

# sheccoBase Global Policy Update

 **ATMO**  
sphere  
Business Case for  
Natural Refrigerants  

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**June 12-14, 2018 – Long Beach**

**ATMOsphere America**  
**Long Beach, CA, 12-14 June 2018**

**Marc Chasserot, Group CEO, shecco**

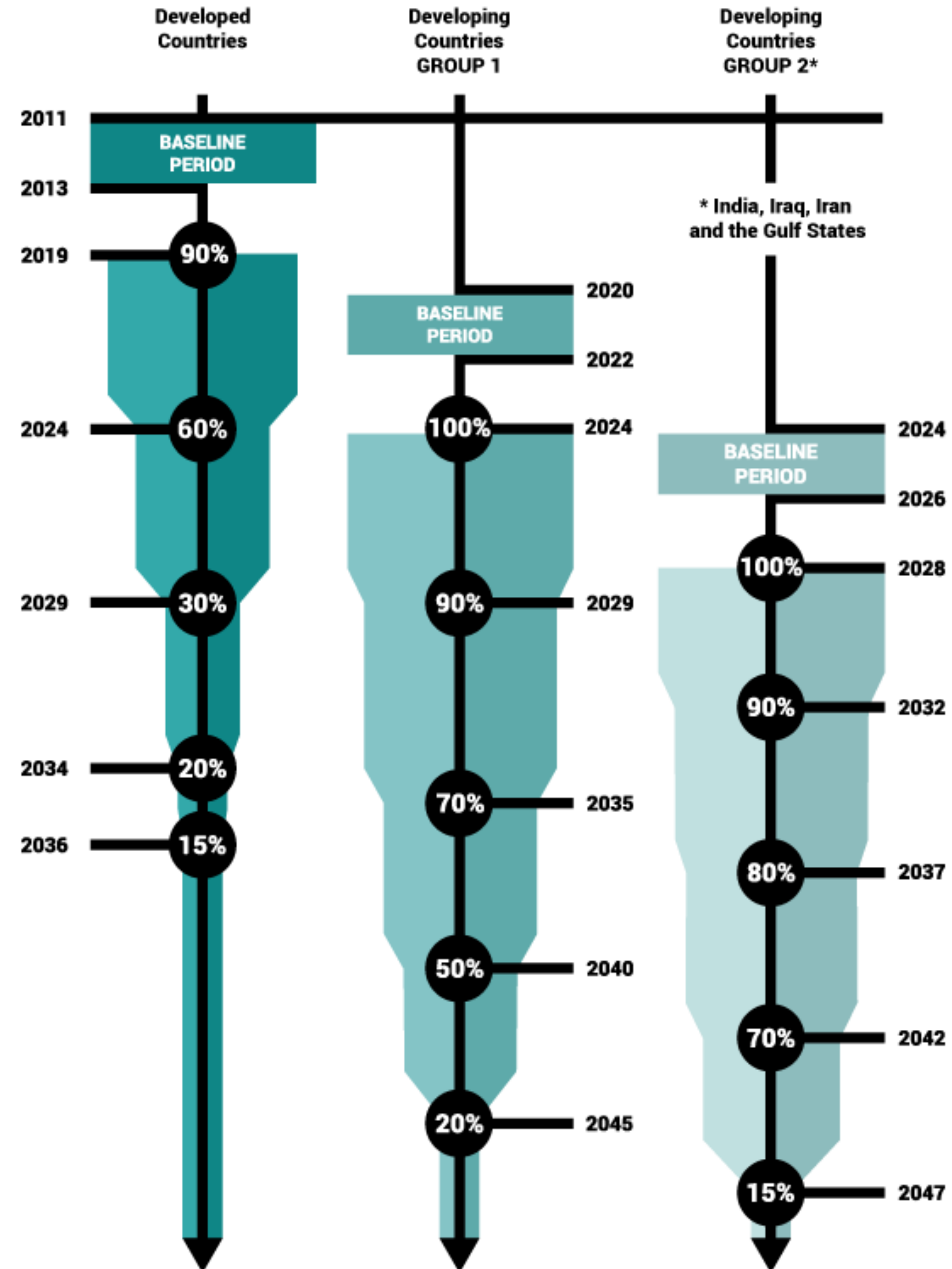
**GLOBAL**

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**01**



- Global phase-down of HFCs by 85% by late 2040s - first reductions by developed countries as of 2019, by most developing countries as of 2024
- > 0.4°C warming avoided by 2100; energy efficiency gains could significantly increase climate impact
- Entry into force: 1 January 2019 (38 countries ratified so far)



# US CLIMATE ALLIANCE ANNOUNCES COMMITMENT TO REDUCE SLCPs

- Coalition of 17 governors (16 US states + Puerto Rico) plans to release action plan in September 2018 and challenges others to join in cutting SLCP emissions, incl. HFCs
- SLCP plan is part of climate action initiatives launched after U.S. withdrawal from global Paris Agreement.
- California leading the way with HFC emissions reduction of 40% below 2013 levels by 2030.
  - **Key states showing huge potential for similar legislation boosting adoption of natrefs**
  - **2018 State of the State: New York Gov. Cuomo directed state agencies to develop HFC reduction plan through regulatory, incentive and capacity building programs**



## US HVAC&R INDUSTRY URGES TRUMP TO REFER KIGALI AMENDMENT TO SENATE

- May 15, 2018: **32 top executives of HVAC&R companies urged President Trump to submit the Kigali Amendment to the Montreal Protocol** to the U.S. Senate for ratification.
- Includes Hillphoenix, Danfoss North America, Emerson, Johnson Controls, Lennox International and Structural Concepts
- Says **ratification of Kigali will increase US manufacturing jobs by 33,000 & increase exports by USD 5 billion.**
- Highlights risk of transferring the competitive advantage from America to other countries like China.



## On-going revisions of international standards - potential to open up opportunities for hydrocarbons globally

### IEC 30335-2-89 for **commercial refrigeration**

- Proposal to raise max. charge limit of flammable refrigerants (e.g. propane from 150g to 500g)
- Final amended standard expected beginning of 2019

### IEC 60335-2-40 for **AC and heat pumps**

- Proposal to increase allowable charge size for flammable refrigerants by implementing various mitigation measures while keeping the max charge size
- Final amended standard expected in 2019-2022

# EUROPE

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02

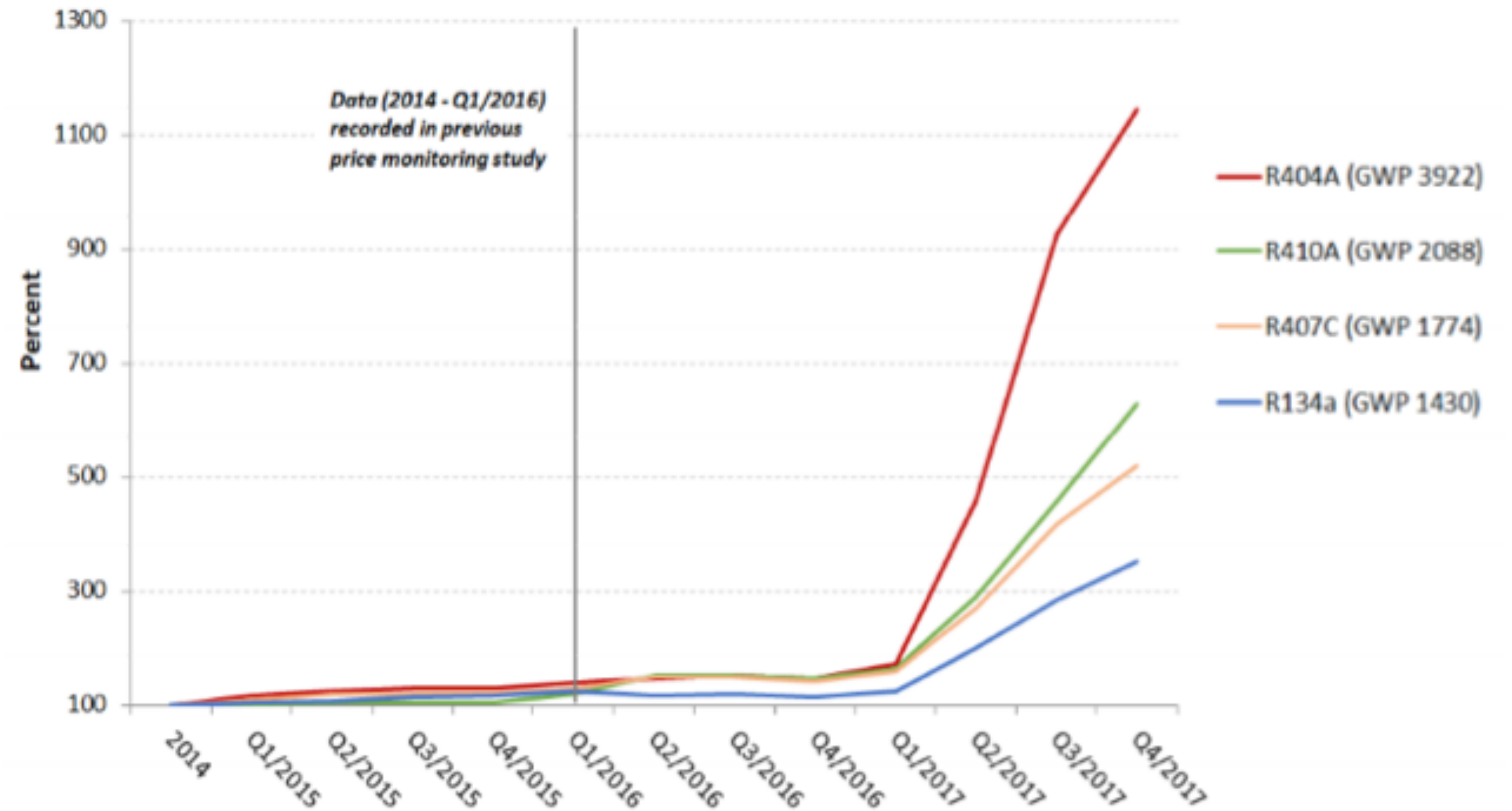


Development of **purchase prices of various refrigerants** at service company level, indexed to 2014 prices (100%) - until Q4 2017

**January 2018:** 37% cut of available HFC quotas in the EU

- **Strong price signal:** 20x increase expected, prices growing proportionally to GWP

**January 2017:** European Union (EU) importers of RAC equipment pre-charged with HFCs must comply with the EU HFC quota system (when placed on the market)



Source: Öko-Recherche, May 2018



## -> Big market opportunity for natural refrigerants in Europe

- **Purchase HFC prices in 2014:** < € 2/t CO<sub>2</sub>e (USD 2,35/t CO<sub>2</sub>e)
- **Purchase HFC prices at the beginning of 2018 (Q1):** € 7 - 23/t CO<sub>2</sub>e (USD 8,2 - 27/t CO<sub>2</sub>e)
- **Forecast 2030\*:** € 35/t CO<sub>2</sub>e (USD 41/t CO<sub>2</sub>e) possible
- **EU Roadmap 2050:** € 50/t CO<sub>2</sub>e (USD 58,5/t CO<sub>2</sub>e) (maximum tolerable level for the industry according to the European Commission)

\*Study carried out by Öko-Recherche, 2015

## Price increase since 2014 (i.e. before EU F-Gas Regulation)

**in €/t CO<sub>2</sub>e (€1 = USD 1,17)**

<b>Gas producers (selling price)</b>	<b>R134a</b> <b>R410A</b> <b>R404A</b>	+8,39 +6,94 +7,27
<b>OEMs (purchase price)</b>	<b>R134a</b> <b>R410A</b> <b>R404A</b>	+16,40 +17,39 +13,65
<b>Service companies (purchase price)</b>	<b>R134a</b> <b>R410A</b> <b>R404A</b>	+16,24 +19,20 +16,62
<b>Service companies (selling price)</b>	<b>R134a</b> <b>R410A</b> <b>R404A</b>	+23,29 +22,04 +22,95

Source: Öko-Recherche, May 2018

On-going revisions of EU standards - potential to open up opportunities for hydrocarbons globally



EC Standardisation Request: CEN and CENELEC to work on specifications for A3 refrigerants to provide for additional mitigation measures and allow wider use of hydrocarbons



**LIFE FRONT:** EU project to remove barriers posed by standards to wider uptake of flammable refrigerants in refrigeration, air conditioning and heat pumps



- **France** - HFC tax proposal - **to be adopted in Finance bill 2019, will enter into force as of January 2019**

-> **Gradual tax**, from €15/tCO<sub>2</sub>-eq in 2019 to €70/CO<sub>2</sub>-eq by 2022 (**approx. from USD 18/CO<sub>2</sub>- eq to USD 83/CO<sub>2</sub>-eq**)

-> **30% over-amortization mechanism** provided for companies investing from January 1, 2018 until December 31, 2021, in equipment using alternative refrigerants, including naturals.



- **Spain** - tax on f-gases with a GWP > 150 in 2015.

- In 2018, the level is EUR 20/tCO<sub>2</sub>-eq (**approx USD 23,40/tCO<sub>2</sub>-eq**)



- **Denmark** - tax on f-gases & HFC bans

- Ban on the use of HFCs in new equipment since January, 1 2006 (the ban does not apply to existing equipment & to equipment with 0.15 - 10kg refrigerant charge)

- Tax on the import of f-gases in bulk and on imported products - in 2018, the level of the tax is DKK 150 (**approx. USD 23,60/tCO<sub>2</sub>eq**)

**CHINA**

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**03**



- Chinese Ministry of Environmental Protection said at ATMOsphere China 2018 government expects **45% reduction in HCFC consumption in room AC by 2020**
- Targets **HFC phase-out by 2045**
- **China to revise domestic & international standards for flammable refrigerants**

Chinese Ministry of Environmental Protection: "China is revising its domestic standards for flammable refrigerants **to promote natural refrigerants**"

Chinese government calling on more countries to revise their safety standards to promote wider use of hydrocarbons



Zhong Zhifeng, vice-chief of Division III in the Chinese Ministry of Environmental Protection – Foreign Economic Cooperation Office (MEP-FECO) at ATMOsphere China 2018 (April 11-12, 2018)

**CANADA**

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**04**



- **April 2018:** Launch of Canada's **HFC phase-down plan** to limit HFC consumption by 85% by 2036
- Plan starts in **2019 with 10% cut** to 2011/2013 baseline level of HFC & HCFC consumption
- **Sector-specific bans** in specific products and as of a certain year

Product	GWP of refrigerant in product	Date
Stand-alone medium-temperature refrigeration system	1,400	Jan. 1, 2020
Stand-alone low-temperature refrigeration system	1,500	Jan. 1, 2020
Centralised refrigeration system	2,200	Jan. 1, 2020
Condensing unit	2,200	Jan. 1, 2020
Chillers	750	Jan. 1, 2025
Mobile refrigeration system	2,200	Jan. 1, 2025
Motor vehicle air-conditioning (MVAC)	150	Jan. 1, 2021 model year of vehicles
Domestic refrigeration	150	Jan. 1, 2025

# NEW ZEALAND & AUSTRALIA

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04







Australian Government  
Department of the Environment and Energy

## NEW ZEALAND

- Considering HFC phase-down to **reduce HFC consumption by +80% and HFC imports to < 260 KtCO2 by 2036**
- Support programs for alternative refrigerants (open for consultation).

Expected to come into force by **January 1, 2019**

## AUSTRALIA

- **HFC phase-down started on January,1 2018**
- **Objective: HFC emissions reduction by 85% by 2036**
- Compared to Kigali Amendment requirements: **lower baseline** (reflecting Australia's current demand), & **more frequent reduction steps**

**=> HFC phase-down pushing NZ & Australia's HVAC&R away from HFCs, creating market opportunities for natural refrigerants**

# SOUTH AFRICA

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05



**“What’s most important for us is to make sure that we leapfrog HFCs, [...] The good news is that alternatives to HFCs do exist,”** Obed Baloyi, Department of Environmental Affairs, Republic of South Africa

- South Africa intends to ratify the Kigali Amendment to the Montreal Protocol, which puts in place a global HFC phase-down pathway, before it comes into effect in January 2019.
- The government is putting in place a Climate Change Act, which **includes an HFC management plan**, said South Africa government representative at ATMOsphere Network Frigair 2018 (June, 8 2018, Johannesburg, South Africa)
- The Climate Act is already in the process of being developed and should go into parliament soon,” Baloyi said.
- Government’s priority is to leapfrog HFCs.



Obed Baloyi, chief director, chemicals management in the Department of Environmental Affairs, Republic of South Africa at ATMOsphere Network Frigair 2018 (June 8, Johannesburg, South Africa)

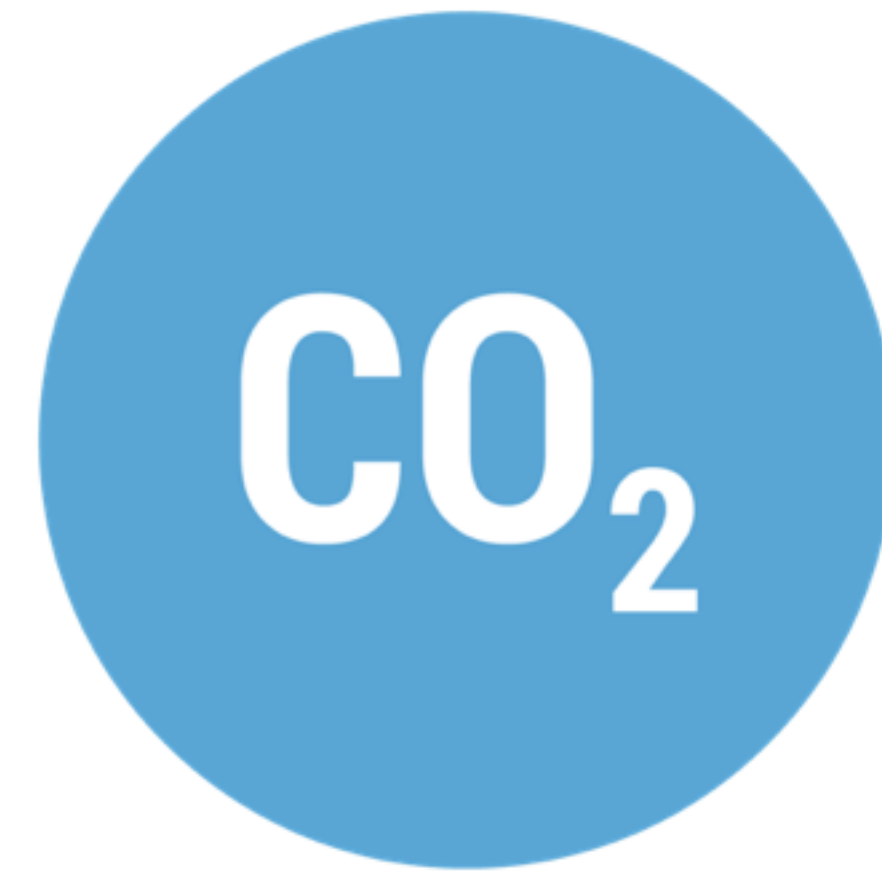
**JAPAN**

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**06**



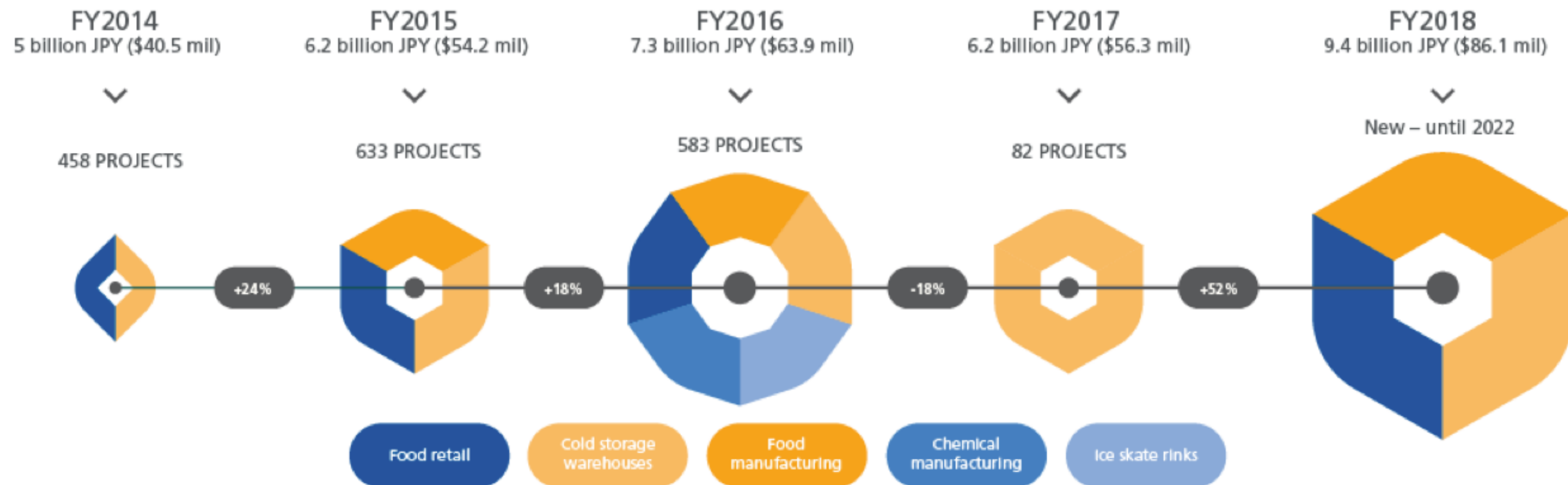
- **July 2017: CO<sub>2</sub> reclassified** under High Pressure Gas Safety Act
  - Move from the strictest level of Group 3 to the **least restricted level of Group 1**
  - **What does it mean?**
    - CO<sub>2</sub> equipment with **daily refrigeration capacity under 20 tons** does not require any government notification or permission (previously under 3 tons)
    - CO<sub>2</sub> equipment with **daily refrigeration capacity between 20-50 tons** will require a government notification (previously permission request as well);
- => OPPORTUNITY for larger CO<sub>2</sub> refrigeration (commercial and industrial) systems** to be introduced in the market, creating more options for end users.



Since 2014, Japan implemented a subsidy programme for natural refrigerant equipment - major driver for the growth.

## Renewed subsidy scheme running from 2018-2022

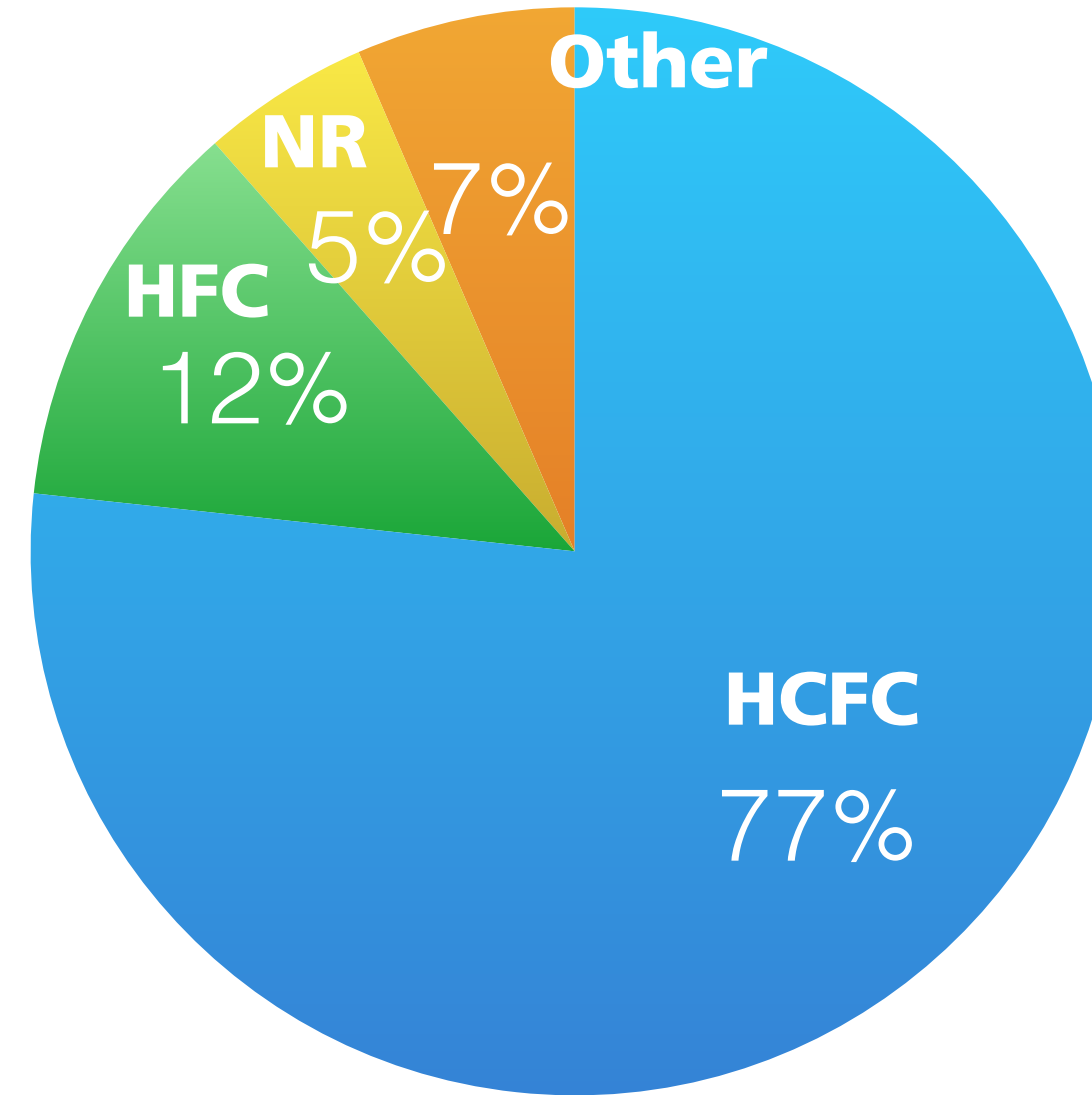
By 2022 (end of subsidy scheme) - achieve cost parity with conventional f-gas equipment, and accelerate the uptake of natural refrigerant-based technology.



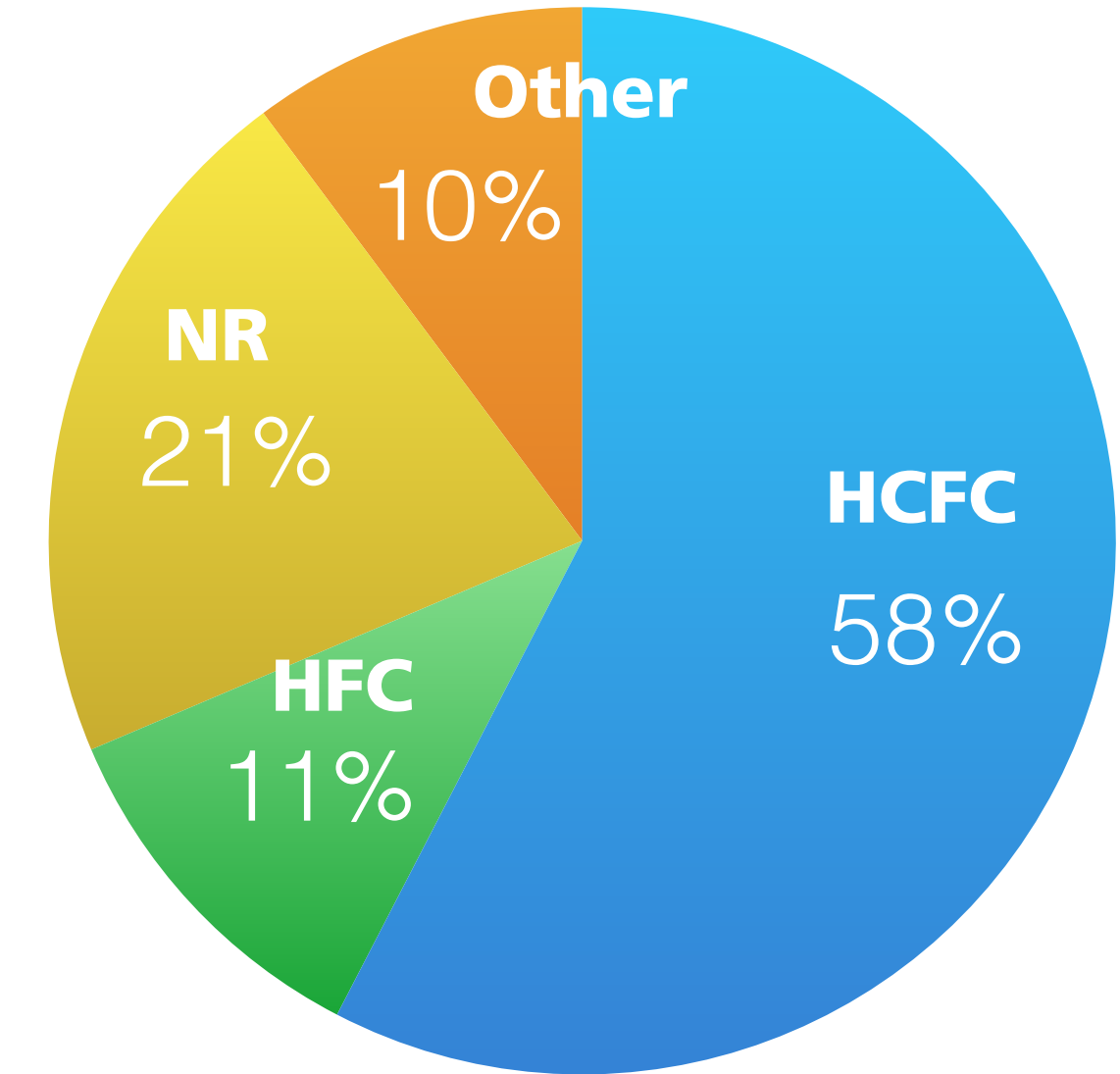
# JAPAN'S SUBSIDIES INCREASE USE OF NATREFS

- Japan's subsidy scheme in combination with expected to increase by **+50% use of natural refrigerants in cold stores by 2021**
- Japanese government currently looking at other options to reduce the use of HFCs to reach the targets of Kigali

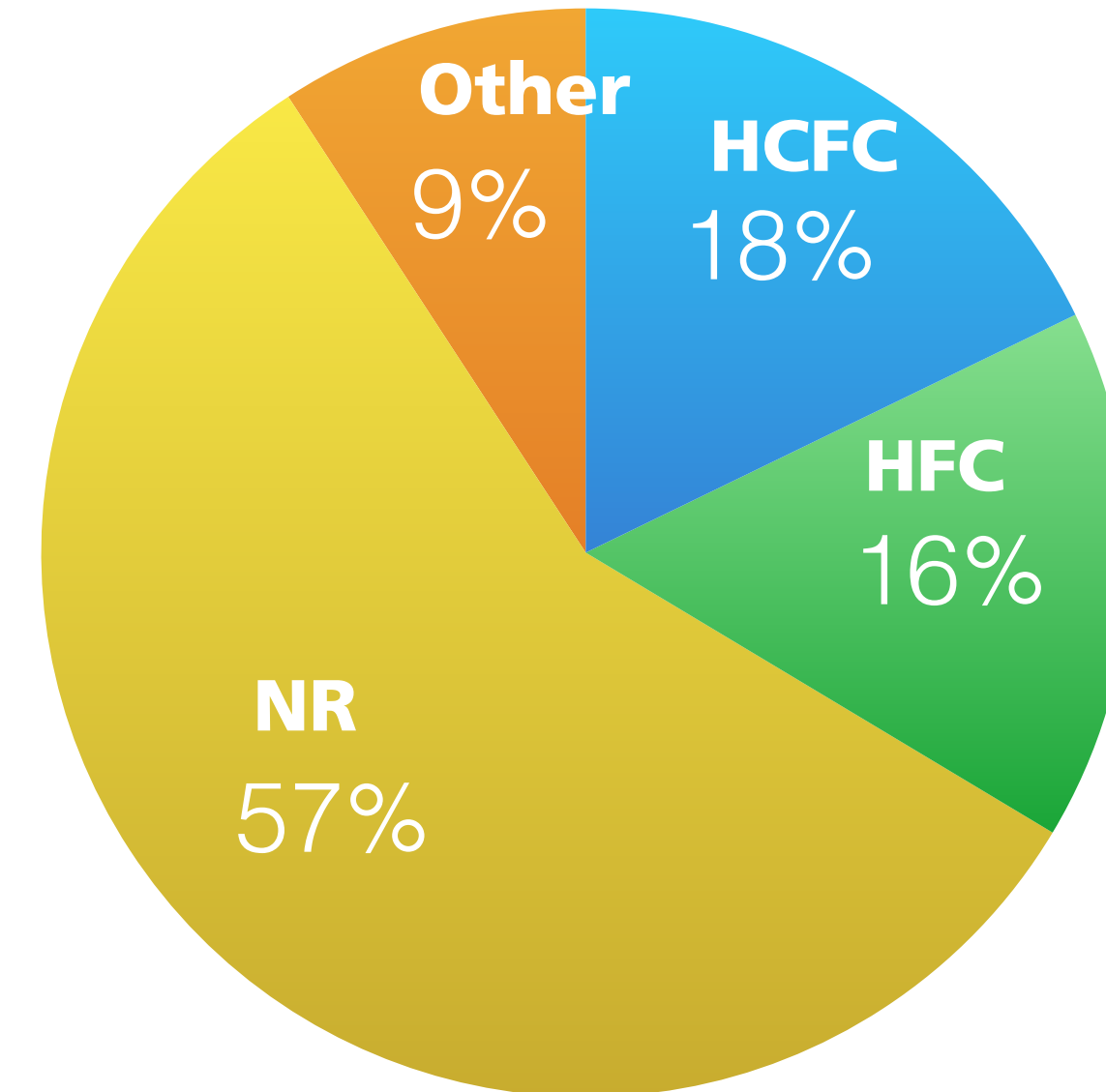
2013 (before subsidy program)



2016



2021



- **Legislation** is key in creating pressure in the industry overall to switch away from high GWP HFCs
- **HFC phase-down** will increase prices of HFCs globally = business case for natrefs
- **Revision of standards is key to allow wider use of energy efficient hydrocarbon technology**







**THANK YOU!**