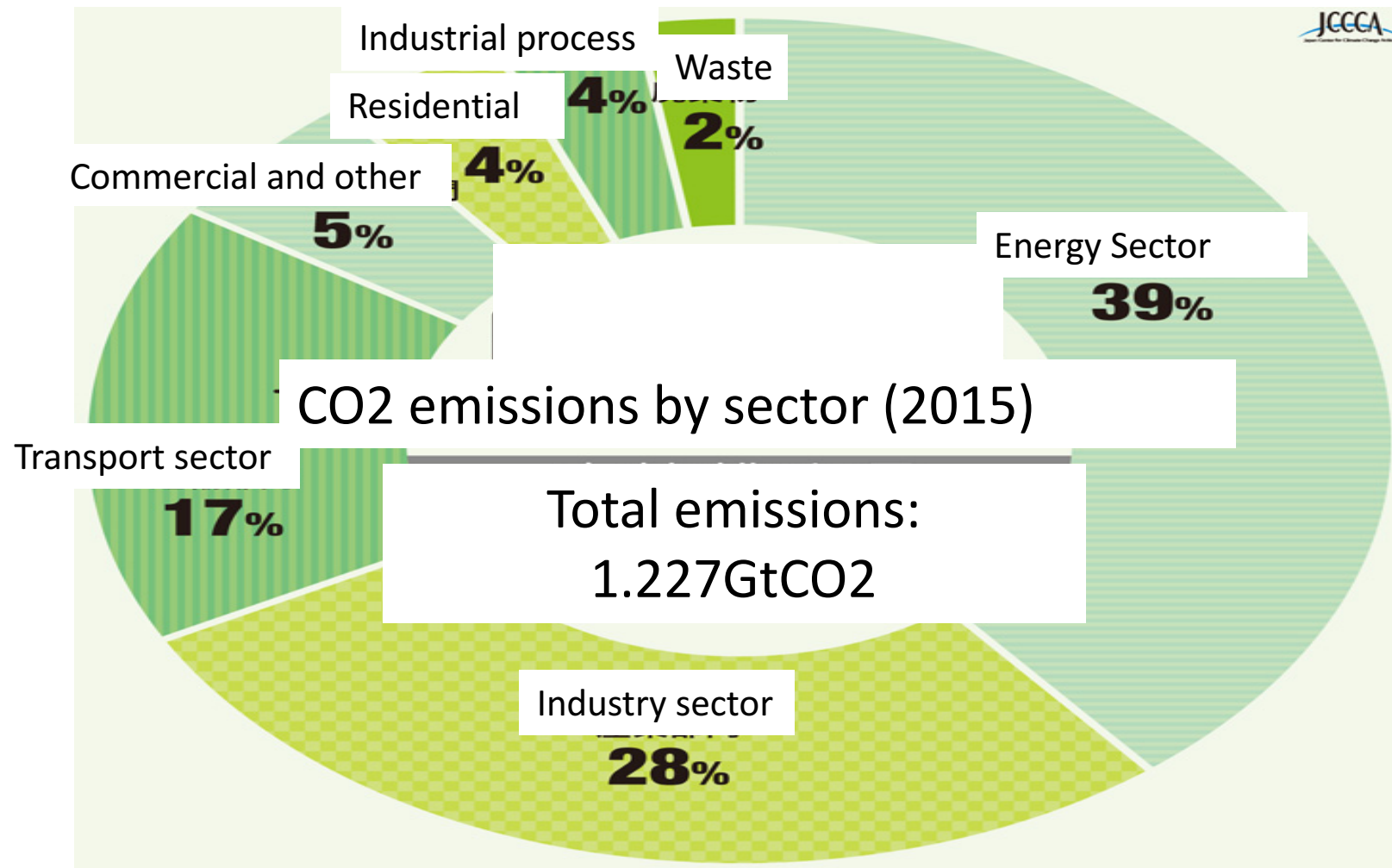


Source : MOE, 2017

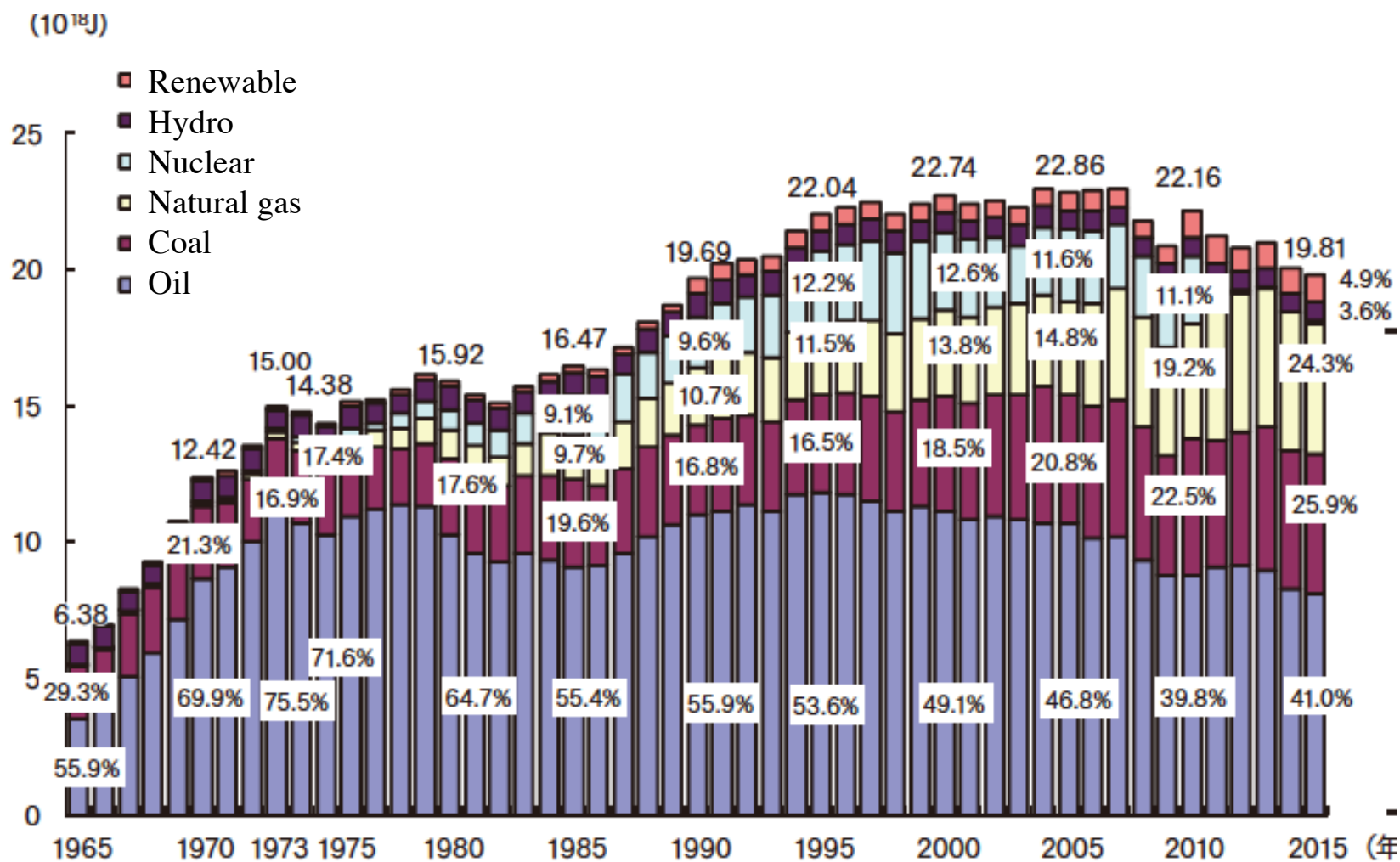
Japan's CO2 emissions by sector(2015)

92.6% of GHG emission is CO2

CO2 from energy use accounts for 86.7%

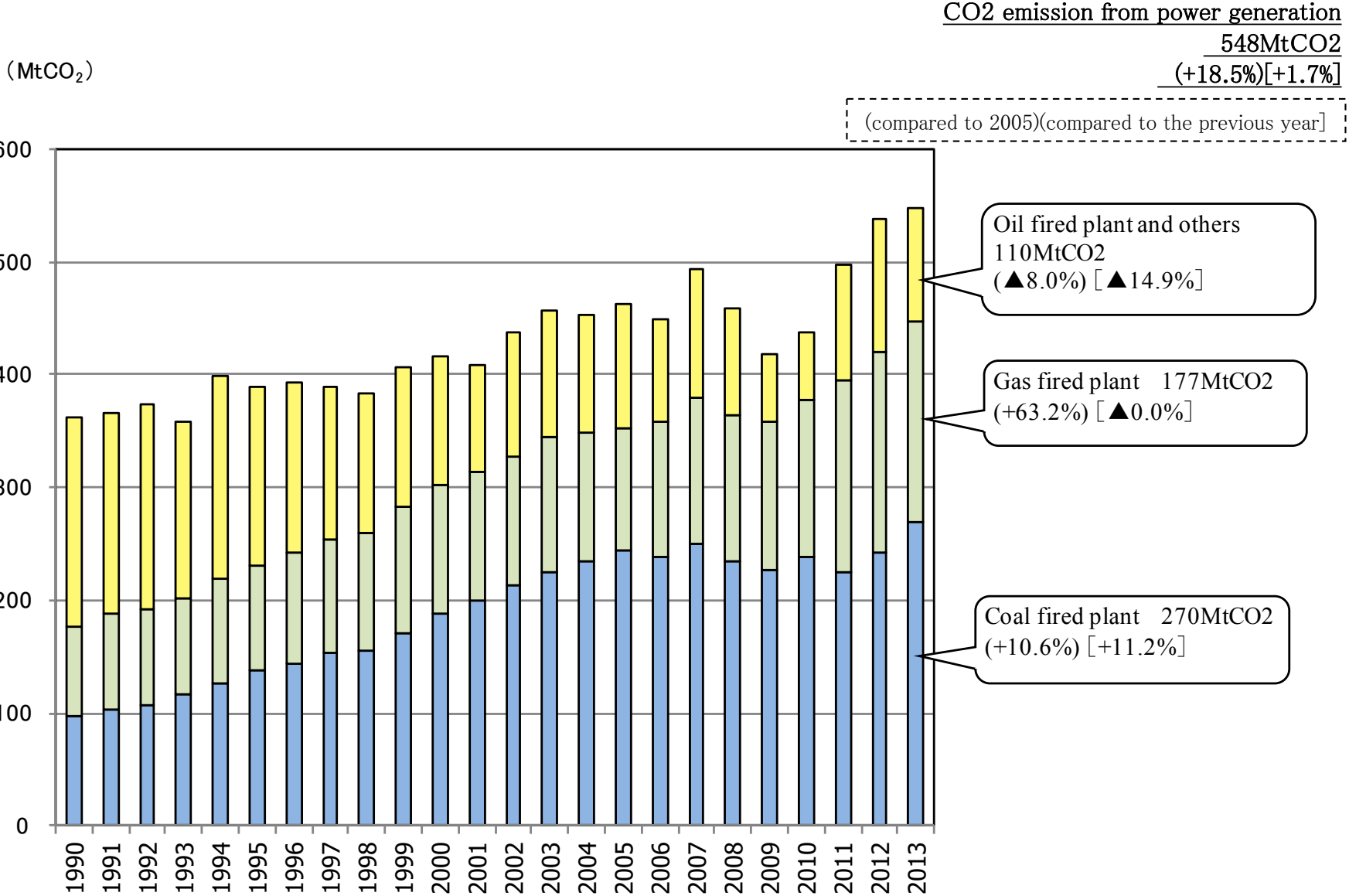


Primary energy supply



Source : METI, 2017

CO2 emission from electricity generation



Developments of Japan's climate policy(1)

Dec. 1997 (COP3)	Adoption of the Kyoto Protocol (KP)
Jun. 1998	Guideline of Measures to Prevent Global Warming decided by Cabinet
Oct. 1998	Law concerning the Promotion of the Measures to Cope with Global Warming (“1998 Law”) adopted
Nov. 2001	Marrakesh Accords (KP implementing rules) adopted
May 2002	1998 Law amended
Jun. 2002	Ratification of the KP

Developments of Japanese climate policy(2)

Feb. 2005	Entry into force of the KP
Apr. 2005	Cabinet decided on the KP Target Achievement Plan
Jun. 2006	1998 Law amended
Apr. 2008	KP 1st commitment period started. KP Target Achievement Plan amended
Sep. 2009	Announcement of 25% target for 2020
Mar. 2010	Basic Law on Climate Actions Bill decided by Cabinet (failed to be enacted in November 2012)
Aug. 2011	Feed-in-Tariff Act adopted (implemented from 1 st July 2012)

Developments of Japanese climate policy(3)

Apr. 2012	Cabinet decided on the 4 th Basic Environmental Plan, which stipulates at least 80% reduction by 2050 as long-term target
Mar. 2013	End of the 1 st commitment period of the KP
May 2013	1998 Law amended (allowing the establishment of National Climate Plan)
Oct. 2013	Global warming tax introduced
Jul. 2015	2030 target (26% reduction below 2013 levels) submitted as INDC
Dec.2015	Paris Agreement adopted
Mar. 2016	1998 Law amendment Bill decided by the cabinet

Law Concerning the Promotion of Measures to Cope with Global Warming (1998 Law)

- Establishes **general framework for measures** to cope with global warming, including **institutional framework**
 - **Headquarter for promoting climate actions** put in place in the Cabinet and led by the Prime Minister
 - Stipulates **obligation of Government, local authorities, companies and citizens** respectively.
- **Provides legal basis for adopting measures by Government and local authorities**, including the Kyoto Protocol Target Achievement Plan and the National Climate Plan.
- 1998 Law does **neither prescribe specific target nor policies and measures to implement the target.**
- **It only requires Government to establish the Plan which put together policies and measures submitted by relevant ministries.**
 - **No clear systematic approach**
 - **Reporting of emissions by large emitters is mandatory under the 1998 Law.**

	Duties provided for under the Law
Government (Art. 3)	<ul style="list-style-type: none"> ▪ Observation and monitoring of climate change and its impacts ▪ Elaboration and implementation of general policy ▪ Promoting measures to reduce emissions ▪ Taking measures to reduce its own emissions ▪ Research ▪ Supporting activities taken by local authorities, companies, citizens and NGOs. ▪ Making efforts to take measures to promote international cooperation ▪ Estimate and publish national emissions annually
Local authorities (Art. 4)	<ul style="list-style-type: none"> ▪ Promoting measures within their jurisdiction ▪ Taking measures to reducing their own emissions ▪ Making efforts to take measures to support for companies and citizens.
Companies (Art. 5)	<ul style="list-style-type: none"> ▪ Making efforts to taking measures to reduce their emissions ▪ Cooperate with the government and local authorities
Citizens (Art. 6)	<ul style="list-style-type: none"> ▪ Making efforts to taking measures to reduce their emissions ▪ Cooperate with the government and local authorities

	Specific obligations under the Law
Government	<ul style="list-style-type: none"> ▪ Estimate and publish national emissions annually (Art. 7) ▪ Establish and make available to the public the Kyoto Protocol Target Achievement Plan (the Plan promoting climate actions (since 2013)) (Art. 8) ▪ Establish the Implementation Plan of Government to reduce its emissions (Art. 20-2) ▪ Report annually the progress made including emissions (Art. 20-2.7)
Local authorities (Art. 4)	<ul style="list-style-type: none"> ▪ Establish and make available to the public the Implementation Plan of the local authority to reduce its emissions. The Plan also contains measures to reduce emissions within their jurisdiction (Art. 20-3) ▪ Report annually the progress made including emissions (Art. 20-3.10)
Companies (Art. 5)	<ul style="list-style-type: none"> ▪ Reporting on emissions by large emitters (see the next slides)

Reporting of emissions by large emitters under the 1998 Law

- “**Designated (large) emitters**” are obliged to report their emissions annually to the competent ministry.
 - “Designated emitters”
 - Operators covered by the 1979 energy conservation law.
 - In addition, operators emitting 3000tCO₂e. of CO₂ from non energy use and of other GHGs are also covered.
 - Includes public authorities.
 - Emissions of covered installation = installation emitting equal to/ more than 1500kl oil equivalent or 3000tCO₂e are to be reported separately.
 - **Franchised installations** are to be dealt with as a group, which has expanded the coverage of “designated emitters”.
 - **Financial penalty** (up to 200,000 yen ≙ 2,000 US dollar) will be imposed **in case of non-reporting or false-reporting.**

Other legislation relevant to climate change

- Other important national legislation relevant to climate change
 - Law concerning rational use of energy (1979 Law. Last amended in 2013)
 - Law concerning improvement of energy efficiency in buildings (2015)
 - Feed-in Tariff Act (2011)(Last amended in 2016)
- The KP target achievement plan (up to 2012) and the National Climate Plan (after 2013) compile a variety of related to climate actions. For example,
 - For HFC, PFC, SF6, promote systematic actions by industries and development and use of alternatives: **Act on Ensuring the rational use and sound management of Fluorocarbons** (previously Act on Ensuring the Implementation of Recovery and Destruction of Fluorocarbons concerning Designated Products enacted in 2001 Act. Amended in 2013)

Voluntary action plan to reduce emissions from industry/commercial/business sectors

- **Voluntary action plan** to promote climate actions by industry/commercial/business sectors.
 - “Voluntary action plan” started as Keidanren (Japan Business Federation) actions.
 - The voluntary action plan is provided for in the KPTAP and National Climate Plan as policies and measures
 - Voluntary action plan and its **progress are subject to annual governmental review**. The Plan has then become a governmental action.
 - **Participation in the plan and the level of pledge is totally voluntary**, which causes **free-riding problem**.

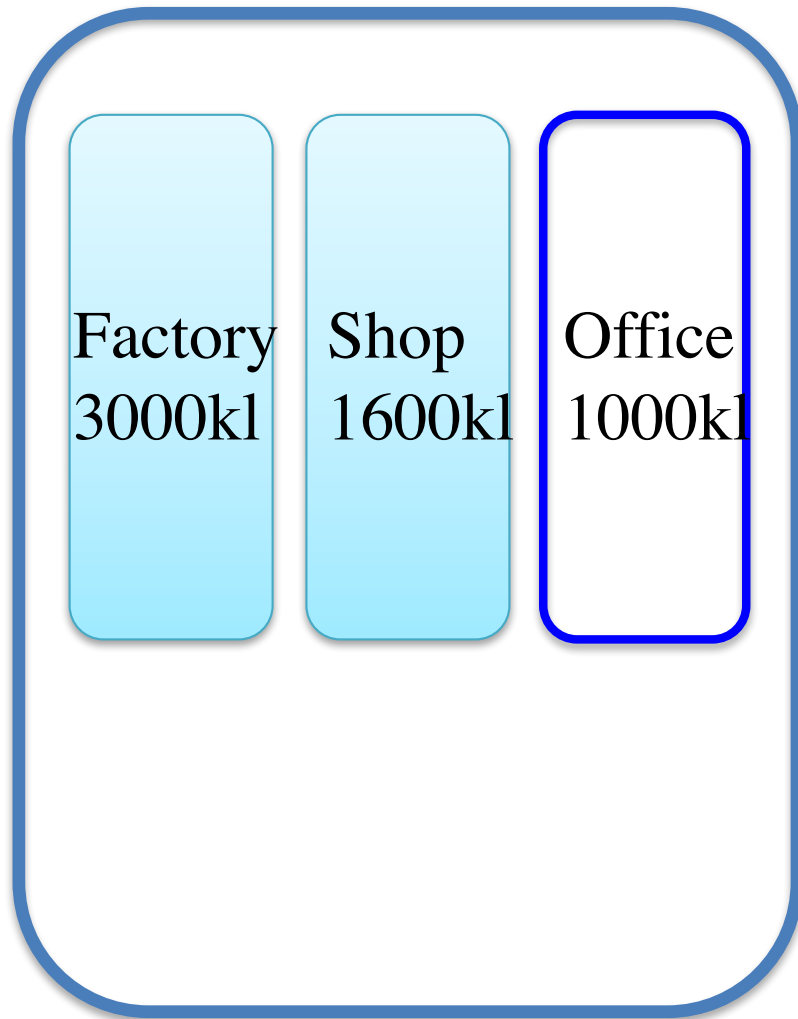
Energy Conservation Law(1)

- Adopted in 1979, triggered by oil crises in 1970's. Originally its objective is not to protect climate.
- **4 main categories of measures** under the 1979 Law
 - Measures for **installations** (factories and others)
 - Measures for **buildings**
 - Measures for **consigners and carriers**
 - Measures for machinery and equipment (**Top runner program**)

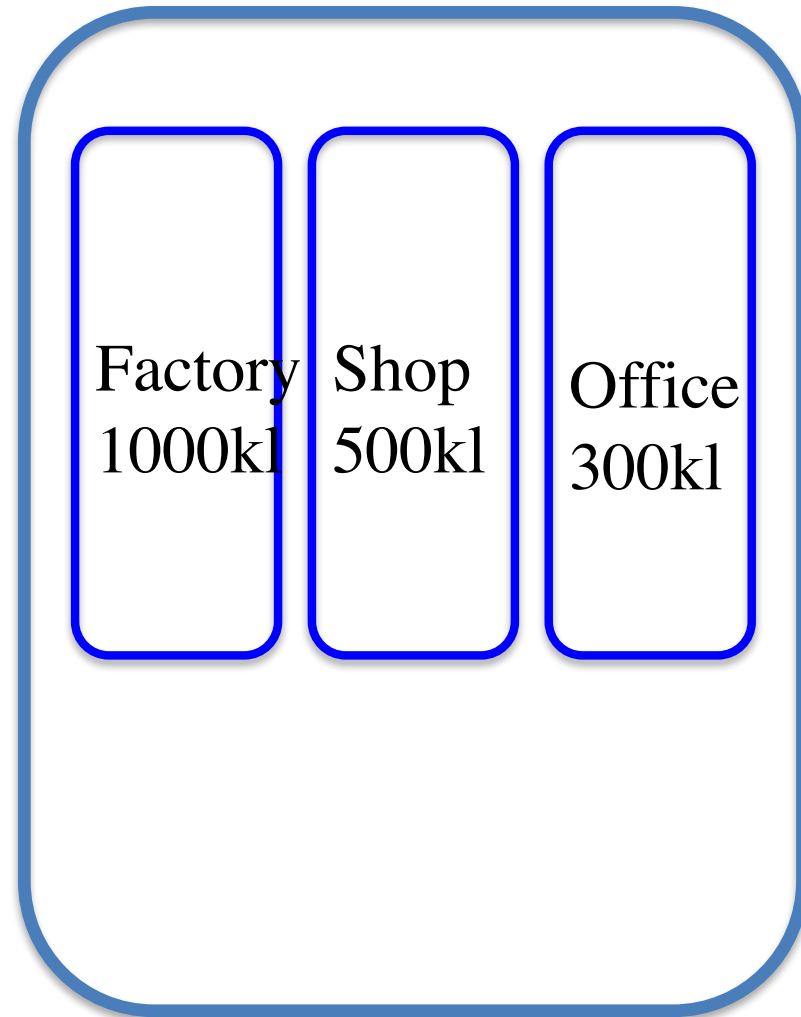
Energy Conservation Law(2)

- **Measures for installations**
 - Companies with large energy consumption, ie. consuming energy equal to/ more than 1500kl/year (“**designated energy management companies**”) have obligation:
 - To appoint energy managers
 - To submit long- and medium-term
 - To make a periodic report
 - Before amendment in 2008, the obligation were imposed on installation basis, but after the 2008 amendment, on company basis.

Company A



Company B



Energy Conservation Law(3)

- Measures for buildings
 - Owners of buildings larger or equal to 2,000m² of total floor space (designated buildings) have obligation:
 - To report on sufficient energy efficiency measures taken on new construction and large-scale repair, etc.
 - To make a periodic report on the maintenance
 - In case of serious non compliance, the government may order compliance (2008 amendment)
 - Owners of buildings larger or equal to 300m² of total floor space have obligation: (2008 amendment)
 - To report on sufficient energy efficiency measures taken on new construction.
 - In case of serious non compliance, the government may make recommendation to the building for compliance.
 - Obligation of housing suppliers (ex. building contractor).

Energy Conservation Law(4)

- Measures for consigners and carriers (cargos and passengers)
 - Transportation companies and cargo owners have obligation:
 - To submit long- and medium-term plan (only for the first class factories)
 - To make a periodic report on energy use (from Apr. 2007 on)
 - Transportation companies with more than 200 trucks/ 200 buses/ 350 taxis...
 - Cargo owners with total transportation volume equal to/ more than 30000 kiloton.

Energy Conservation Law(5)

- Measures for machinery and equipment
 - Top-runner program
 - With regard to designated products specified by the Enforcement Ordinance, the METI set the standards of energy consumption efficiency of these products in consideration of the performance of the most energy efficient products commercially available in the market.
 - The METI may take measures including public announcement and order against non-compliance.
 - Designated products include: vehicle, air conditioner, lightening appliance, TV, copy machine, VTR, refrigerator, rice cooker... (23 appliances). Building materials added (2013 amendment)

Energy Conservation Law(6)

- Other measures
 - **Energy suppliers** have obligation to make efforts to **disseminate highly energy efficient equipment** and publish information on the implementation and effects of such efforts.
 - **Retailers** have obligations to make efforts to **display energy efficiency performance of their products** in order to provide the consumer with information on annual electric consumption, fuel cost, etc.

General feature of climate policy (1)

- Developments of Japanese climate policy have always been **driven by international developments of climate policy, especially international climate treaties.**
 - **Unfortunate example:** without legally binding target from 2013 on, Climate Action Plan of Government had not been put in place (April 2013 to May 2016), though the Government is clearly obliged to establish the Plan under the 1998 Law.
 - After the adoption of the Paris Agreement, the current Climate Action Plan was decided by the Cabinet (May 2016) (just before the Ise-Shima G7 Summit).
 - It also implies **domestic (spontaneous) driver is so weak.**

General feature of climate policy(2)

- Climate Action Plan of Government, including the KP Target Achievement Plan, is a key tool to implement climate policy, but it looks as a mere “**compilation of measures taken or planned by relevant ministries**” or “**plan of patch-work type**” than a comprehensive strategy for implementation.
 - In a sense, we could call it a **bottom-up and progressive approach**, but looking at Japan’s emission trends, it would not either so effective or successful.
 - **Japan has achieved 6% target** under the 1st commitment period of the KP, finally filling the gap with sinks and oversea credits from the Kyoto Mechanisms.
 - It is **due to a strong sectionalism of Japanese administration**.
 - For instance, energy policy is very much determinant to climate policy, but MOE and other ministries provides opinions but it has no competence to decide.
 - **In order to achieve a deep de-carbonization, a more comprehensive and over-arching strategy is necessary** with clear target(s) and clear direction.
 - Especially, **a more comprehensive and integral approach with energy law and policy**.
 - No coordination between 2050 target (80% reduction by 2050) and energy legislations.
 - Missed such opportunity with failure of Basic Law bill.

General feature of climate policy(3)

- **The minimal intervention of law** in climate actions: “**lack in rule of law**”; “**weak legalization**”
 - **Mainly voluntary.** The Law barely obliges private entities to do climate actions (minimalism of legal intervention). Formal or informal “administrative guidance (Gyosei Shido)” often used.
 - A good contrast with EU and its MS implementation.
 - Important exceptions are 1979 Energy Conservation Law, but usually **with very weak enforcement.**
 - Energy efficiency benchmark for each major business sectors exists but has barely been enforced.
 - Cause **problem of effectiveness (difficulty in more drastic reduction) , equitable allocation of efforts among private entities (free riding problem) and legitimacy (who have a legitimate right to decide how much emission should be reduced and how much climate risk should be, linked with transparency and accountability).**
 - Felt that **voluntary actions clearly have a limit** in terms of effectiveness. **Needs a level playing field.** Otherwise, they would be reluctant to take more aggressive actions.
 - What would be factors which could make such difference between Japan and EU?

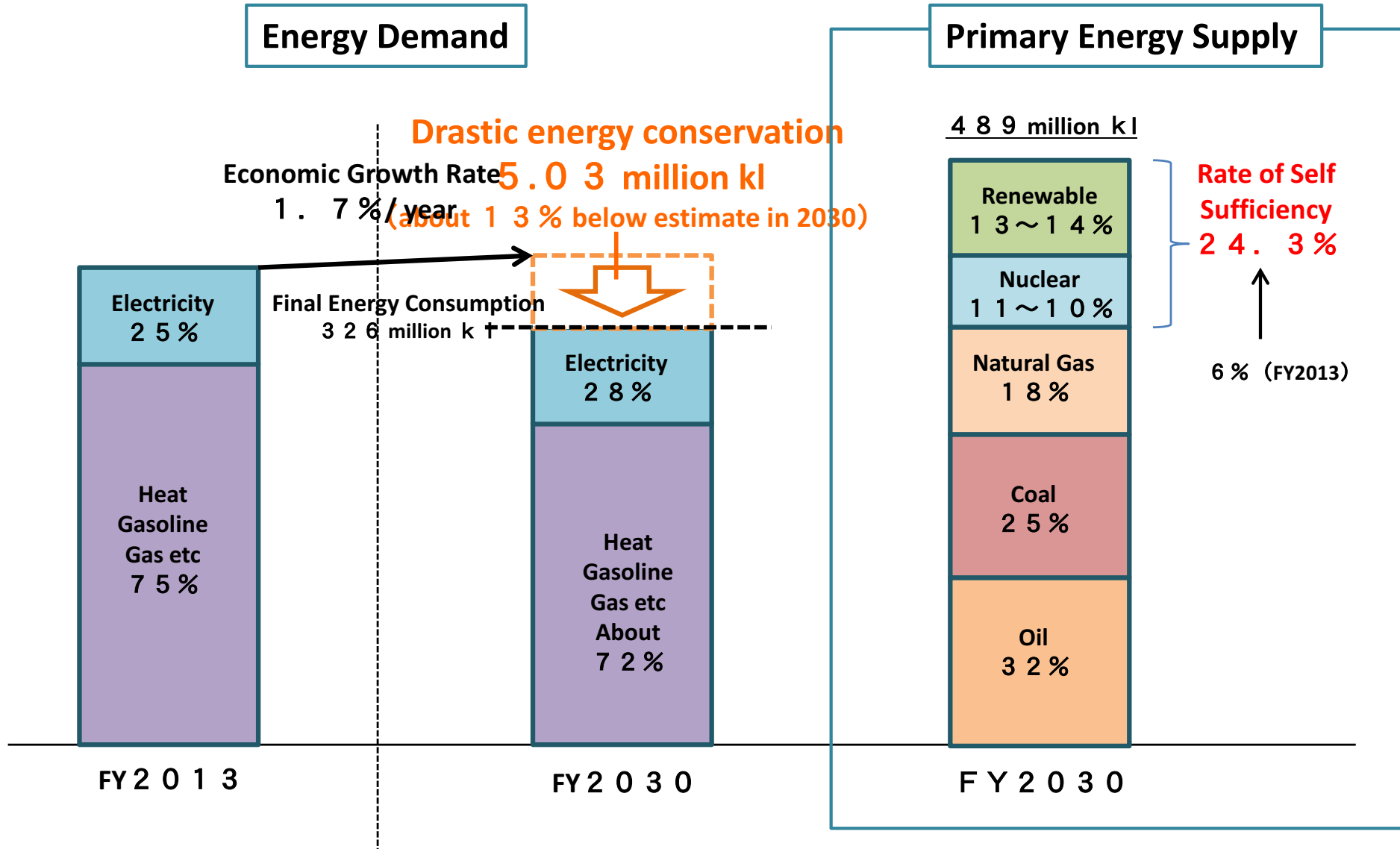
Japan's 2030 NDC

	Compared to 2013	Compared to 2005
CO2 from energy sources	▲21.9%	▲20.9%
Other GHG	▲1.5%	▲1.8%
Land use sector	▲2.6%	▲2.6%
Total reduction	▲26.0%	▲25.4%

NDC under the PA

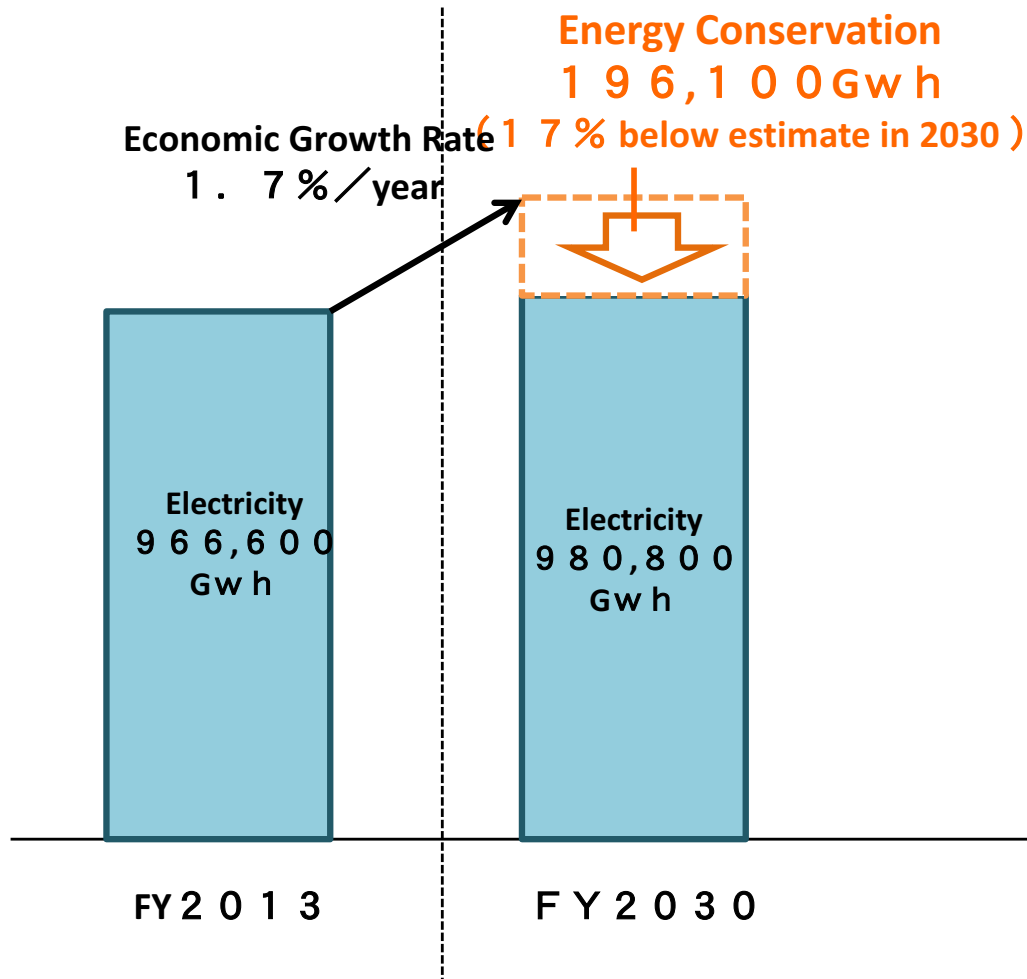
	Target Year	1990 base year	2005 base year	2013 base year	Notes
US	2005	13-16%	26-28%	19-21%	
EU	2030	At least 40%	35%	24%	
Japan	2030	18%	25.4%	26%	Both 2005 and 2013 are base year
China	2030	—	Improve Emission intensity /GDP by 60-65%	—	Peak out CO2 emission around in 2030; Share of Non fossil fuel in primary energy consumption: 20%
India	2030	—	Improve Emission intensity /GDP by 33-35%	—	40% of cumulative power installed capacity from non-fossil fuel energy
Brazil	2025	—	37%	—	43% in 2030 (indicative)
South Africa	2025-30	—	—	—	398 - 614 Mt CO ₂ -eq

Energy Mix in 2030(1)



Energy Mix (Electricity) in 2030 (2)

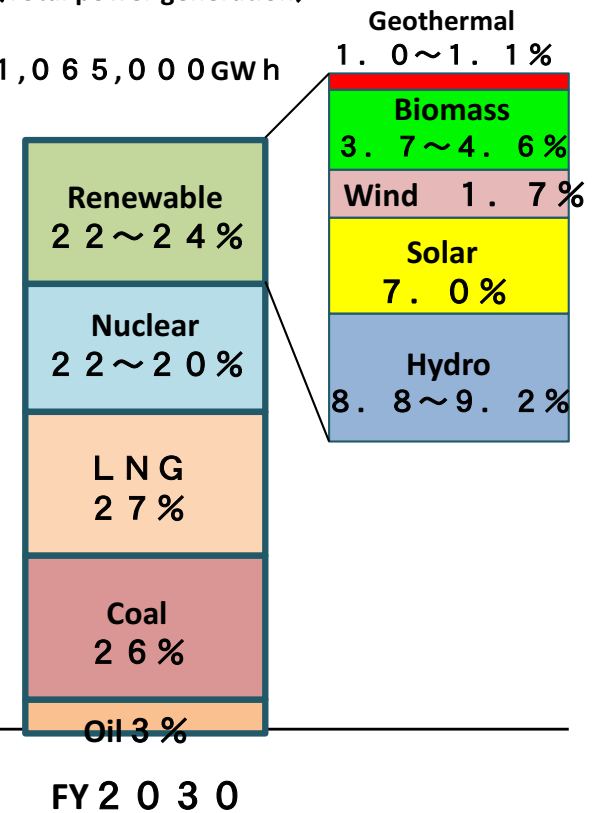
Electricity Demand



Power Mix

(Total power generation)

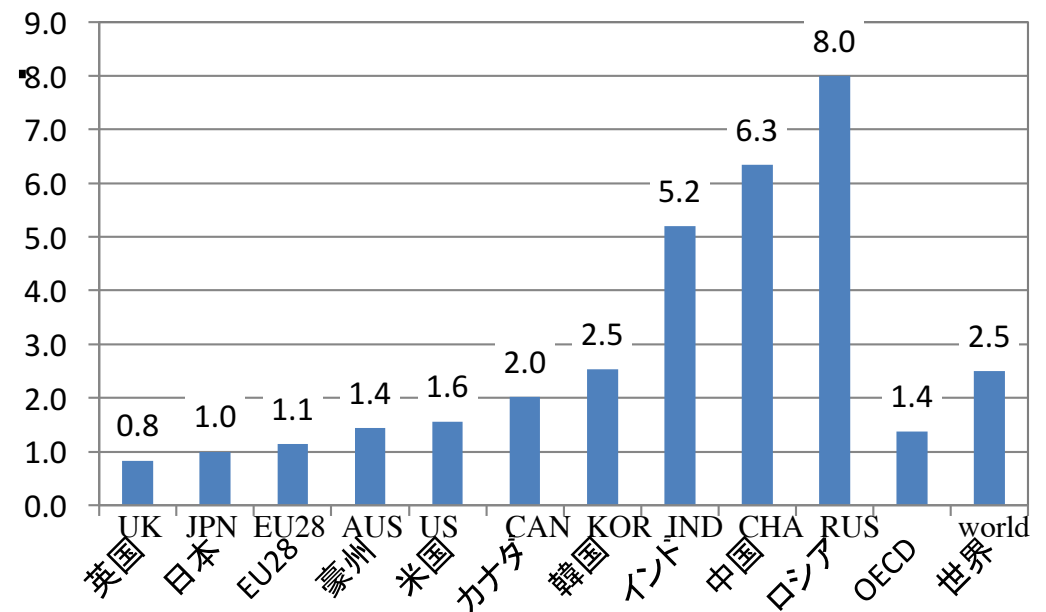
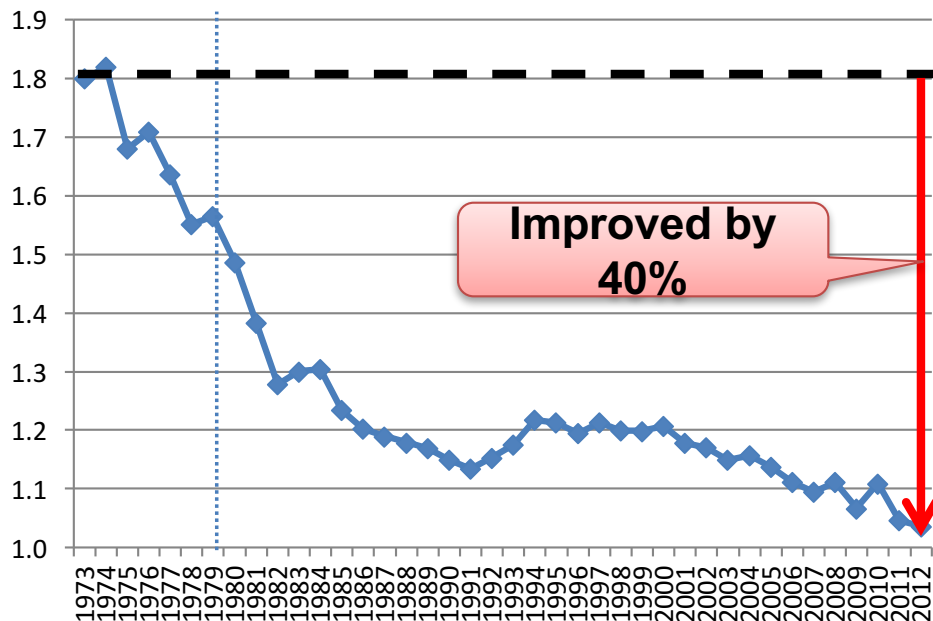
1,065,000 GWh



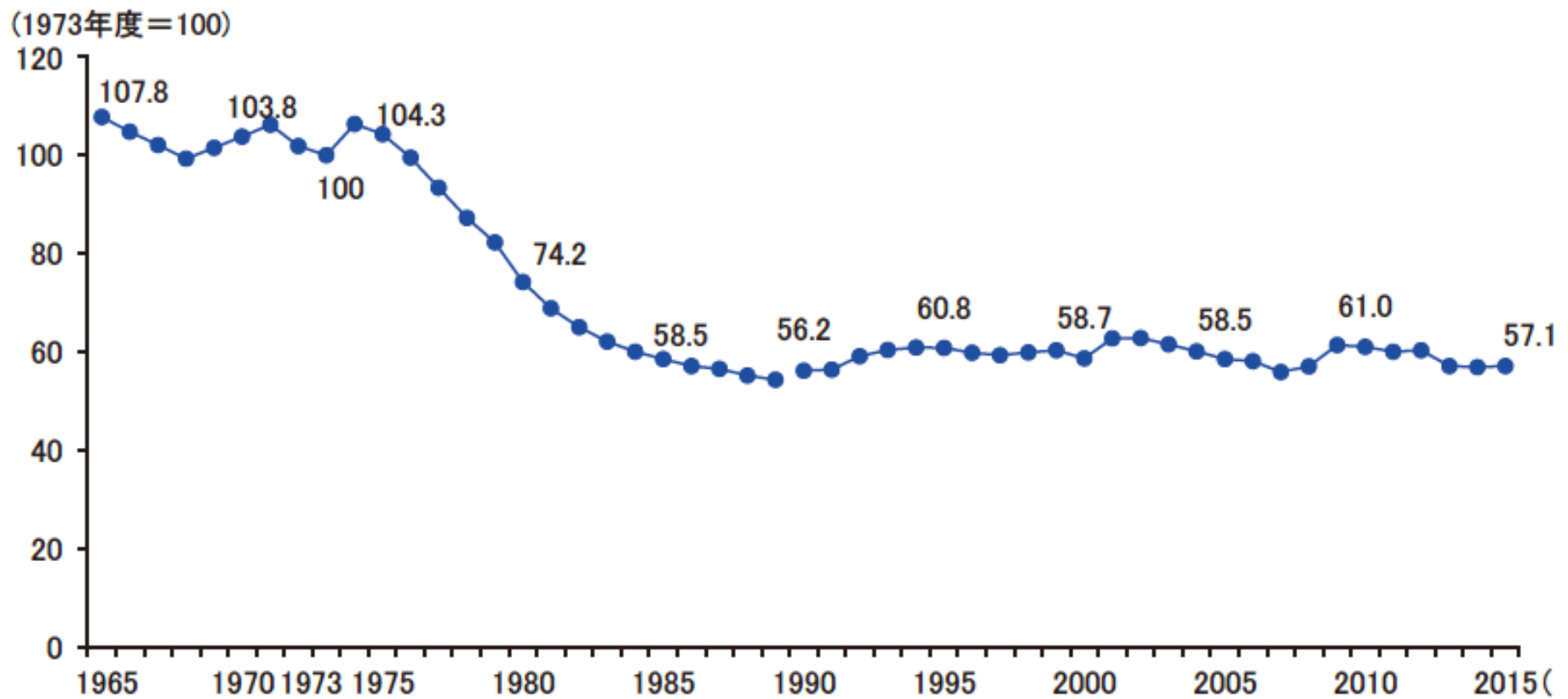
Challenges and Prospects(1)

- Energy conservation/Energy efficiency
 - 13% below estimate in 2030 (primary energy base); 17% (electricity demand base)
 - Most part of improvement in energy efficiency has been achieved before 1990.
 - Would estimated energy demand in 2030 be appropriate (not too high)?
 - Current trends
 - Japanese population will decrease by 10 Million in 2030

(Mt oil equivalent/trillion yen)



Energy intensity of manufacturing sector



Source : METI, 2017

Challenges and Prospects(2)

- Share of electricity from **nuclear power** plants: 20-22%
 - “...dependency on nuclear power should be reduced as much as possible” (Strategic Energy Plan, 2014)
 - Difficult to “predict” its share, since it would depend on whether a plant could meet stringent safety regulations and could get consent by local governments of the site.
 - “40 years life span in principle” under the legislation would probably bring share of nuclear to less than 15%; and to zero around 2050.
 - The prospect beyond 2030 is not clear.
 - Need to prepare additional measures for the situation (Plan B) in which nuclear power plants could not operate as assumed.
 - In order to ensure our energy system would be more sustainable in light of energy security, low carbonization, and energy cost.
 - In that sense, promoting nuclear as climate action is vulnerable and at least not the best policy option.

Challenges and Prospects (3)

- Share of renewable energy in energy mix: 22-24%
 - It shows a vision in which renewables will become one of principal energy sources for Japan in 2030.
 - Still, share of renewable energy will be relatively low compared to other developed countries.
- More introduction in 2030 would be possible and necessary.
 - Especially about solar (7%) and wind (1.7%)
 - Cf. Bloomberg New Energy Finance: Solar 11.6%, Wind 2.4%
 - For wind power, 1.7% would be at the similar level of power generated from all wind power projects already in the pipeline.
- Potential exists and challenges also exist.

Challenges for renewables in Japan

- FIT reform of 2016
 - Necessary reform to settle problems recognized during operation of the FIT
 - Careful oversight is necessary on a couple of points
 - Fair access to grid
 - Auctioning in the pilot phase
- Cost reduction is a big challenge.
 - Need a tariff setting to incentivize cost reduction
 - Improvement/ rationalization of business practices
 - Need some scale of introduction (ex. Wind)
 - Grid problems
 - Stable and predictable investment environment

Challenges and prospects(4)

- The biggest challenges for 2030 Climate target: **COAL**
 - Coal to gas? In 2030 energy mix
 - Natural gas: 43% (4100億kWh) (2013) → 27% (2900億kWh) (2030)
 - Coal: 30% (2800億kWh) (2013) → 26% (2200億kWh) (2030) = 46GW (2030)
 - Our concern: numerous plans of new construction of coal fire plants
 - MOE estimate: 18.4GW coal fired plants are planned as of June 2016, which would lead to 59.5GW in 2030 and would double Japan's emissions in 2030
 - Other estimate according to “Don't go back to the COAL”
 - Newly constructed already in operation: 2 (0.28GW)
 - Planned: 43 (20.43GW)
 - Plan suspended/ terminated: 4 (2.31GW)

Existing coal fired plants



New and planned coal fired plants



Challenges and prospects(5)

- Government introduced 2 regulations for that purpose, in addition to voluntary action by utilities and retailing companies.
 - Energy efficient regulation on coal fired plants
 - Requires retailers to sell at least 44% of non fossil based power (by 2030, but details are not yet clear).
- Government should put in place more clear policies and measures on coal fired plants to achieve 2030 target.
 - Higher carbon price
 - Effective carbon rate of Japan: relatively low outside of transport among developed countries, especially low on industry

Impacts of and challenges for the Paris Agreement

- The PA has regenerated the momentum for Japanese climate policy.
 - Decides 2030 climate target and establish a new Climate Action Plan of the government.
 - It is **another evidence** that Japanese climate policy has always been promoted by the progress in international climate regime.
 - Under the current situation, self determined way of target setting under the PA (INDC) has turned out a good (if not best) option.
 - Kyoto Protocol type of target setting would have taken more time to agree.
 - Self determined way of target setting could accelerate ratification and then implementation.
 - How to raise continuously the level of ambition with such self determined way of target setting?
 - What should be international rules to make it possible?
 - Rule book of the PA decision (COP24 in 2018) and the next submission of INDC in 2020 is very important.
 - Japan's hosting G20 in 2019 would be another momentum?

Business on move (1)

- Tokyo Metropolitan Government as a member of C40
- Many community powers
- Business also on the moves. For instance,
 - Toyota: “Toyota Environment Challenges 2050”
 - 90% reduction of emission from new cars to be sold globally by 2050
 - Zero emission from its production by 2050
 - Zero emission from over all supply chain
 - Nissan: do the same direction
 - ZEB (Net Zero Energy Building) and ZEH (Net Zero Energy House)

Science based targets (SBTs)

- Science based target (SBTs)
 - 297 companies participates (as of 29 August), 65 of which have approved science based targets.
 - Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered “science-based” if they are in line with the level of de-carbonization required to keep global temperature increase below 2 degrees Celsius compared to pre- industrial temperatures.
 - 37 Japanese companies have committed to having such targets, 11 of which have approved targets.
 - Targets approved: Fujitsu, Kirin, Ricoh, Sony, Toda and others
 - Toyota, Nissan, Honda, Hitachi, Daikin, Suntory and others follow these companies.

Business on move(2)

- Companies commit them to reduction target on emission from all or majority of supply chain.
 - A filial of Toyota commits it to zero emission by 2050 (2016).
 - Another company (Ibiden) commits it to using 100% renewable energy for producing Apple products.
- Companies start to seek to 100% renewable energy for their operation.
- Definitely important initiative for raising the level of ambition
 - Far more important for Japan: we have now different voices supporting more aggressive climate policy and renewable policy from business sector.
 - How would such a private regime expand/work effectively under the PA?

Thank you for your attention!

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