

New policy measures for reducing F-gas emissions in Japan (especially for upstream industries)

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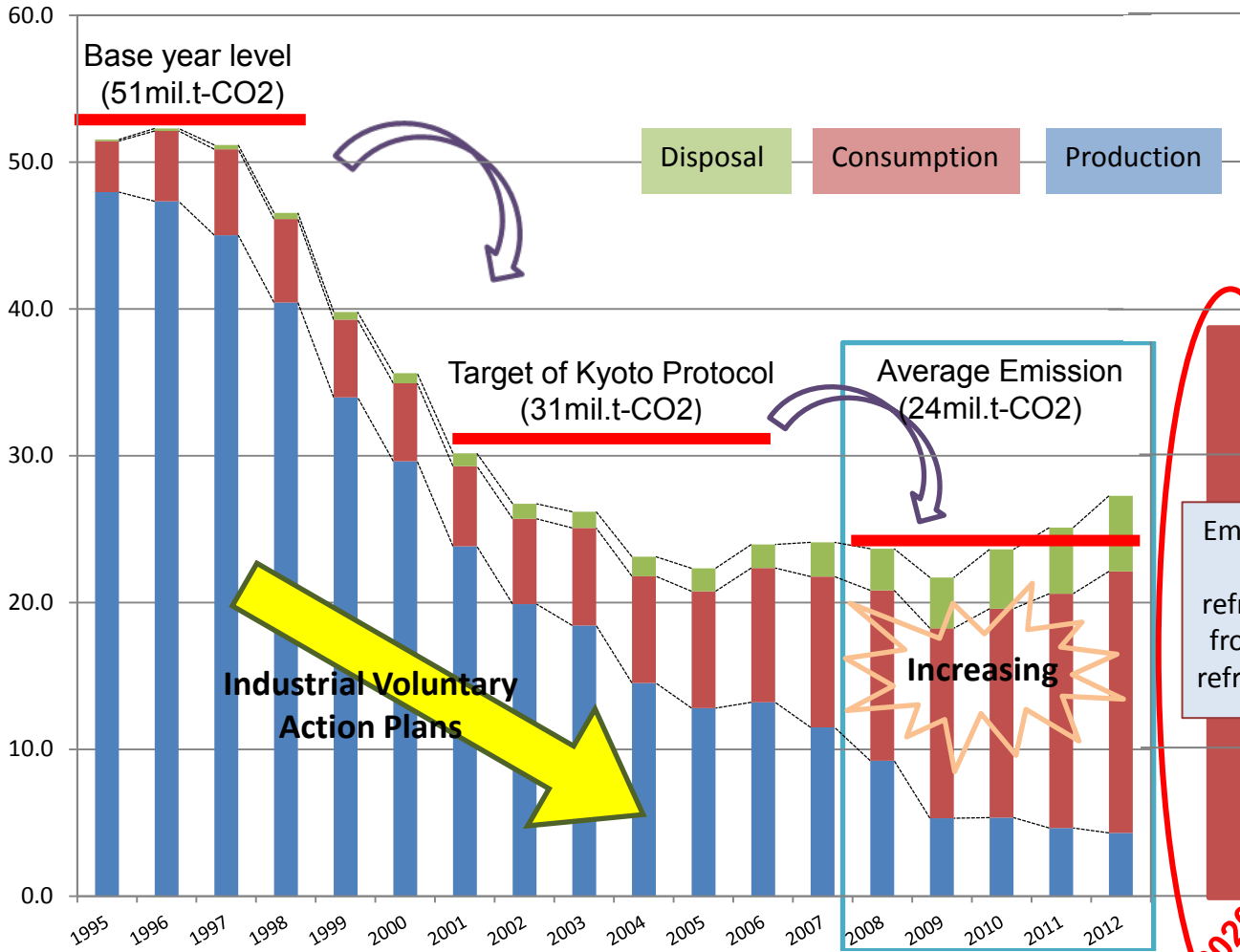
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 - especially for upstream industries -**
- 4. Financial Support**

Status of emissions (HFC, PFC, SF6) per sector through by Industrial Voluntary Action Plans and their achievements

Projected increase of Fluorocarbons emissions in refrigeration & air conditioning sector

(mil. t-CO₂)

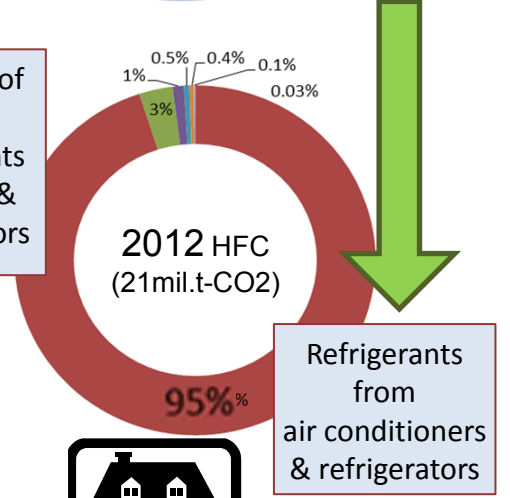
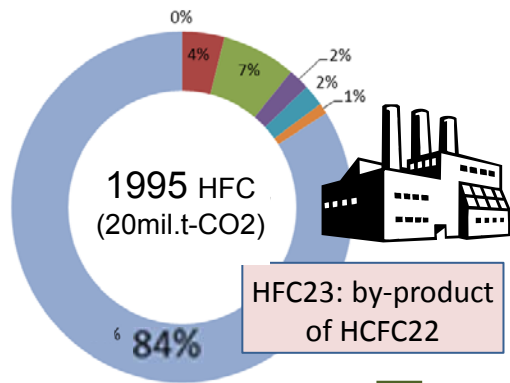


Source: Industrial Structure Council, METI

The first commitment period of Kyoto Protocol

2020 BAU

(Source change of HFC emission)



Emission of HFC refrigerants from AC & refrigerators

Refrigerants from air conditioners & refrigerators

New Measures ①

New Industrial Voluntary Action Plans



(Kyoto Protocol)

18 industrial organizations tackled for the achievement of the first commitment period of the Kyoto Protocol.

(Intended Nationally Determined Contributions for COP 21)

14 industrial organizations are working on new measures for their new targets for 2020, 2025 & 2030.

10 industrial organizations have set more ambitious targets by themselves than their previous plans for the Kyoto Protocol.

New Measures

- ◆ Prevention of emissions in the manufacturing process
- ◆ Conversion from F-gases to natural refrigerants
- ◆ Technology transfers, etc.

14 organizations

- Japan Fluorocarbon Manufacturers Association (JFMA)
- Japan Chemical Industry Association (JCIA)
- Japan Urethane Foam Association (JUFA)
- Aerosol Industry Association of Japan (AIAJ)
- The Federation of Pharmaceutical Manufacturers' Association of Japan (FPMAJ)
- Air Soft Gun Kyoukai (ASGK)
- The Japan Refrigeration and Air conditioning Industry Association (JRAIA)
- Japan Association of Refrigeration and Air-Conditioning Contractors (JARAC)
- Japan Vending Machine Manufacturers Association (JVMA)
- Japan Automobile Manufacturers Association, Inc. (JAMA)
- Japan Electronics and Information Technology Industries Association (JEITA)
- The Japan Electrical Manufacturers' Association (JEMA)
- The Federation of Electric Power Companies of Japan
- The Japan Magnesium Association

(In no particular order)

New Measures ②

Measures to promote lower-GWP/natural refrigerants in designated products

Manufacturers and importers of products will be required to replace high-GWP products with lower-GWP or natural refrigerant products, considering safety, energy efficiency, economic affordability etc.

Example: air conditioning

To reduce climate impact by converting refrigerants to the target value specified, referring to the lowest GWP among the designated products in Japan.

- Refrigerants GWP
- Volume of products

METI evaluates accomplishments per company for each product category (weighted average)

Target value

Weighted average

- Refrigerants ⇒ Lower-GWP/non-fluorocarbon
- Volume of products

Index related to environmental impact

High-GWP

Low-GWP

Base year

Target year

New Measures ②

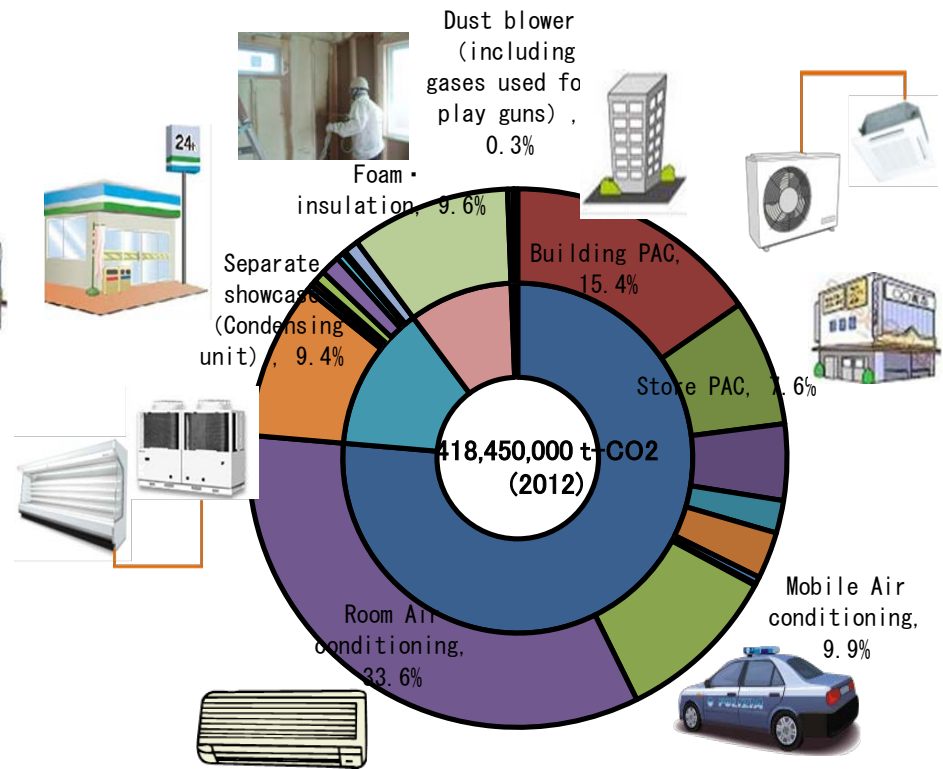
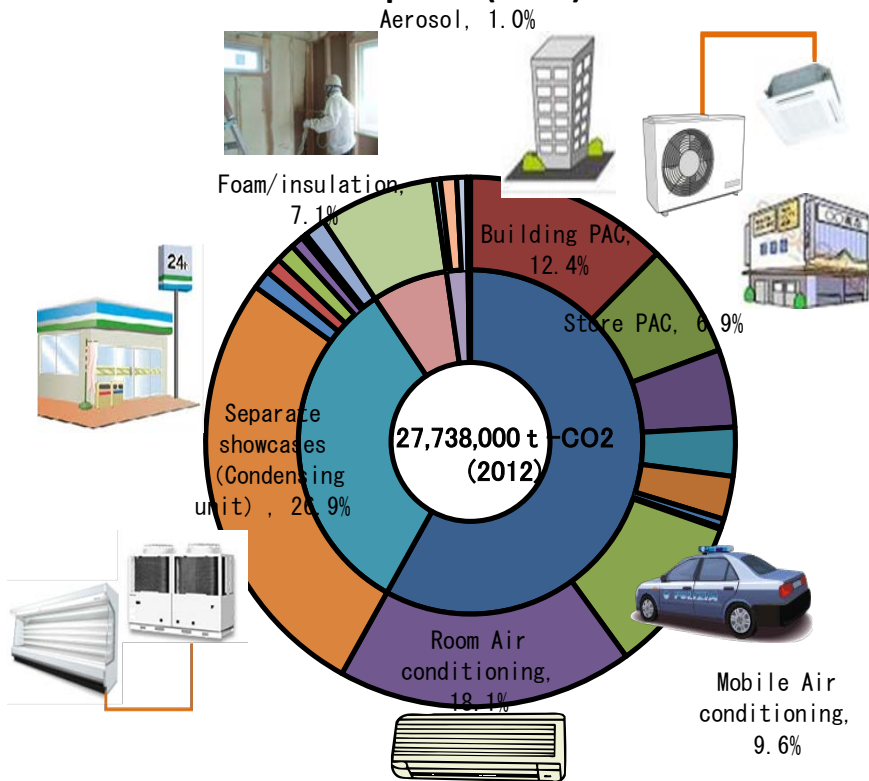
Possible target for designated products and equipment using fluorocarbons

(HFC emission)

(HFC stock amount)

Ratio of fluorocarbon emissions from whole product lifecycles including manufacturing, usage and disposal (2012)

Ratio of fluorocarbon amount used in products under operation (2012)



Source: inventory report of greenhouse gases by METI








※Based on GWP values for the second commitment period - Kyoto Protocol

※This data covers only products which METI is taking care of as the competent authority.

※Subject to change depending on considered categories of designated products.

New Measures ②

Target value and year for each designated product (the first group)

Designated products ※	Present refrigerant(GWP)	Target value (GWP)	Target year
Room air conditioning 	R410A(2090) R32(675)	750	2018
Commercial air conditioning (for offices and stores) 	R410A(2090)	750	2020
Condensing unit and refrigerating unit (for separate type showcases, etc.) 	R404A(3920) R410A(2090) R407C(1774) CO2(1)	1500	2025
Cold storage warehouse (for more than 50,000 m ³) 	R404A(3920) Ammonia (single digit)	100	2019
Mobile air conditioner 	R134a(1430)	150	2023
Urethane foam (for house construction materials) 	HFC-245fa(1030) HFC-365mfc(795)	100	2020
Dust blowers 	HFC-134a(1430) HFC-152a(124) CO2(1), DME(1)	10	2019

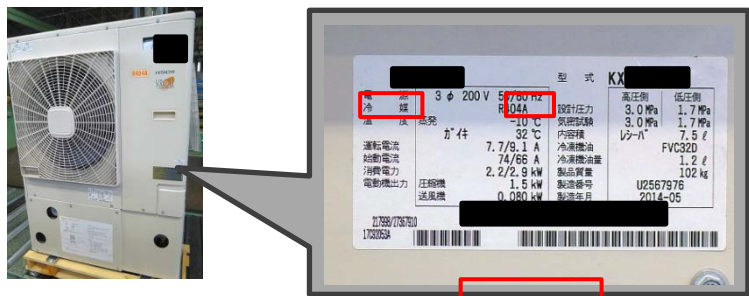
※ With some exceptions.

New Measures ②

Indications and labeling for the designated products, etc.

Purpose	To promote designated products using lower-GWP/ natural refrigerants Labeling JIS can help users to understand environmental impact of the refrigerants in the products easily
Objective	Besides designated products, labeling showcase itself, so that consumers can recognize labeling in supermarkets, etc.
Items to include	① showing “non-F- gas using” or degree of achievements in relation to the target GWP value ② target year and target GWP value ③ GWP value of the refrigerant used in the products
Location of labeling	Catalogs, etc. (can be printed on the products themselves or their wrapping)

Regulated indication on the designated products



GWP

Labeling JIS In the catalogs, etc.



PROMOTION

SELECT by users

Lower- GWP

Natural refrigerant



Showcases are not currently categorized as designated products, but labels can be affixed to showcases.

Financial Support ③

Funding scheme for promoting Lower GWP alternatives including Natural Refrigerant Products.

(1) Accelerating R&D (by NEDO)

'97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14

1. R&D of new alternative materials

- Alternative CFC cleaning agent
- Alternative refrigerant, blowing agent, CFC cleaning agent
- Electronic device cleaning system using SF6 substitute gas
- Electronic device etching systems and processes using alternative gas
- SF6-free micro-structural control of magnesium alloy

2. R&D of recovery and destruction technologies

- Recovery and recycling technologies for heat insulation materials
- Resolution and destruction technologies for fluorinated gas

Technologies to reduce F-gas emissions in the factory process

Industrial Voluntary Action Plans. (main factor to decrease in emissions)

- decrease in HFC-23 produced as a by-product of HCFC-22 manufacturers
- decrease in PFCs emission from cleaning agents and solvents due to the use of alternatives
- decrease in SF6 emission from electric equipment due to gas management systems, etc.

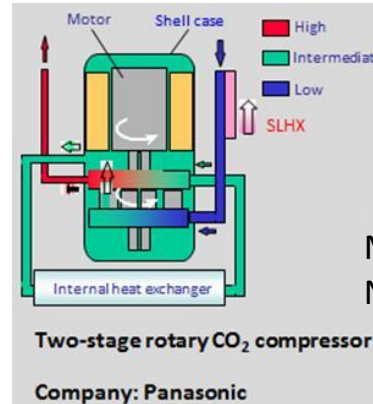
Technology Development of High-Efficiency Non-Fluorinated Air Conditioning Systems (2011-2015)
(Government budget in 2015: 280million JPY)

3. R&D of fluorocarbon-free technologies

- Small-scale air-conditioning systems and freezing and refrigeration systems
- High-efficiency and large-scale air-conditioning systems

Technologies for non-F-gas products

New Lower GWP Refrigerant



旭硝子、環境配慮の新冷媒
エアコン向け 温室効果6分の1に
旭硝子は、従来の冷媒であるHFC-410A(二酸化炭素(CO₂)の温室効果係数は約1000倍)に代わり、温室効果係数が約6分の1に抑えられた新冷媒を開発した。新冷媒は、従来の冷媒に比べて、温室効果係数が約6分の1に抑えられ、大気中に放出されると、温室効果係数が約6分の1に抑えられる。新冷媒は、従来の冷媒に比べて、温室効果係数が約6分の1に抑えられ、大気中に放出されると、温室効果係数が約6分の1に抑えられる。新冷媒は、従来の冷媒に比べて、温室効果係数が約6分の1に抑えられ、大気中に放出されると、温室効果係数が約6分の1に抑えられる。

↑
March 19, 2014
Nikkei

(2) Accelerating Introduction to markets

① Financial support for demonstrating energy-efficient products using natural refrigerants (Government budget in 2015: 570 million JPY)

	2006	2007	2008	2009	2010	2011	2012	2013	2014 (H26~)
<div data-bbox="19 307 1304 592" style="border: 1px solid black; border-radius: 50%; padding: 20px; background-color: #e0f0ff;"> <h3 style="text-align: center;">Support for practical implementation</h3> <ul style="list-style-type: none"> • Field test of non-F-gas products for reliability, durability, energy efficiency, safety etc. (2010~) • Strategic Development of Energy Conservation Technology Project (2003~2010) • Support Project for Industries for Increasing the Efficient Use of Energy (1998~2011) </div>									



Confidently releasing new products on the market

Sep.3, 2014
Nikkan Kogyo →

Award of protection of the ozone layer and prevention of global warming (2014)



② Financial support for introducing energy saving equipment using natural refrigerants (Government budget in 2015: 5,000 million JPY)

Objective	Subside
Refrigerated Warehouses	1/2 of introduction cost
Retail store Showcases	1/3 of introduction cost
The Others	1/3 of the difference to equipment with fluorocarbon



Market Penetration through mass production



(3) Accelerating contributions to the world

① Making use of the Montreal Protocol Multilateral Fund (MLF)

The MLF assists developing countries to reduce ODS implementing projects using lower GWP and natural refrigerants, etc.

Beneficiary countries (Bilateral)	Description	Approved	ExCom	Lead Implementing Agencies
Colombia	Validation of the use of super-critical CO2 in the manufacture of sprayed PU rigid foam	Apr-10	60	UNDP
Philippines	Sector plan to phase out HCFC-141b in the foam sector	Dec-10	62	UNIDO
Thailand	HCFC phase out management plan: Conversion to HFC-32 in RAC	Dec-12	68	World Bank
(Multilateral)				
Indonesia	Conversion to HFC-32 in RAC sector	Jul-11	64	UNDP
West Asia Countries (high ambient)	Promoting low-GWP refrigerants for air-conditioning sectors in high-ambient temperature countries in West Asia	Apr-13	69	UNEP/UNIDO

② Making use of JCM

JCM Feasibility Study by METI & NEDO in FY 2013



(4) Capacity Building for maintenance operators

Training institute for installation and repair with textbooks & CO2 equipment

(Government budget in 2015: part of 130million JPY)



**Thank you very much
for your attention.**