

2. 日本のカーボンプライシング（海外現地調査資料）

Carbon Pricing in Japan

4th - 13th September, 2017

Mizuho Information & Research Institute

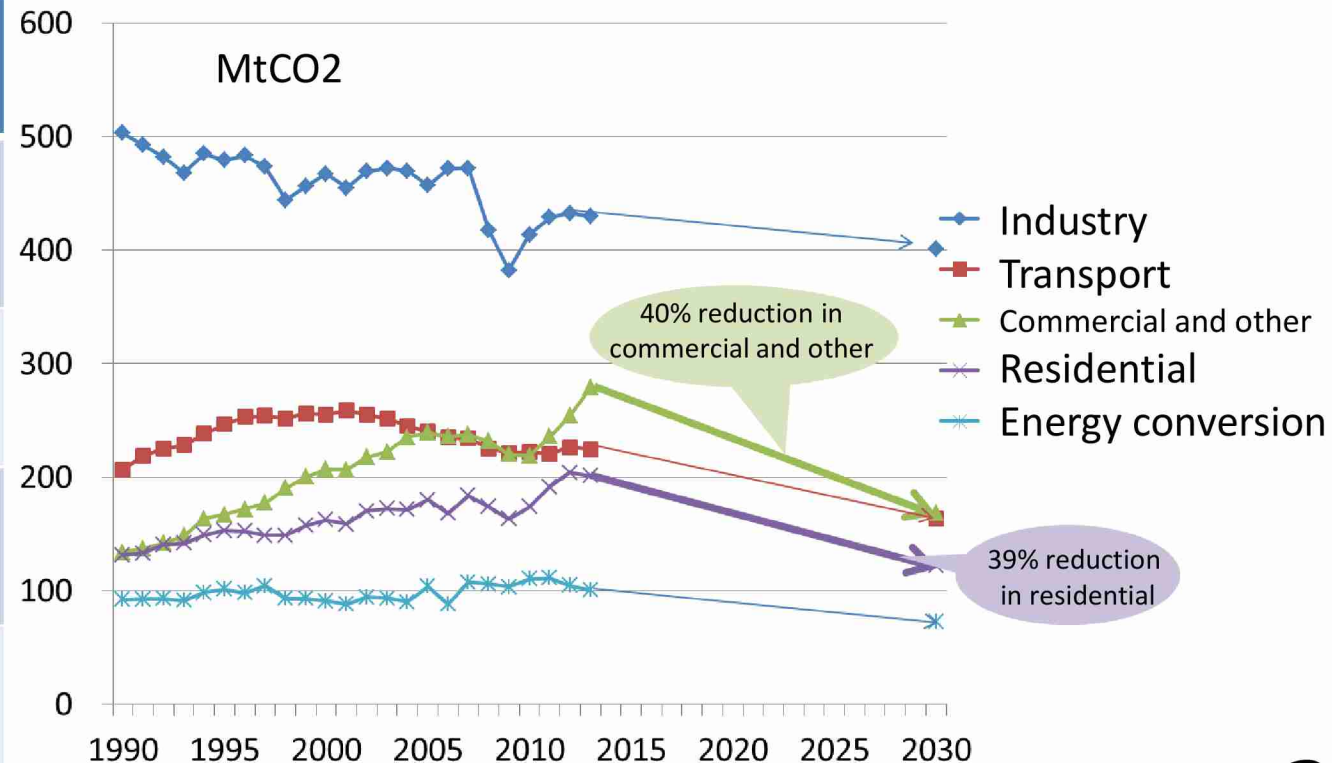
Current Situation of Carbon Pricing in Japan

Japan's Intended Nationally Determined Contribution

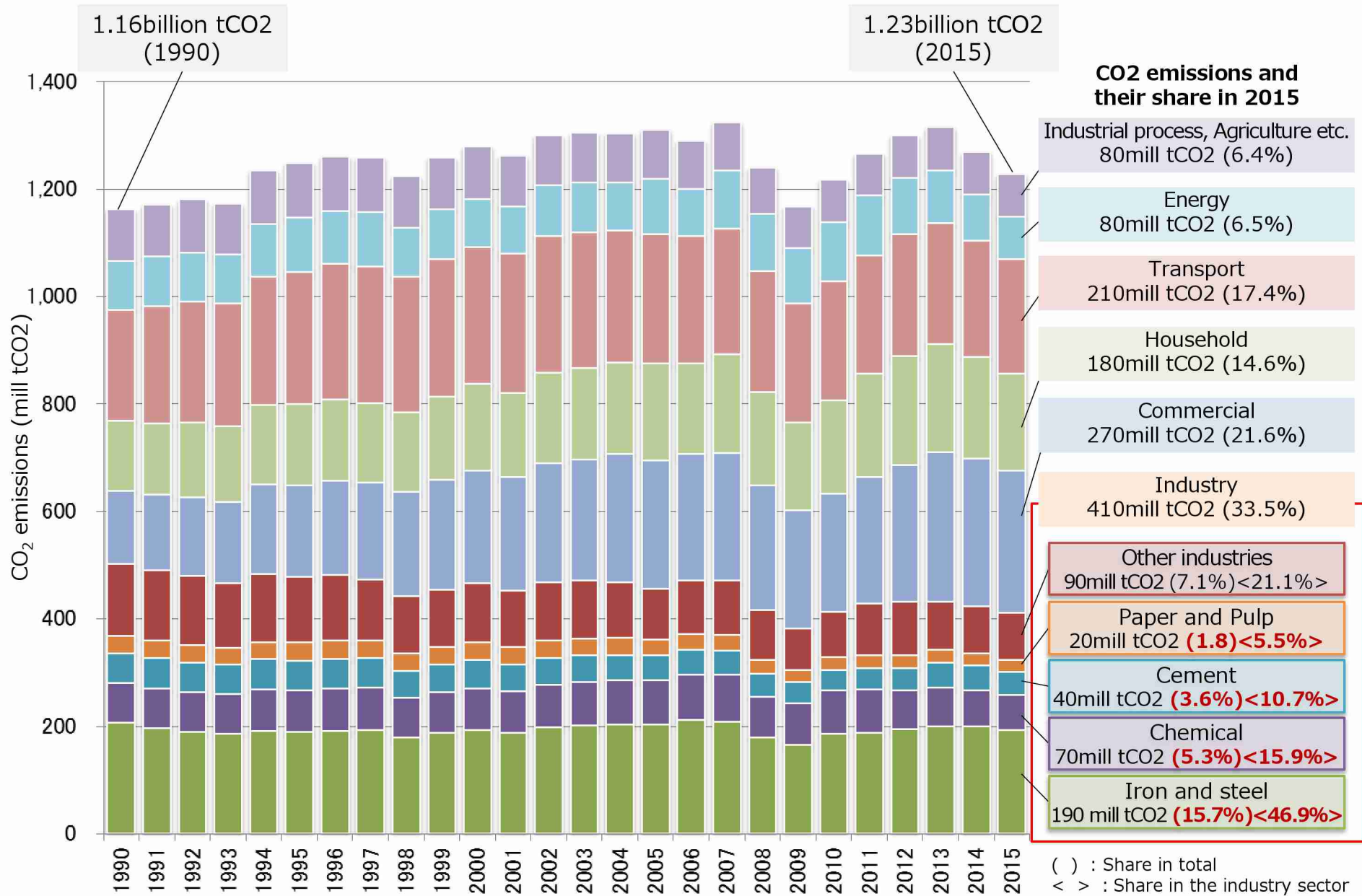
(Submitted to UNFCCC on 17th July 2015)

- Japan's INDC has been set as a **reduction of 26.0% by fiscal year (FY) 2030 compared to FY 2013 (25.4% reduction compared to FY 2005)** (approximately 1.042 billion t-CO₂ eq. as 2030 emissions)
- This is a **feasible reduction target set based on bottom-up calculation of concrete policies, measures and individual technologies**, with adequate consideration of technological and cost constraints, and consistency with the energy mix.

	reduction from FY 2013 (FY2005)
Energy Originated CO ₂	▲ 21.9% (▲ 20.9%)
Other GHGs	▲ 1.5% (▲ 1.8%)
LULUCF sector	▲ 2.6% (▲ 2.6%)
Total	▲ 26.0% (▲ 25.4%)



Component of Japan's CO2 emissions

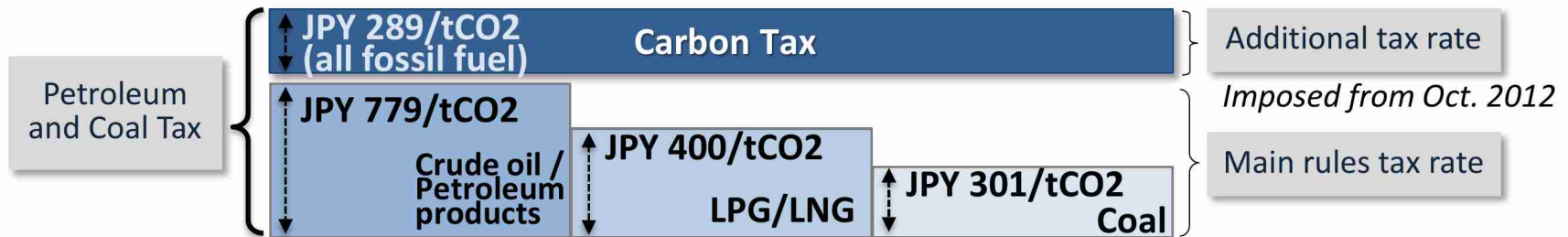


(Source) Compiled by, GHG inventory office "GHG emissions data in Japan" (1990-2015).

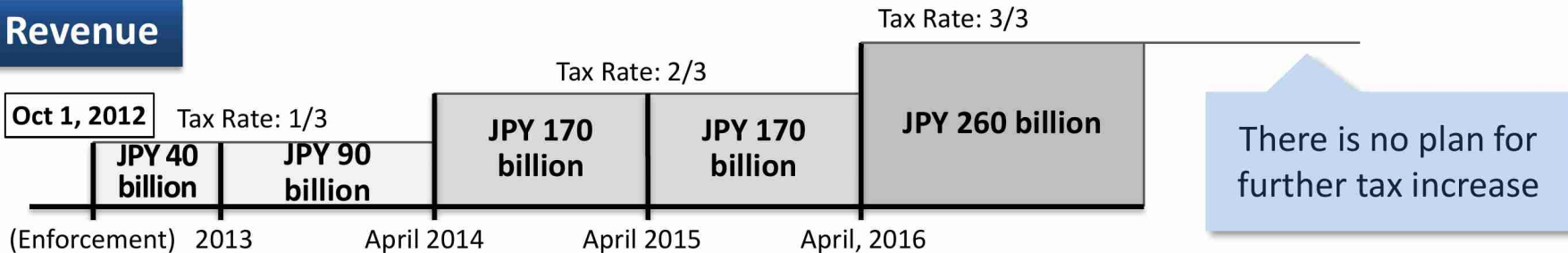
Carbon tax in Japan (Official name: Tax for Climate Change Mitigation)

- In October 2012, Japan introduced Carbon tax. Tax rate is corresponding to the amount of CO2 emissions for all fossil fuels (JPY 289/tCO₂, about 2EUR/tCO₂)
- 3/3 tax increase has been done in April 2016 but no provision for further increase.
- All the tax revenue is earmarked for “environmental issues”.

Tax Rate



Tax Revenue

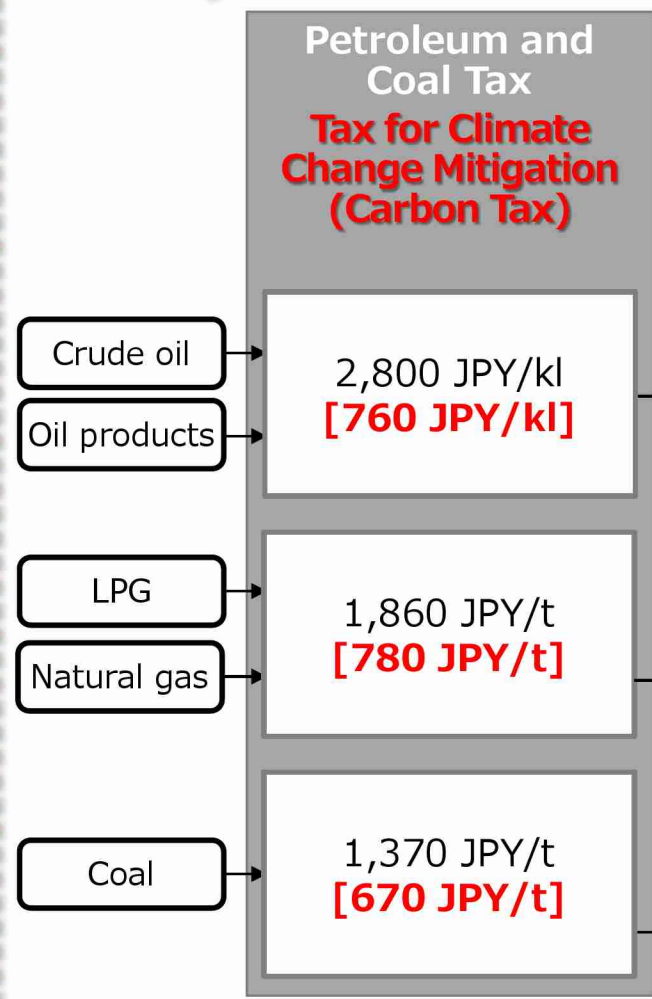


- All the revenue is earmarked for project of reducing energy-originated CO₂ emission (Promoting energy savings and renewable energies)

Regulation point of Japan's carbon tax and energy taxes

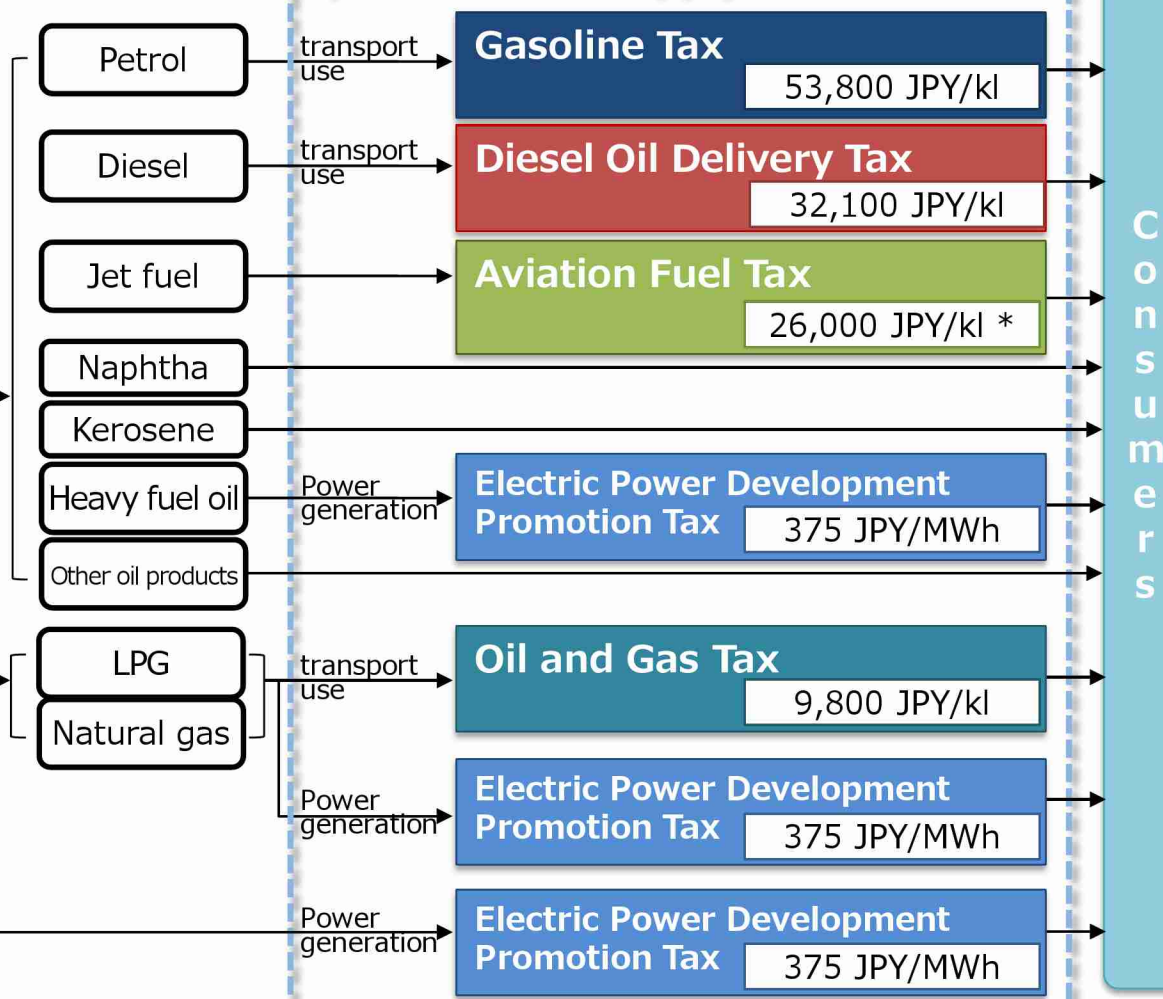
Upstream Taxes

Taxation at import or extraction stage of fossil fuels



Mid-Downstream Taxes

Taxation at shipment from energy producers or supply to consumers

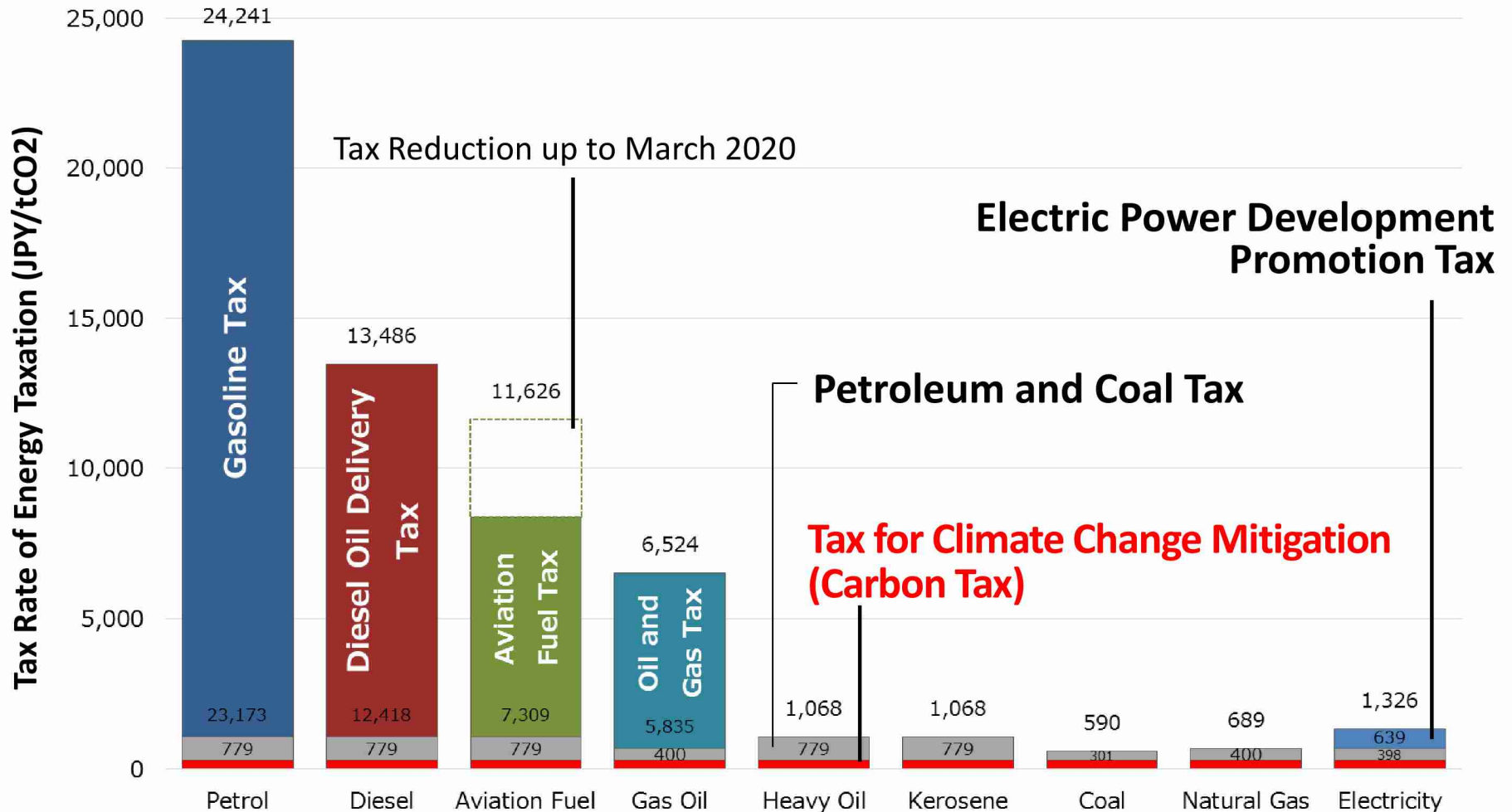


* Reduced rate for Aviation Fuel Tax (18,000 JPY/kl) will be applied until 2019.

Energy taxes and carbon tax in Japan

■ Carbon tax is imposed at the same rate for all fuels but the share of tax burden is quite small.

Tax Rates of Energy products and electricity in Japan



(Note) Tax rates of electricity are compiled by Mizuho Information & Research Institute based on 2015 data. Other taxes are current tax rates.

CO2 Reduction Effects of Carbon Tax in Japan in 2020

- Compared to 1990, in 2020 ▲0.5% to ▲2.2% (6 million tons to 24 million tons of CO2 reduction) is estimated as for energy-originated CO2 reduction due to price effect*1 and budget effect*2.

*1: Price Effect: CO2 reduction through taxation (price elasticity)

*2: Budget Effect: CO2 reduction by inflecting tax revenue for measures for energy-originated CO2 emission control

Estimation of CO2 Reduction Effect by Carbon Tax

	2020
Price Effect	▲0.2% (Approximately 1.76 million tons of CO2 reduction)
Budget Effect	▲0.4%~▲2.1% (Approximately 3.93 million tons to 21.75 million tons of CO2 reduction)
Total	▲0.5%~▲2.2% (Approximately 5.69 million tons to 23.5 million tons of CO2 reduction)

* As contents concluded by FY 2012 Tax Reform are premised

- Tax Rate : JPY 289/tCO2 (will be raised progressively for three and a half years)
- Revenue: JPY 39.1 billion for the first year/JPY 262.3 billion for the normal years

(Note) Energy originated CO2 emission in 2020 without Carbon Tax (as BAU) is assumed as 11.15 billion tons of CO2.

(Note) Price effect is calculated by using the price elasticity of energy use estimated from the latest statistics.

(Note) Budget effect is estimated by using AIM/Enduse (Asia-Pacific Integrated Model) in case (1) to introduce the existing technologies with precedence in order of cost-effectiveness: in case (2) to assign half of the revenue to a prospective measure in the long term and to equally distribute remaining half to the existing technologies depending on the potentials for the introduction.

(Note) In addition, so-called announcement effect is also expected but not included in this estimation.

(Note) The total of number of the lists does not necessary accord with the total number from relation of the significant digit.

CO2 Reduction Effects of Carbon Tax in Japan in 2030

- Energy originated CO2 in 2030 is expected to be reduced by 4.4% (approx. 54 million tCO2) compared to 2013 emissions level by carbon tax's price and budget effects.

Estimation of CO2 Reduction Effect by Carbon Tax

	2030
Price Effect	2.42 million tCO2 (Equivalent to 0.2% of CO2 emissions in 2013)
Budget Effect	51.66 million tCO2 (Equivalent to 4.2% of CO2 emissions in 2013)
Total	54.08 million tCO2 (Equivalent to 4.4% of CO2 emissions in 2013)

Emissions reduction projects not included in the budget effect

- Projects which is not able to detect its amount of CO2 emissions reduction
- Projects which is related to technology development
- Projects which is conducted in other countries

(note 1) CO2 emissions in 2013 in Japan was 1,235 million tCO2 (from Japan's INDC).

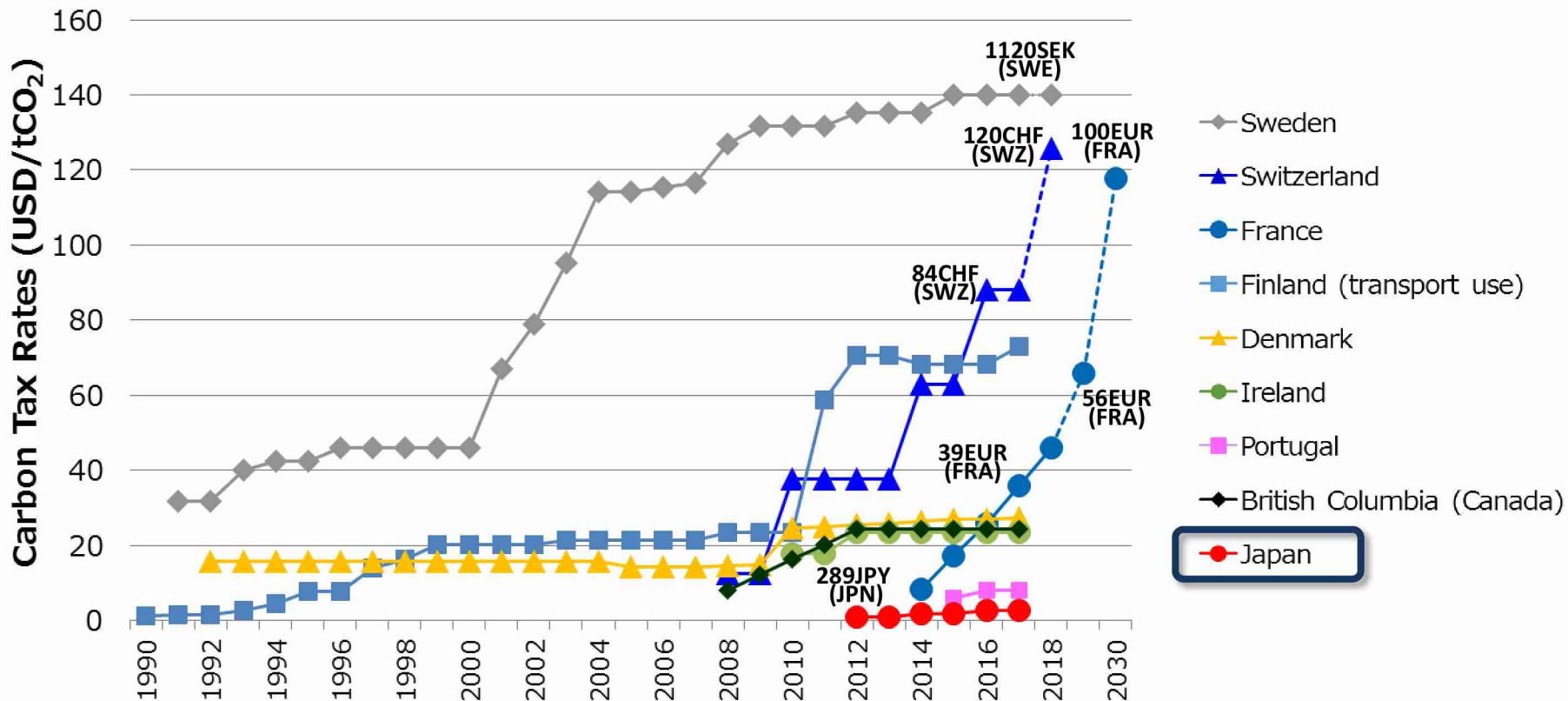
(note 2) Announcement effect of carbon tax is not taken into account in this estimation.

(Source) Ministry of the Environment Japan.

Comparison of Carbon Tax in Japan and other countries

- Japan's carbon tax rate is quite low compared to other countries with carbon taxes.
- There is no plan for tax increase in Japan while France and Switzerland have already decided very high future carbon tax rate to send business sector strong and long-term price signal.

Changes in carbon tax rates including future rates



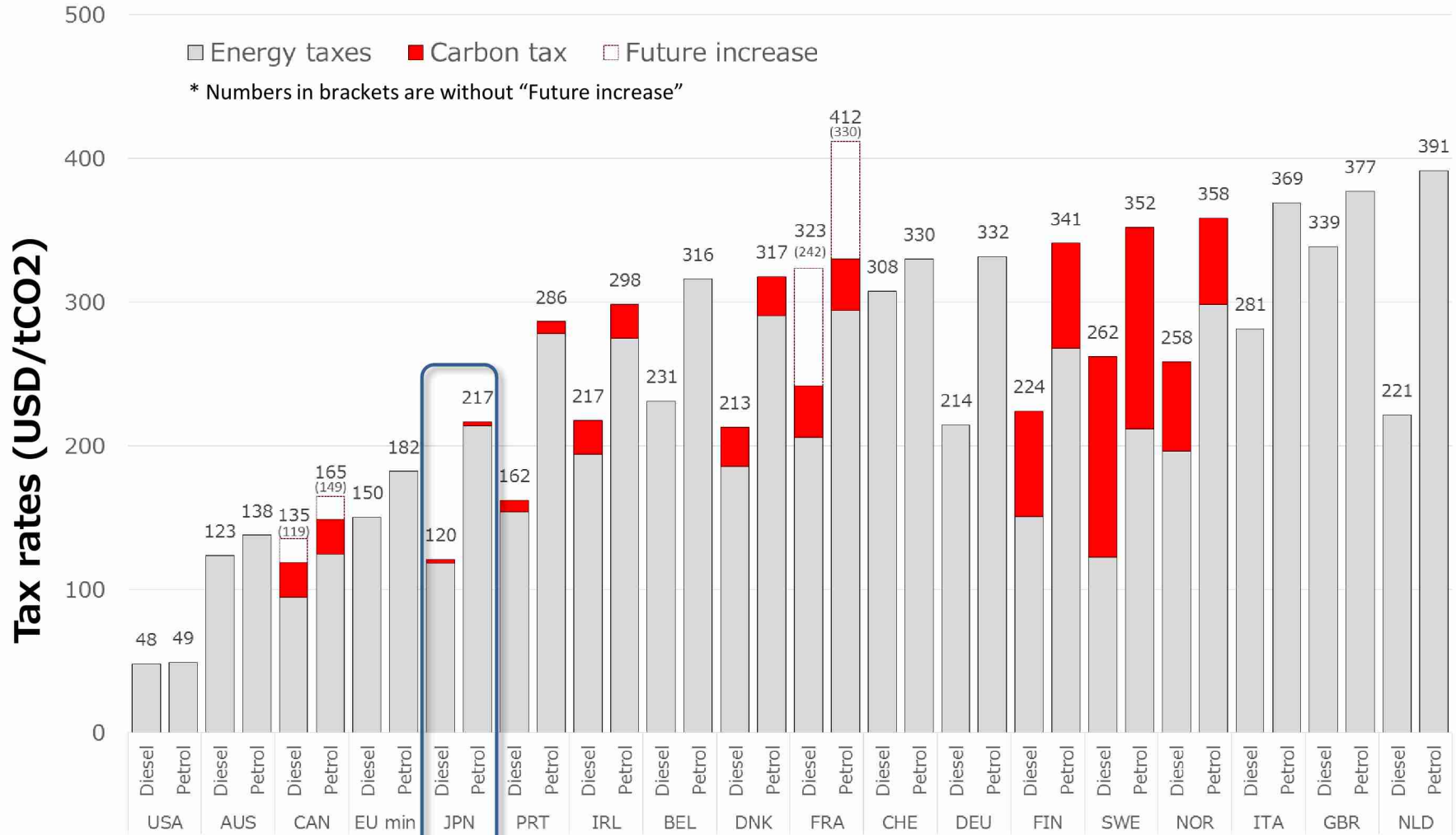
(Note) For Switzerland, the highest rate is used on this chart (Its 2018 carbon tax rate varies from 96 – 120 CHF/tCO₂).

(Note) Tax rates are as of March 2017. Foreign exchange rates are based on Mizuho Bank's monthly average exchange rates from 2014-2016.

(Source) Compiled by Mizuho Information & Research Institute from the interview survey results and information obtained from each country.

Comparison of Carbon Tax in Japan and other countries (with energy taxes)

Comparison of tax rates for transportation fuels (gasoline and diesel)



(Note 1) Tax rates are as of March 2017. Foreign exchange rates are based on Mizuho Bank's monthly average exchange rates from 2014-2016.

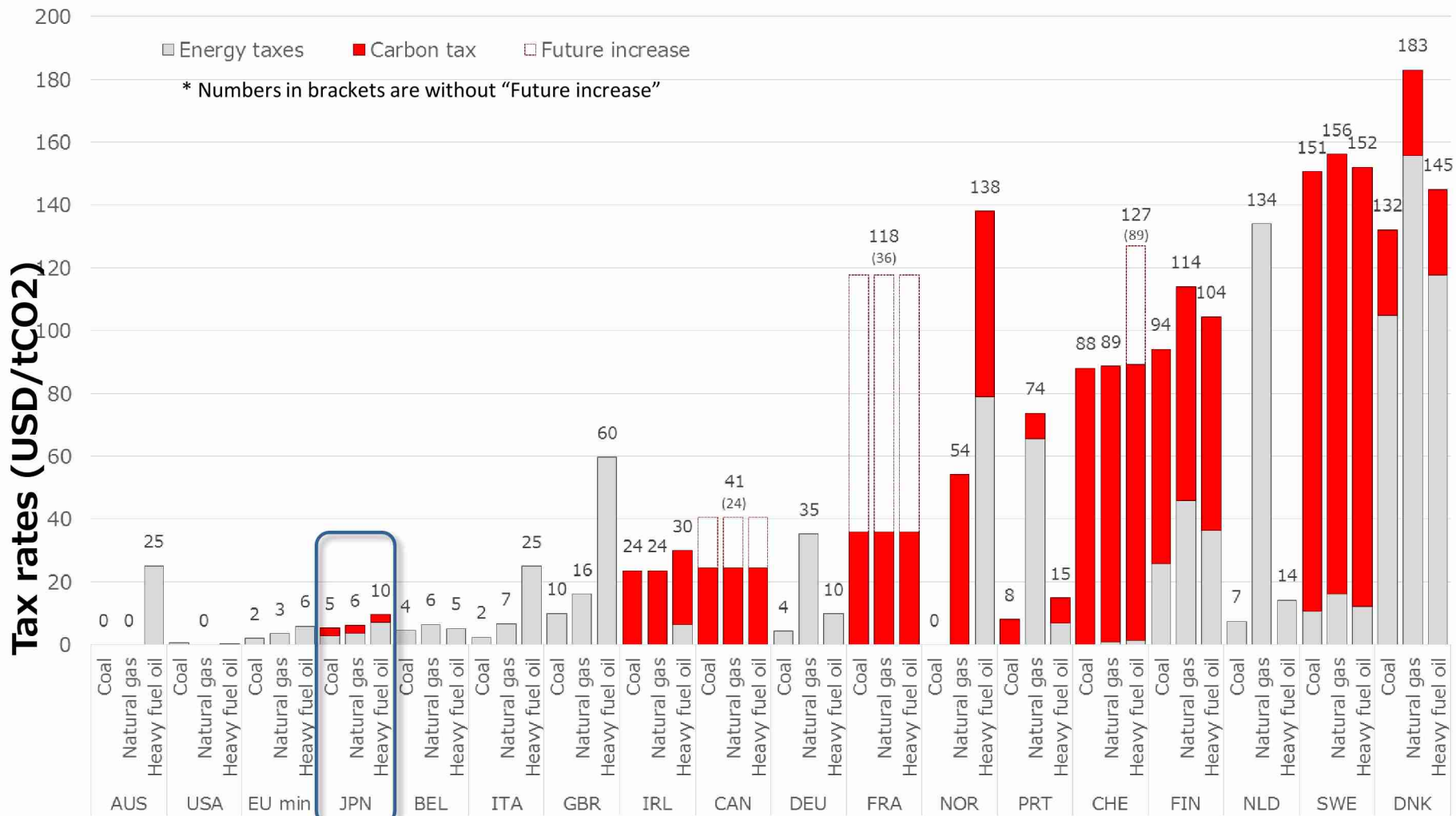
(Note 2) Taxation in New York State and taxation in BC for the US and Canada, respectively, are included.

(Note 3) "Future increase" is for France (100EUR/tCO₂ in 2030), Canada (50CAD/tCO₂), and Switzerland (120CHF/tCO₂).

(Source) Compiled by Mizuho Information & Research Institute based on respective country data.

Comparison of Carbon Tax in Japan and other countries (with energy taxes)

Comparison of tax rates for industry fuels (coal, natural gas, and heavy fuel oil for industry use)



(Note 1) Tax rates are as of March 2017. Foreign exchange rates are based on Mizuho Bank's monthly average exchange rates from 2014-2016.

(Note 2) In Netherland and Italy tax rates for natural gas varies according to amount consumed and in this chart the highest rate is adopted.

Taxation in New York State and taxation in BC for the US and Canada, respectively, are included.

(Note 3) "Future increase" is for France (100EUR/tCO2 in 2030), Canada (50CAD/tCO2), and Switzerland (120CHF/tCO2).

(Source) Compiled by Mizuho Information & Research Institute based on respective country data.

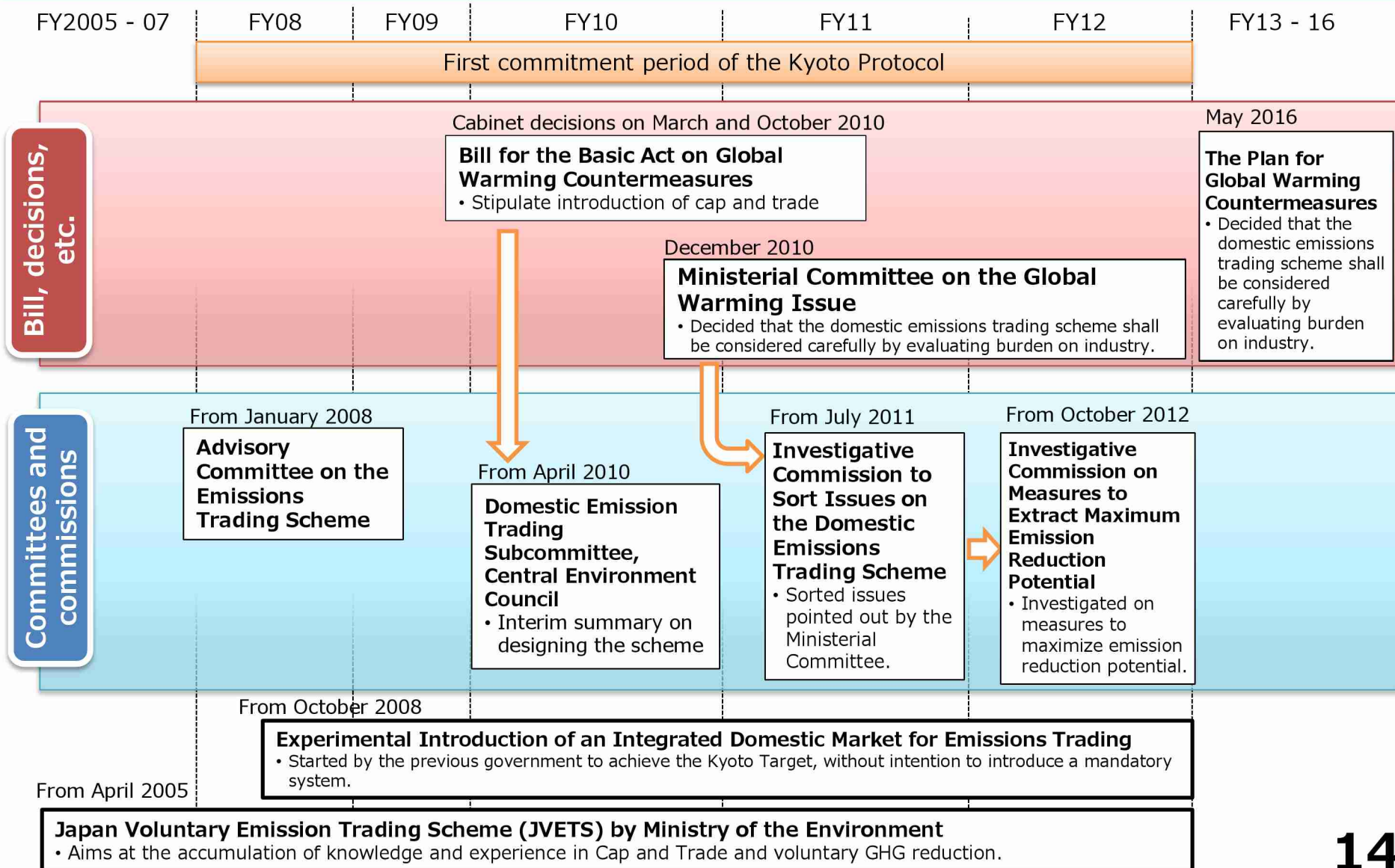
Energy taxes

- **There is a huge potential for energy and carbon tax increase** in Japan, to change people's behavior towards low carbon business and lifestyles (**"Price effect"**).
- It should be carefully considered that **alternative ways of recycling carbon tax revenue**. That can be put into the **general account** and used for stimulating **economic growth**.
- **Long term price signal should be shown** to encourage low-carbon investment

History of Consideration for the Domestic Carbon Pricing Scheme

History of Consideration for the Domestic Emissions Trading Scheme

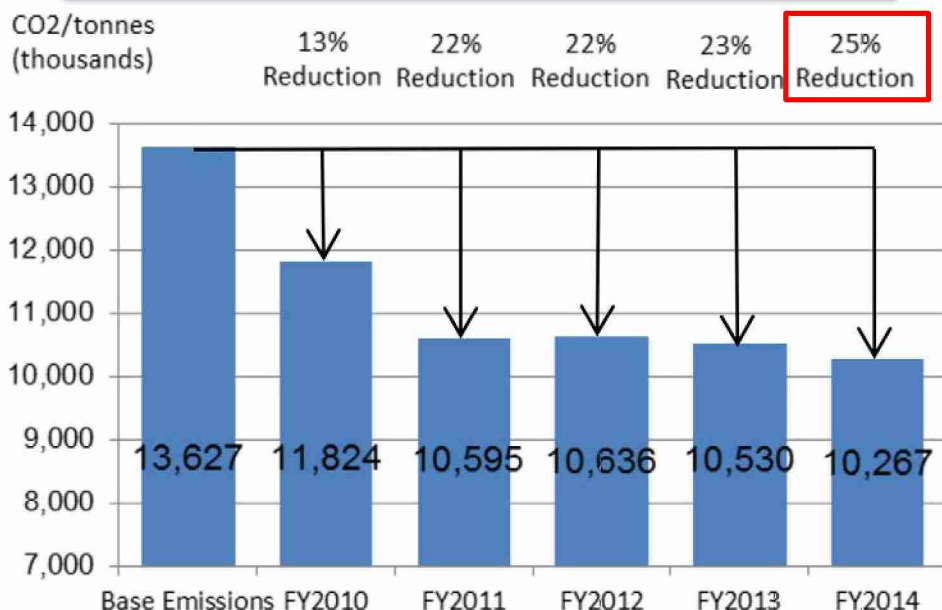
- There is no nation-wide emissions trading scheme in Japan. There has been a lot of negotiation for that but none of them has succeeded.



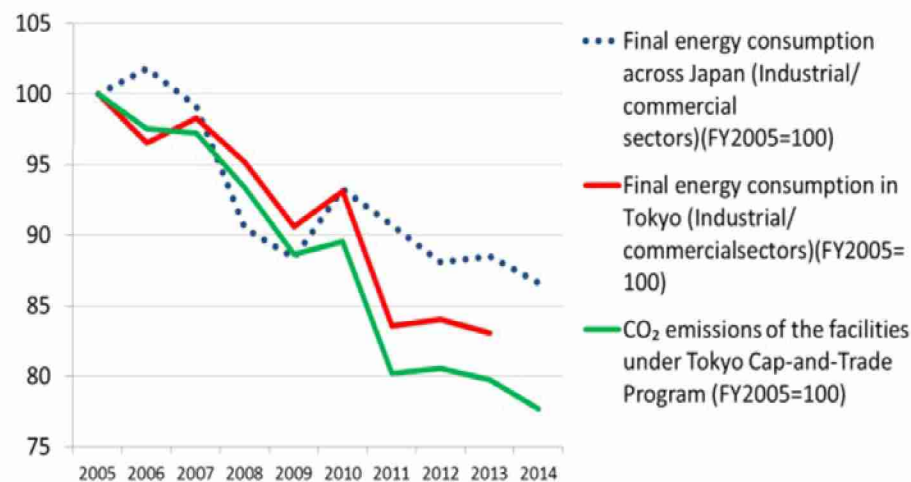
Local level ETS: Success of Cap-and-Trade Program in Tokyo

- Tokyo Metropolitan Government announced that the Tokyo Cap-and-Trade Program has achieved a 25% reduction in emissions after the 5th year of the program compared to base-year emissions.

Transition of covered facilities' total CO2 emissions



Yearly changes in CO2 emissions (comparison with national average)



1st Commitment Period : **Emissions reduction without trading: 10.08 mill tCO₂ / Traded credit: 0.19 mill tCO₂**

Source: Tokyo Metropolitan Government Bureau of Environment (2016) "The 5th Year Result of the Tokyo Cap-and-Trade Program"

<http://www.kankyo.metro.tokyo.jp/en/files/3c08a5ad895b5130cb1d17ff5a1c9fa4.pdf>

Tokyo Metropolitan Government Bureau of Environment "All covered facilities achieved emissions reduction target for 1st commitment period"

<http://www.metro.tokyo.jp/tosei/hodohappyo/press/2016/11/04/10.html>

Cap-and-Trade Program in Tokyo (Overview)

“Mandatory CO₂ Reduction and Emissions Trading Program (the Tokyo-ETS)”, which requires mandatory reduction of absolute CO₂ emission, was developed from “Tokyo CO₂ Emissions Reduction Program” by amending the Tokyo Metropolitan Environmental Security Ordinance. The Tokyo-ETS has started from April 2010.

Coverage	Large CO ₂ emitters, such as office buildings and factories. --Consumption of fuels, heat and electricity is 1,500 kiloliters or larger per year (crude oil equivalent) • Number of covered facilities: 1,400 installations (including 1,100 business facilities and 300 factories)
Compliance period	5 years --1st compliance period: from FY2010 through FY2014 --2nd compliance period: from FY2015 through FY2019 • Monitoring and Reporting: every year
CAP setting	TMG’s target of GHG emission reductions (25% reduction levels by 2020 from the 2000 emission) *The cap for the first compliance period(2010-2014) has been set at a level of 6% below base emissions. *The cap for the second compliance period will need to be set at a level of approximately 17% below base emissions.
Allowance allocation	Based on grandfathering method Allowances : Base year emission × Compliance factor × 5years Base year emissions: Average of past 3 years
Penalty	Fine will be imposed for non-compliance emitter
Offset	•Small and Midsize facilities Credits within Tokyo area •Outside Tokyo Credits •Renewable Energy Certificates
Banking/ Borrowing	Banking is allowed/Borrowing is not allowed

Source: http://www.kankyo.metro.tokyo.jp/en/attachement/Tokyo-cap_and_trade_program-march_2010_TMG.pdf

Current discussions for new, nation-wide carbon pricing scheme in Japan

- In the late 2016, then Environment Minister Koichi Yamamoto stated that carbon pricing is the world trend and Japan should begin firm discussions for introducing a new scheme.
- In January 2017, the first committee was held. In 2017 and onwards, the discussions for the introduction of a new, nation-wide carbon tax will be speeded up.

Media reaction to carbon tax committee

カーボンプライシング 本格導入に向けて検討へ

1月27日 15時37分



排出した二酸化炭素に価格をつけて、企業や家庭に排出削減を促す「**carbon pricing**」と呼ばれる制度について議論する、初めての会合が開かれ、国内で本格的に導入するための課題について、今後、検討を進めることになりました。

環境相「日本にふさわしい仕組みを」

カーボンプライシングについて、山本環境大臣は27日の閣議のあとの記者会見で、「低炭素社会を目指すうえで、極めて重要な要素で、世界的な潮流になってきている。この分野で、日本は1周おくれという状況にあるので、今まで実施して成功している国のよいところを取り入れるなどして、日本にいちばん、ふさわしいような仕組みを考えたい」と述べ、国内での本格的な導入に向けた議論を加速させる考えを示しました。

温暖化対策で低炭素電源を90%以上に 環境省戦略案

2月1日 5時08分



2050年に向けた地球温暖化対策の新たな長期戦略を検討している環境省は、太陽光や風力による発電など温室効果ガスの排出量が少ないいわゆる「低炭素電源」で国内の発電量の90%以上を賄うべきだとする提言を、戦略の案に盛り込む方針を固めました。

carbon tax

このため、石油や石炭などの化石燃料に課税する「炭素税」や、企業が排出できる二酸化炭素の量に上限を設け過不足分を別の企業と売り買いできる「**排出量取引制度**」などの新たな制度の本格的な導入を検討すべきだとする指摘も、合わせて盛り込むことにしています。ただ、こうした制度の導入には、鉄鋼や電力などの化石燃料を多く消費する業界団体が強く反発していて、今後、調整が難航することも予想されます。

emissions trading

Thank you.

For more information

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