

# shecco Base





# Policy trends for natural refrigerants

ATMOsphere China  
12 April 2018

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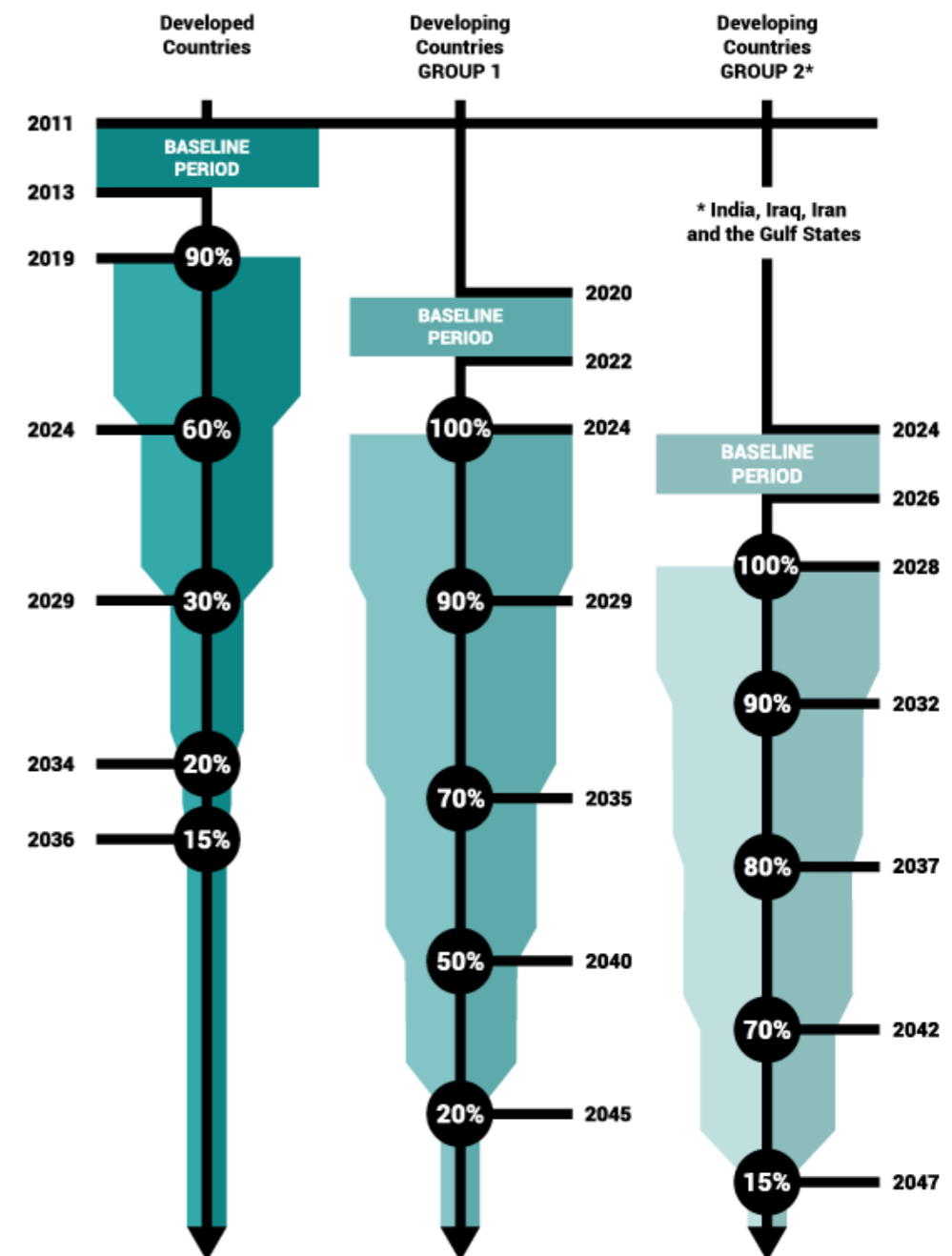
# POLICY TRENDS - INTERNATIONAL



# KIGALI AMENDMENT TO MONTREAL PROTOCOL

## Global phase-down of HFCs by 85% by late 2040s

- HFCs no longer a long-term viable solution
- HVAC&R sector = low-hanging fruit to reach Climate Change goals (avoiding almost 0.5°C warming)



# KIGALI - IMPLEMENTATION IS KEY



Refrigerants

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## Honeywell And United Nations Environment Sign Strategic Partnership Agreement

March 12, 2018

**WHO IS REPRESENTING NATURAL REFRIGERANTS????**

**LEVEL-PLAYING FIELD IS NECESSARY.**

## INTERNATIONAL STANDARDS

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



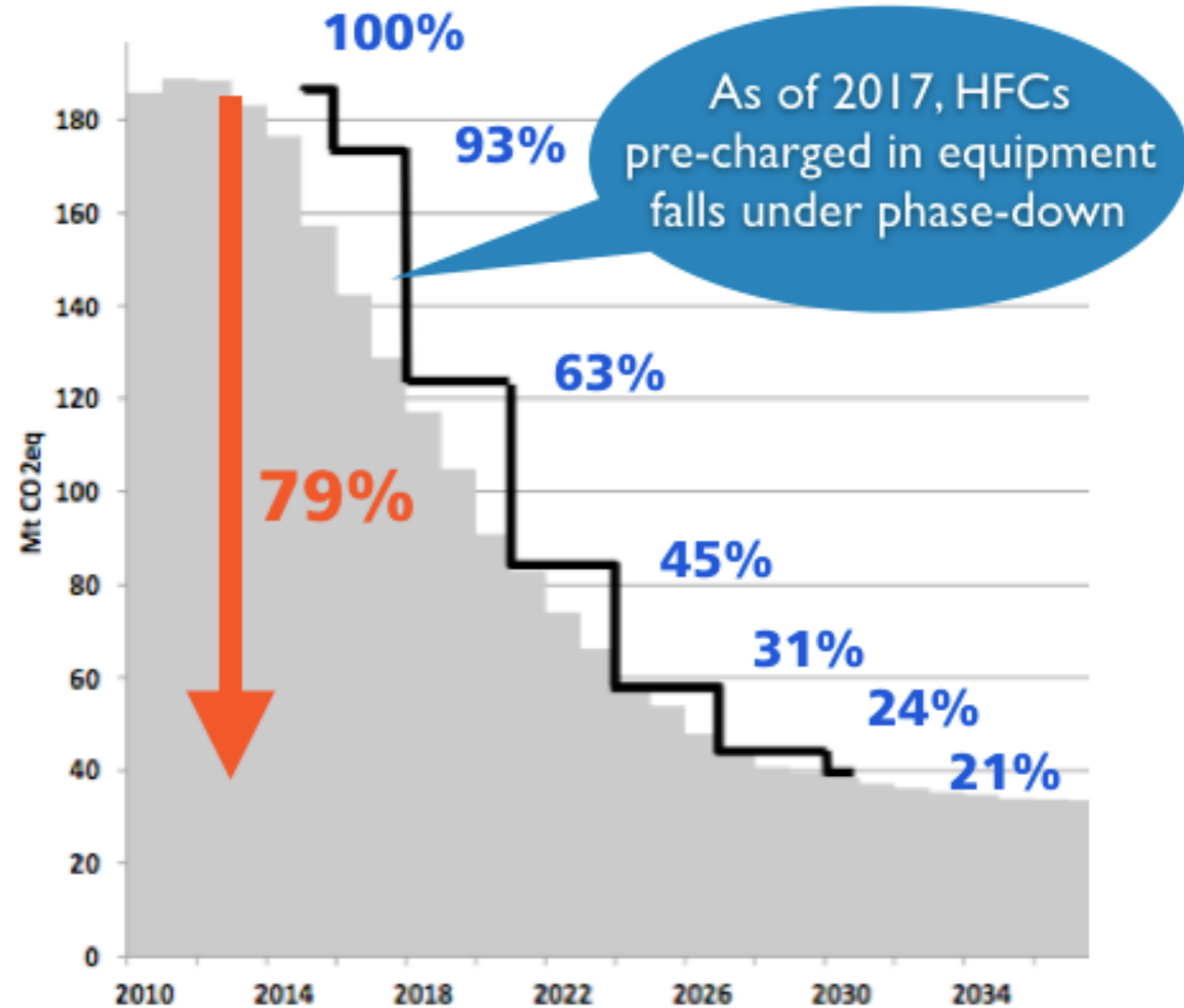
**LIFE FRONT:** EU project to remove **barriers posed by standards** to wider uptake of flammable refrigerants in refrigeration, air conditioning and heat pumps

# POLICY TRENDS - EUROPE



## Bans on HFCs with GWP > 150 approaching soon

- **2022** - hermetically sealed refrigerators and freezers for commercial use
- **2022** - multipack central systems for commercial use > 40kW





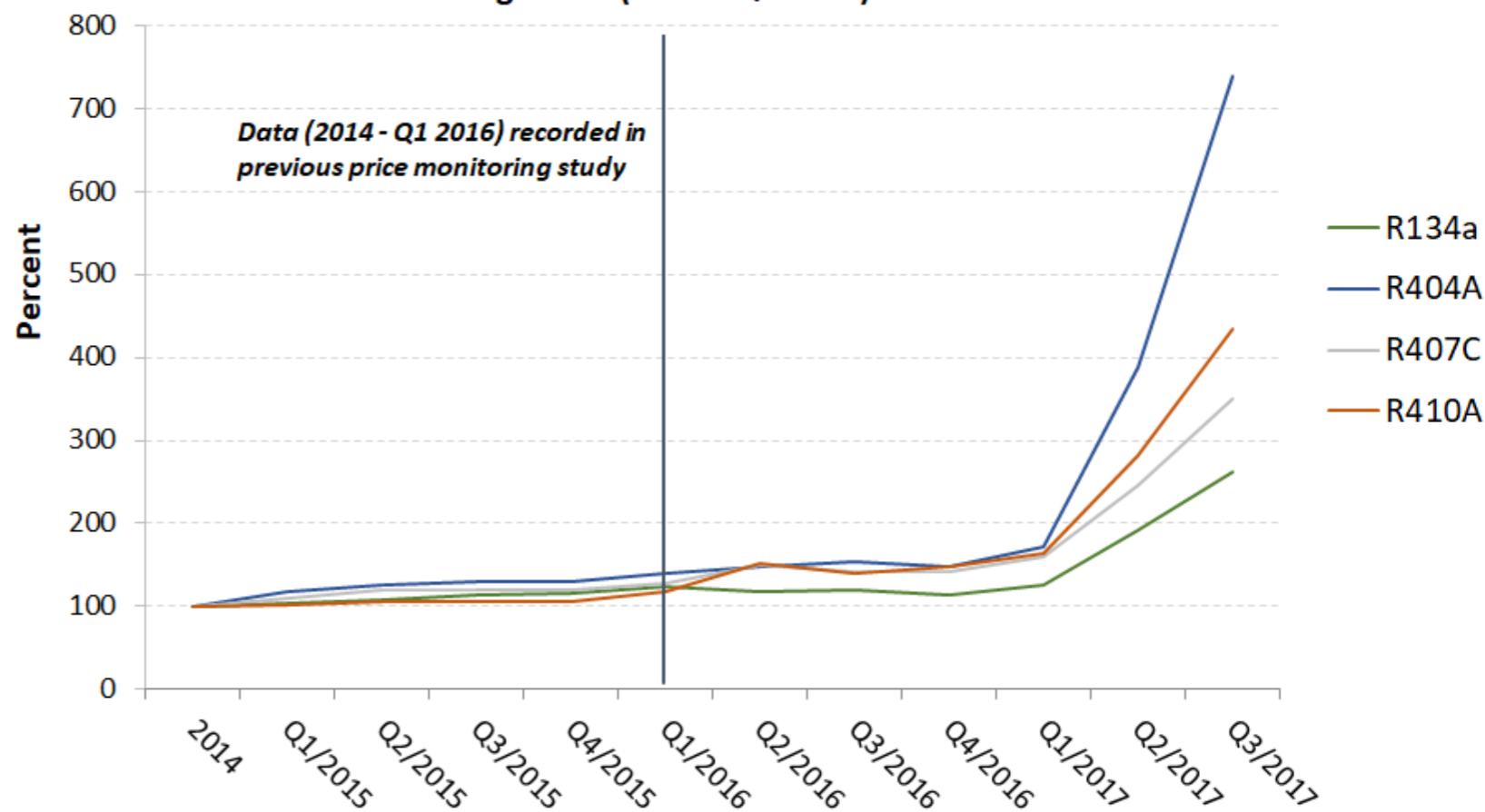
HFC prices started to rise in **mid-2017**

In 2017, 5x increase

In 2018, **20x** increase expected

Prices growing proportionally to GWP

Average purchase price (in €/t CO<sub>2</sub>e, indexed to 2014) for the most common refrigerants (2014 - Q3 2017)



Source:

# EUROPE: F-GAS POLICY AT NATIONAL LEVEL



**France** - considering a tax on HFCs, should enter in force as of 2019

Also revising national codes to allow use of A3 refrigerants in HVAC applications in public access buildings



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

In 2018: EUR 20/tCO<sub>2</sub>-eq



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

Ban on the use of HFCs in new equipment since 1 January 2006 (with exceptions)

# POLICY TRENDS - NORTH AMERICA



# US - UNCERTAINTY AT FEDERAL LEVEL

## US Administration under Trump

- Exited from Paris Agreement
- Head of EPA (Scott Pruitt): leading advocate against action on climate change
- Head of DOE (Rick Perry): ties to oil sector, climate sceptic

## Open questions and risks

- Ratification of Kigali Amendment?
- Role of EPA in enforcement of legislation?
- Investment in renewables, climate change programmes?
- Future of SNAP?



# EPA SNAP PROGRAM



- EPA's Significant New Alternatives Policy (SNAP) program lists alternatives (incl. natural refrigerants) to high GWP refrigerants AND delists the use of high GWP refrigerants.
  - **Hydrocarbons** listed as alternatives in number of applications, including commercial refrigeration.
  - **September 2016** SNAP published a rule to prohibit the use of certain high GWP fluorinated gases (R404A, R410A, R134a, and R407C).
- **August 2017:** U.S. Court of Appeals of Columbia - EPA cannot require companies to replace HFCs designated for HVAC&R equipment or other applications with low-GWP substances under the SNAP program.
  - **Long-term effects of this decision as well as the reaction by the EPA remain to be seen.**



## Short-Lived Climate Pollutant (SLCP) Reduction Strategy - From March 2017

Aims to reduce HFCs by 25% by 2020; by 40% by 2030;

## California Cooling Act - introduced on 7 Feb 2018 by Senator Lara

Target: To restrict the use of high GWP refrigerants & to introduce incentive program for lower GWP alternatives

## California Air Resources Board (CARB) adopts SNAP - adopted on March 2018

## California legislation expected to eventually influence federal level



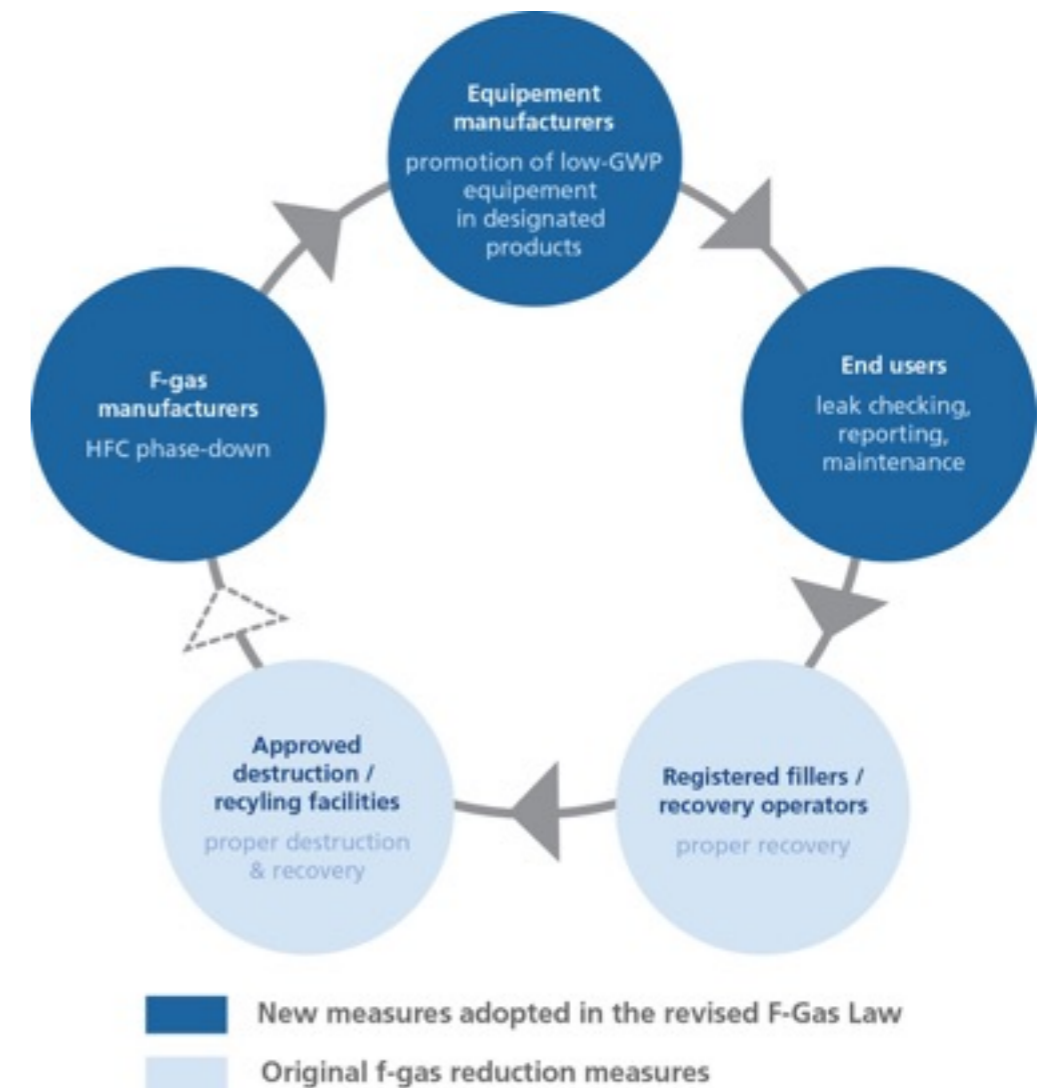
# POLICY TRENDS - JAPAN

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# JAPAN: F-GAS LAW

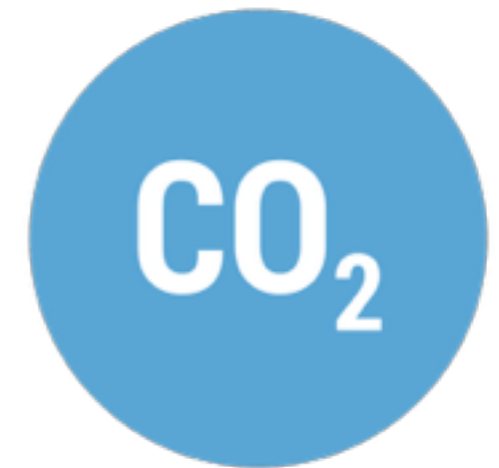
- Effective as of April 2015;
- Targets the entire life cycle of f-gases, from production to destruction;
- Reduced f-gas leakage from commercial equipment: periodical checks, maintenance, reporting etc.; proper refill and recovery; obligation of destruction;
- Promotion of low-GWP / non f-gases alternatives for designated products, incl. condensing units & refrigeration units > 1.5kW (target of average GWP 1500 by 2025).





# JAPAN: HIGH PRESSURE GAS SAFETY ACT

- **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

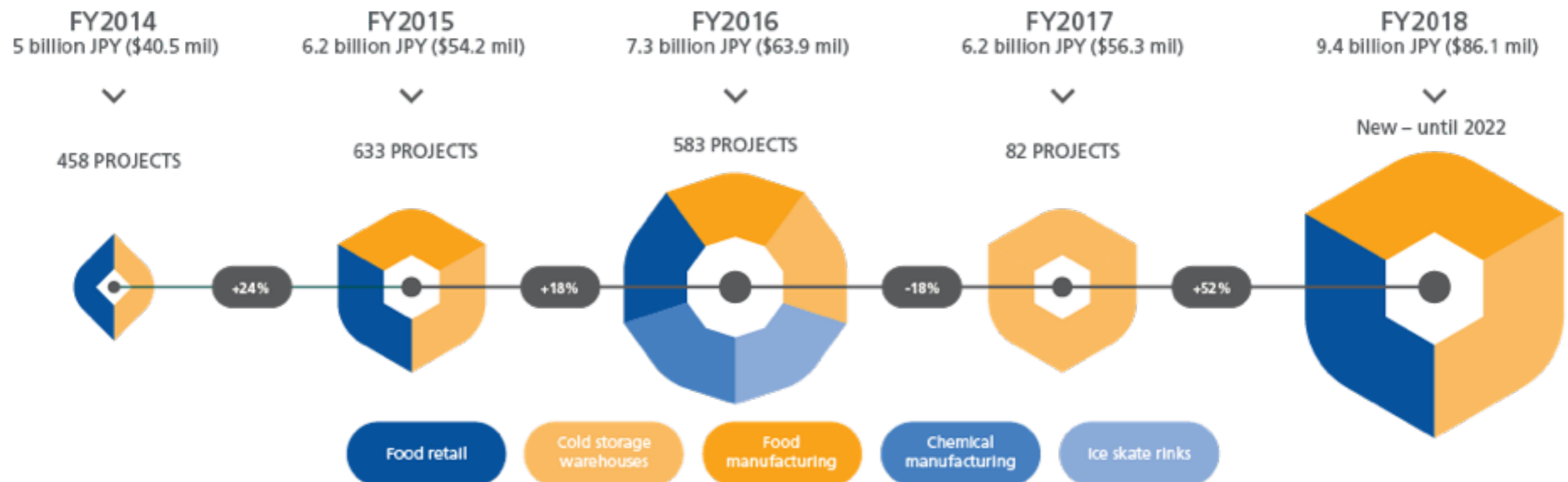


# JAPAN: SUBSIDIES TO INTRODUCE NAT REFS

Since 2014, World's most ambitious subsidy program for natural refrigerants

Current subsidy scheme program 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

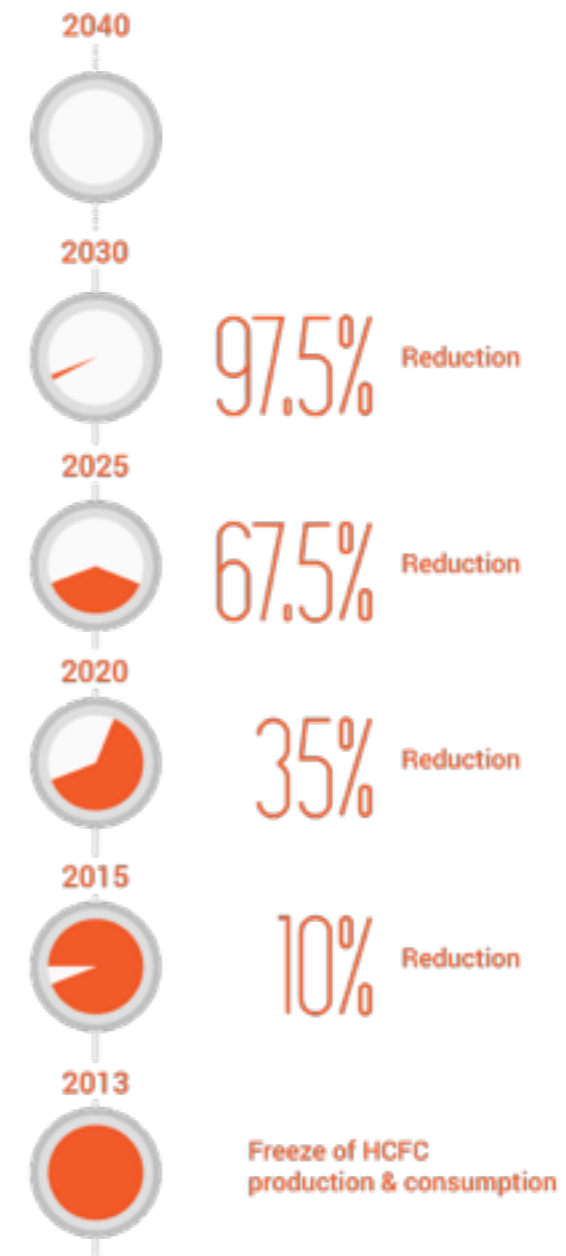


# POLICY TRENDS - CHINA



# CHINA: HCFCs PHASE DOWN SCHEDULE

- Phase-out of production and consumption of **HCFCs by 2030** = global impact
- At Montreal Protocol meetings **China pushing for revision of standards** to allow wider introduction of natural refrigerants
- Increasing **government support for natural refrigerants** in several sectors, especially room AC, heat pumps, commercial & industrial refrigeration



## CHINA: LIST OF RECOMMENDED SUBSTITUTES

### Natural Refrigerants recommended by MEP/FECO China in majority of targeted HVAC&R segments

- **R290** - Room air conditioners, Heat pump water heaters, Stand-alone refrigeration systems
- **R600a** - Stand-alone refrigeration systems
- **CO<sub>2</sub>** - Domestic heat pump water heaters, industrial or commercial heat pump water heaters, Industrial or commercial refrigeration systems (refrigerant or secondary refrigerant)
- **NH<sub>3</sub>** - Cold storage, condensing units, industrial refrigeration systems



# CONCLUDING REMARKS



## CONCLUSIONS

- Adoption of natural refrigerants: low-hanging fruit for climate goals
- Policy tools: Phase down, phase out, tax penalties, subsidies, tax incentives, capacity building and knowledge-sharing, etc.
- Barriers to reap full potential of natural refrigerants worldwide: Update on international standards, awareness raising, training gap...
- EU, Japan, California leading the way
- CHINA playing an increasingly important role globally



**Thank you very much!**

