



Updates on regulation and standards globally

ATMOsphere America

San Diego

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Overview

1. Global initiatives (Paris Agreement, Kigali)
2. Canada
3. China
4. Europe
5. Australia & New Zealand
6. Japan
7. Closing remarks

GLOBAL INITIATIVES





China, EU & Canada: new climate leaders?

- China, and EU are to agree a joint statement on the Paris agreement.
- **Draft statement leaks:** we will “forge ahead with further policies and measures” to implement national plans on cutting carbon.
- **Chancellor of Germany Angela Merkel:** “The cooperation of the European Union with China in this area will play a crucial role especially in regards to new technologies”.
- **“We will make our skies blue again”** Chinese Premier Li Keqiang, March 5, 2017, opening of the annual National People’s Congress.



Yesterday at #PetersbergDialogue, Canada, China and the EU announced a Ministerial meeting in September to move forward the #ParisAgreement

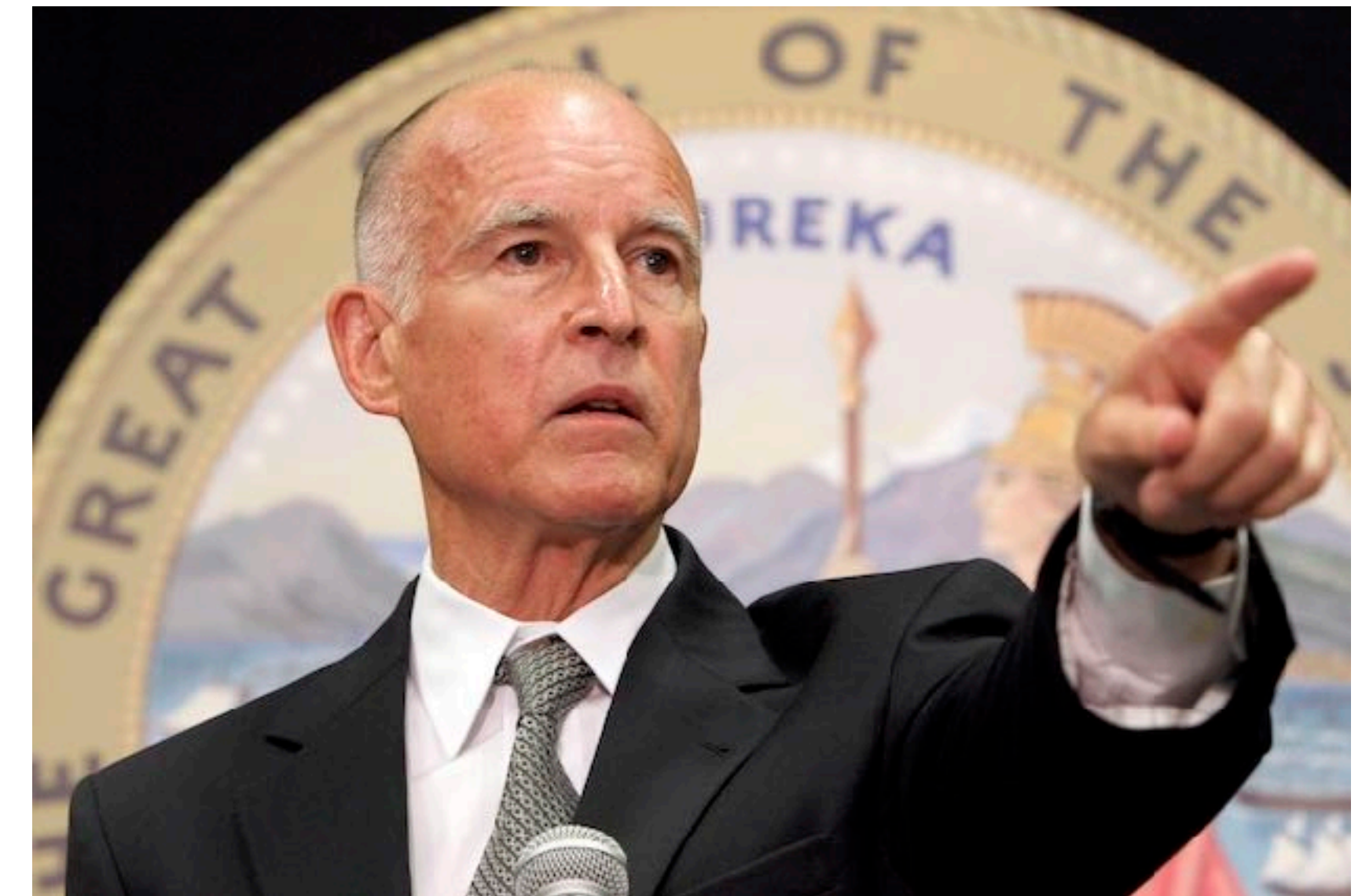
À l'origine en anglais





Will US environmental action shift to the state level, led by California?

- California Gov. Jerry Brown is in China since **Friday, June 2.**
- Will attend a Global climate summit and meeting with high-level Chinese officials, possibly including President Xi Jinping.
- **June 1:** Washington Gov. Inslee, New York Gov. Cuomo and California Gov. Brown announce formation of **United States Climate Alliance** to uphold the 2015 Paris Agreement.





- Key target: to prevent global temperature from rising more than 2 degrees celsius above industrial levels
- Each country submits their Nation Determined Contribution (NDC) to the Climate Change Secretariat, pledging their emissions reduction commitment
- Every 5 years: further emissions reduction can be scaled up
- Agreed on December 2015, entered into force on November 2016
- No direct bans on HVAC&R, BUT opportunities to access finance, link emissions reductions to Nat Refs, emissions trading, etc.



UNITED NATIONS  NATIONS UNIES

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Reference: C.N.735.2016.TREATIES-XXVII.7.d (Depositary Notification)

PARIS AGREEMENT
PARIS, 12 DECEMBER 2015

ENTRY INTO FORCE

The Secretary-General of the United Nations, acting in his capacity as depositary, communicates the following:

On 5 October 2016, the conditions for the entry into force of the above-mentioned Agreement were met. Accordingly, the Agreement shall enter into force on 4 November 2016, in accordance with its article 21, paragraph 1, which reads as follows:

“This Agreement shall enter into force on the thirtieth day after the date on which at least 55 Parties to the Convention, accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession.”

5 October 2016



COP22 was held in Marrakech in December 2016: focus on Implementation Mitigation and Finance

In 2017: COP23 hosted by Fiji, held in Bonn, Germany. Focus on Oceans

Finance to the Green Climate Fund expected to increase: possible **funding** opportunities for natural refrigerants as mitigation to climate change. Key is to demonstrate energy efficiency



Changing the HVAC&R Industry globally?





Kigali Amendment: the most practical step towards mitigating climate change.

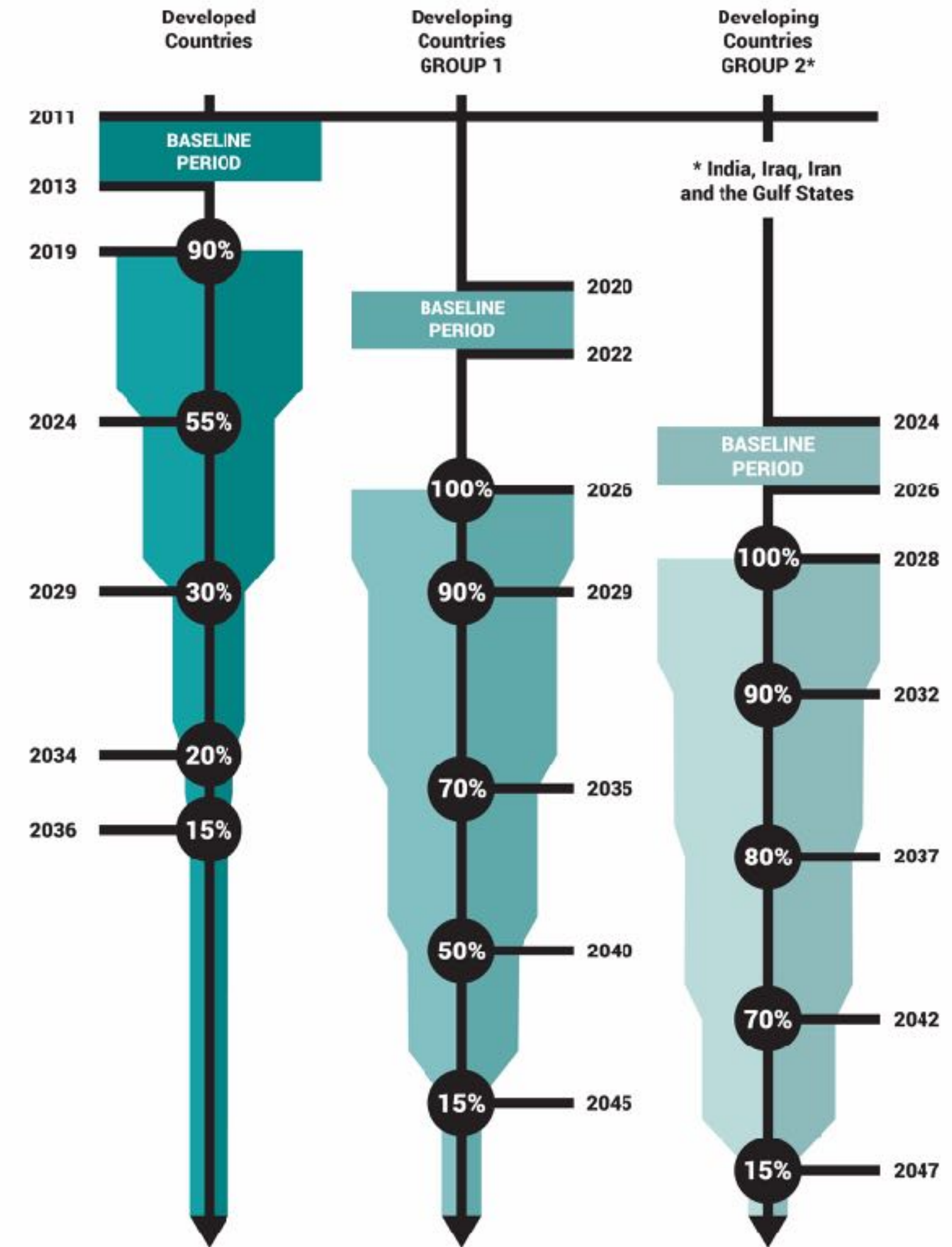
- Positive signal to the market: HFCs on their way out **globally**
- Global phase down will span the next 30 years
- Phase-down affecting 18 substances - average GWP of 2500
- Multilateral Fund to come up with guidelines for Finance
- If fully implemented, it could stop global warming by 0.5 degrees
- Exemptions for high-ambient temperature countries still remain on the table

KIGALI AMENDMENT: SCHEDULE



Targets by groups of countries under Montreal Protocol

Based on baseline period, against which reductions are measured





Ratification: By 1 January 2019 latest.

Top priorities: Standards (initiated by China), access to finance, exemptions

Next Key Meetings

- 11-14 July 2017: Workshop on standards for low GWP alternatives to HFCs (Bangkok, Thailand)
- 20-24 November: 29th Meeting of the Parties of the Montreal Protocol (Montreal, Canada)



Ratification of the Kigali Amendment to the Montreal Protocol

- Marshall Islands as the first country to deposit its instruments of ratification (2 March 2017), followed by Mali (31 March 2017)
- European Commission published its draft decision paving the way for the Council of the EU to ratify the Kigali Amendment to the Montreal Protocol (2 February 2017)



- Standard IEC 60335-2-89 currently recommends charge limit of Hydrocarbons at 150grams
- International Electrotechnical Commission (IEC) working group on household and similar electrical appliances currently reviewing safety standards
- Agreement on recommended limit expected by 2018: raising the limits to 500 grams likely
- 26 Working Group members (including Germany, NZ, Japan, US)
- If limit is raised, national standards will need a review in turn
- **Potentially opening up further opportunities to hydrocarbons globally**
- The first official vote to adopt the new standard will be next October during the Plenary Meeting in Vladivostok, Russia.
- It is likely that the vote will be held in 2018.



CANADA

02





HFC phase-down:

Canada implementing HFC phase-down until 2030, including reporting obligations

Nation wide carbon pricing:

- **May 18:** Environment and Climate Change Canada released the Technical Paper on the Federal Carbon Pricing Backstop (overview of the prospective federal carbon emissions pricing system)
- Follows the publication of the **Pan-Canadian Framework on Clean Growth and Climate Change** (Dec. 2016)
- Commits to pricing carbon emissions by 2018, with increasing stringency over time.

Canada's Proposed GWP Limits, by Product

PRODUCT	USE	DATE	MAXIMUM GWP OF REFRIGERANT
Stand-alone medium-temperature refrigeration system with internal temperature at or above 0°C.	Commercial or industrial	Jan.1 2020	700
	Residential	Jan.1 2025	150
Stand-alone low-temperature refrigeration or industrial system with internal temperature of less than 0°C but not less than -50°C.	Commercial or industrial	Jan.1 2020	1,500
	Residential	Jan.1 2025	150
Centralized refrigeration system with a capacity greater than 20 kW, maintaining an internal temperature greater than or equal to -50°C.	Commercial or industrial	Jan.1 2020	1,500
Condensing unit with a capacity less than or equal to 20 kW, maintaining an internal temperature greater than or equal to -50°C.	Commercial or industrial	Jan.1 2020	2,200
Chiller that has a compressor, an evaporator and a secondary coolant (not an absorption chiller).	Commercial or industrial	Jan.1 2025	700
Mobile refrigeration system	Commercial or industrial	Jan.1 2025	2,200

CHINA

03





- Updated list of recommended substitutes for R22 in refrigeration systems: Propane, Isobutane, CO₂, NH₃, Difluoromethane*
- Air pollution and air quality has become a priority for the Chinese Government
- Paris Agreement: China National Determined Contribution (NDC) include a commitment to peak CO₂ emissions by 2030. Most recent studies: China CO₂ emissions have already stopped increasing and reached peak levels.
- At MOP28 China put forward a Conference Room Paper to reviews **standards** (IEC 60335-2-40)
- Chinese Government currently reviewing list of acceptable alternatives to HCFCs before final publication: opportunity to leapfrog to natural refrigerants

*(only to the products t-designed and manufactured following GB4706 and GB9237)



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
- **CO₂** - Domestic heat pump water heaters, industrial or commercial heat pump water heaters, Industrial or commercial refrigeration systems (refrigerant or secondary refrigerant)
- **NH₃** - Cold storage, condensing units, industrial refrigeration systems



EUROPE

04





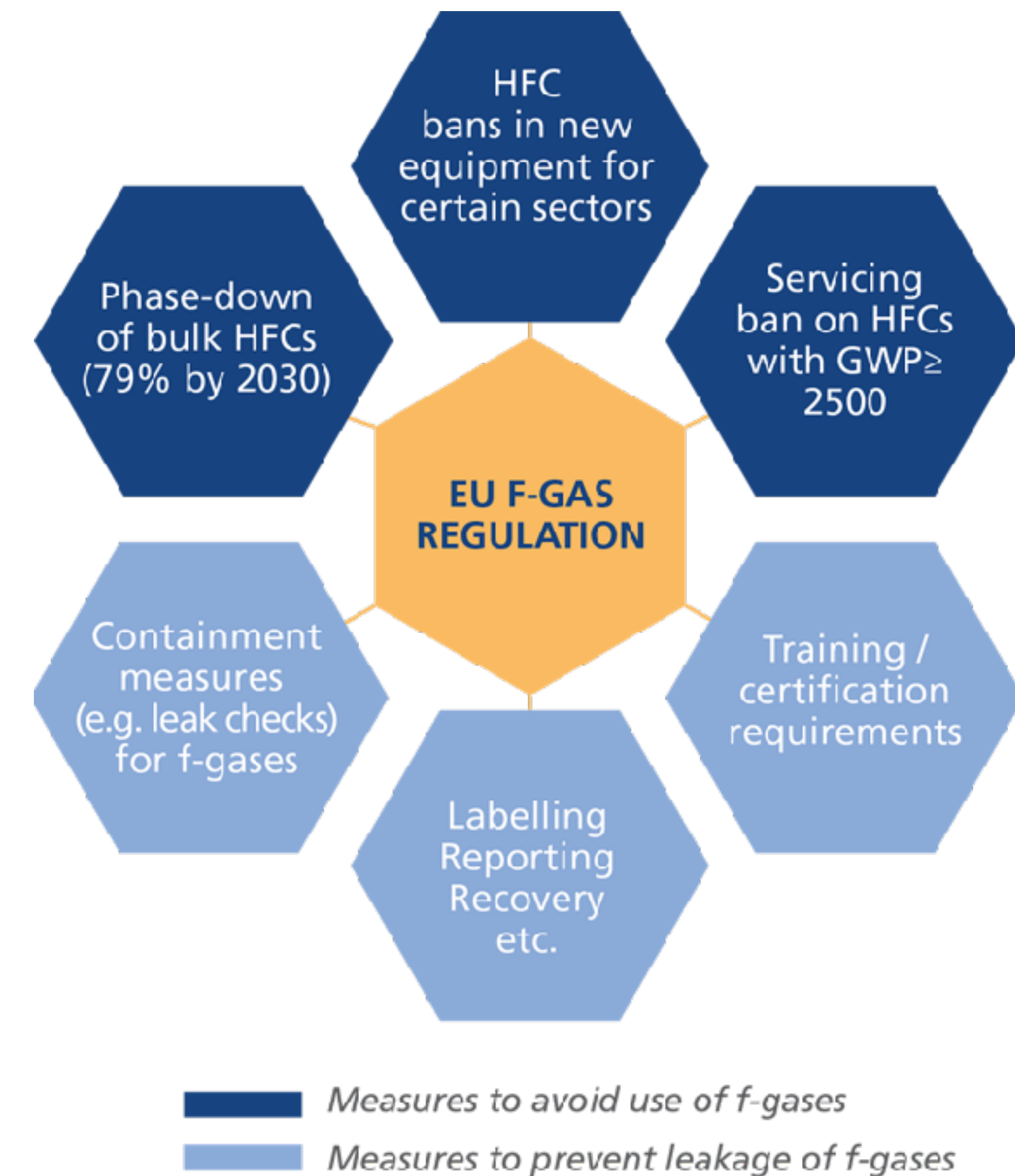
Entered into force in 2015

Introduced a number of measures to limit F-gas emissions







Aims to reduce HFC emissions by 79% by 2030 (compared to 2009-2012)

= the average GWP of HFCs will have to fall from today's 2,000 to about 400 by 2030 across all sectors

Key elements of the F-Gas Regulation





	Sector	GWP limit	Year
	Domestic refrigeration	150	2015
	Stationary refrigeration (except < -50°C)	2500	2020
	Hermetically sealed commercial refrigeration	150	2022
	Centralized commercial refrigeration ($\geq 40\text{kW}$), except in the primary refrigerant circuit of cascade systems where f-gases with a $\text{GWP} < 1500$	150	2022
	Movable room AC	150	2020
	Single split AC (< 3kg of f-gases)	750	2025



Report reveals early effects of the EU F-Gas Regulation

Looks at the **impacts on the European businesses** (qualitative & quantitative analysis)

Evaluates the **effects on other legislative frameworks**, incl. Montreal Protocol





Report: F-Gas Regulation shaking up the HVAC&R Industry (by shecco for Green Group in the European Parliament)

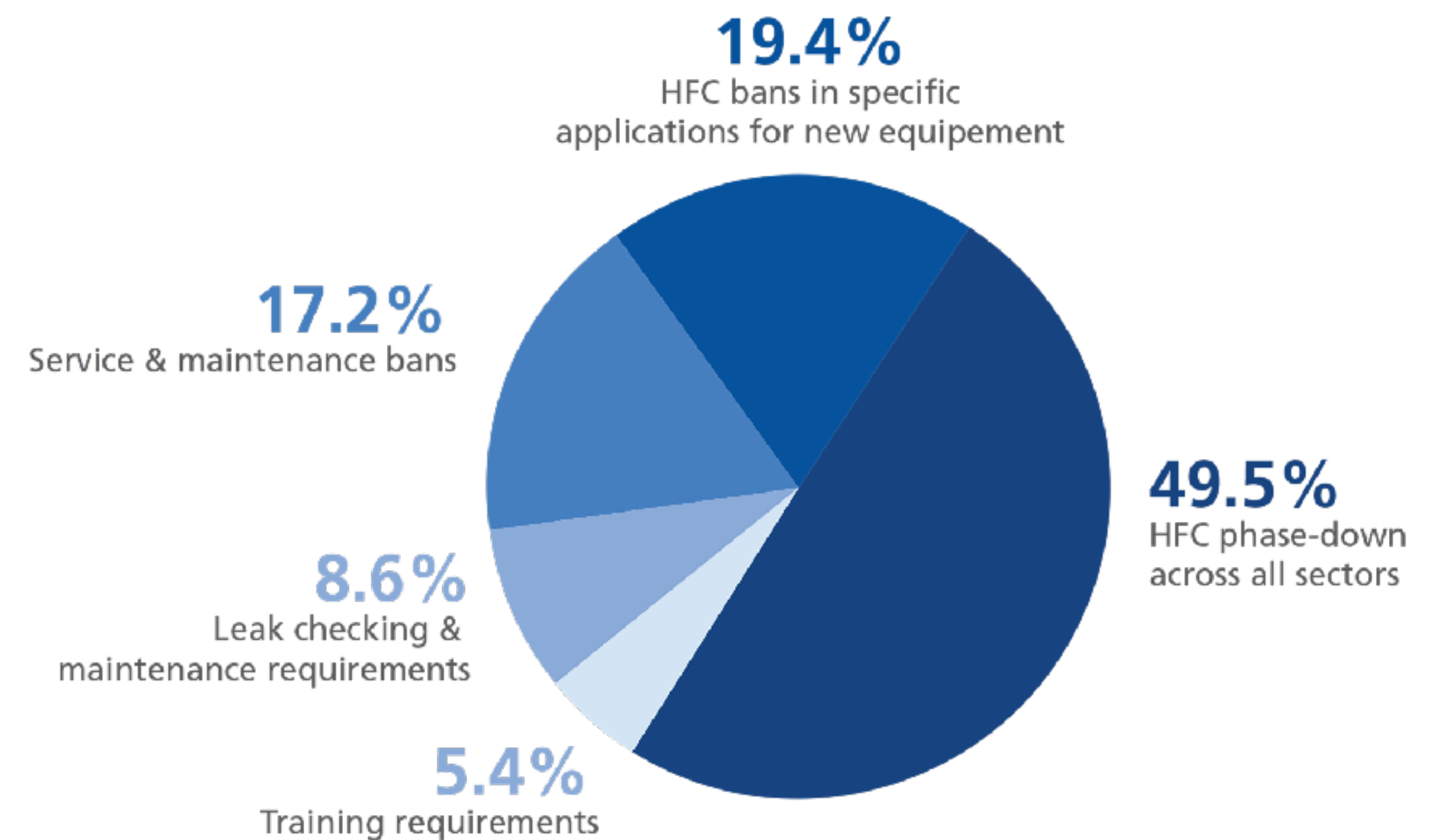
230 industry representatives participated in survey for the F-Gas Report

Industry took **early action**: 73% of respondents before the F-Gas Regulation came into force

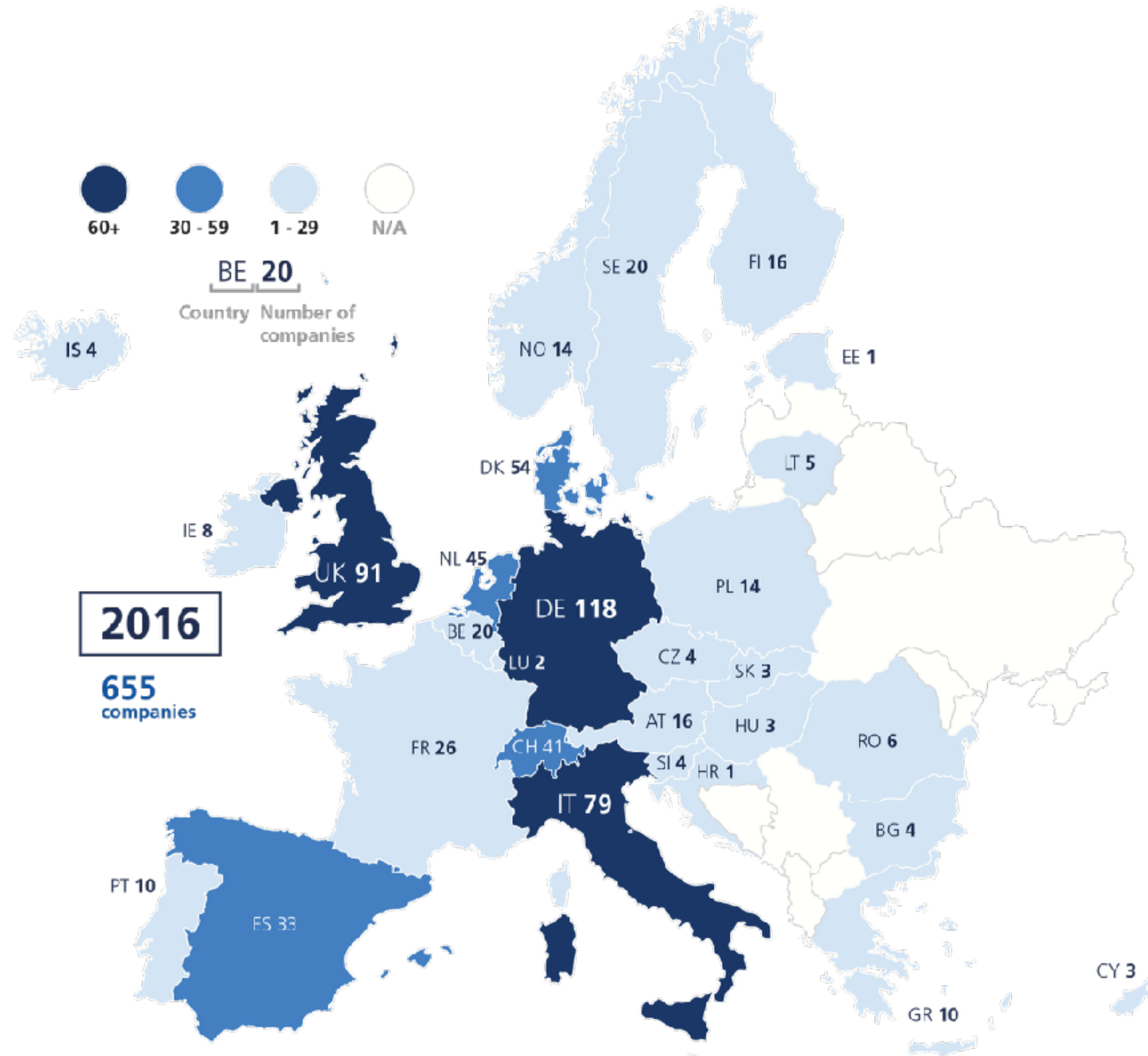
HFC phase-down is seen as the most significant game-changer for the industry overall

Sector-specific HFC bans seen as the most effective measure driving the industry forward

F-Gas Regulation measures that the industry believes to have the most significant impact on HFC reduction



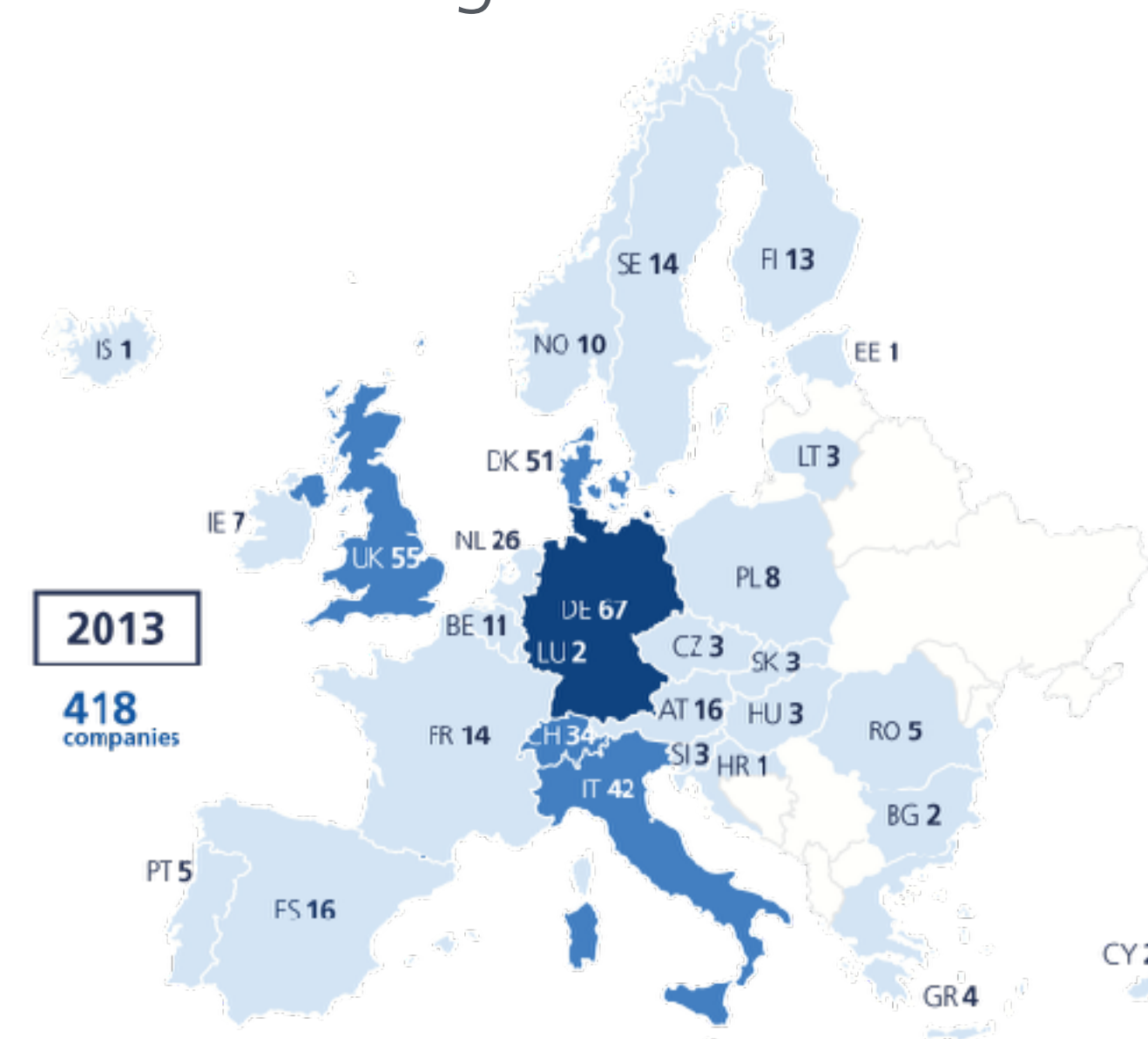
EUROPE: INDUSTRY WORKING WITH HFC ALTERNATIVES GROWING



F-Gas Report survey: **Over 650 companies** work with natural refrigerants (HFC alternatives) in the EU, Norway, Switzerland and Iceland

Southern European countries are increasingly investing in this technology

First-movers were able to benefit from their competitive advantage across the EU and beyond





Next Steps

Review process of the Regulation kicked off end 2016

Review may result in **extended list of HFC bans** in other applications

European Commission currently considering options. In November 2016 it published reports on:

- standards
- training





Legislative timeline

- **November 30, 2016:** Proposal announcement
- Package of 40 planned measures to strengthen and standardise the **EU's energy market**.
- Target: Cut CO2 emissions by at least 40% by 2030.
- Dec. 2016: EU institutions agreed to achieve a substantial progress and, where possible, a **delivery before the end of 2017**.
- Legislative work is ongoing:
 - **December 2016:** Joint Declaration on the EU's legislative priorities for 2017 include the **Energy Efficiency Directive** and the **Energy performance of buildings Directive**.
 - **March 22, 2017:** The Council/ Parliament provisional agreement reached for **energy efficiency labelling**.
 - **June 19-25, 2017:** European Union Sustainable Energy Week by the European Commission (Brussels). Energy stakeholders will debate on the policy developments, best practices and sustainable energy ideas.



AUSTRALIA & NEW ZEALAND

05





Australian Government

Department of the Environment and Energy

- **March 30, 2017:** New f-gas legislation introduced in Australia amending the **Ozone Protection and Synthetic Greenhouse Gas Management (OPSGGM)** Act by adding an HFC phase-down plan.
- A statutory phase-down of HFC imports will be implemented, commencing **January 2018**, and will reduce **HFC emissions by 85% by 2036**.
- The phase-down is more ambitious than the Kigali requirements: **lower baseline** (reflecting Australia's current demand), & **more frequent reduction steps**.



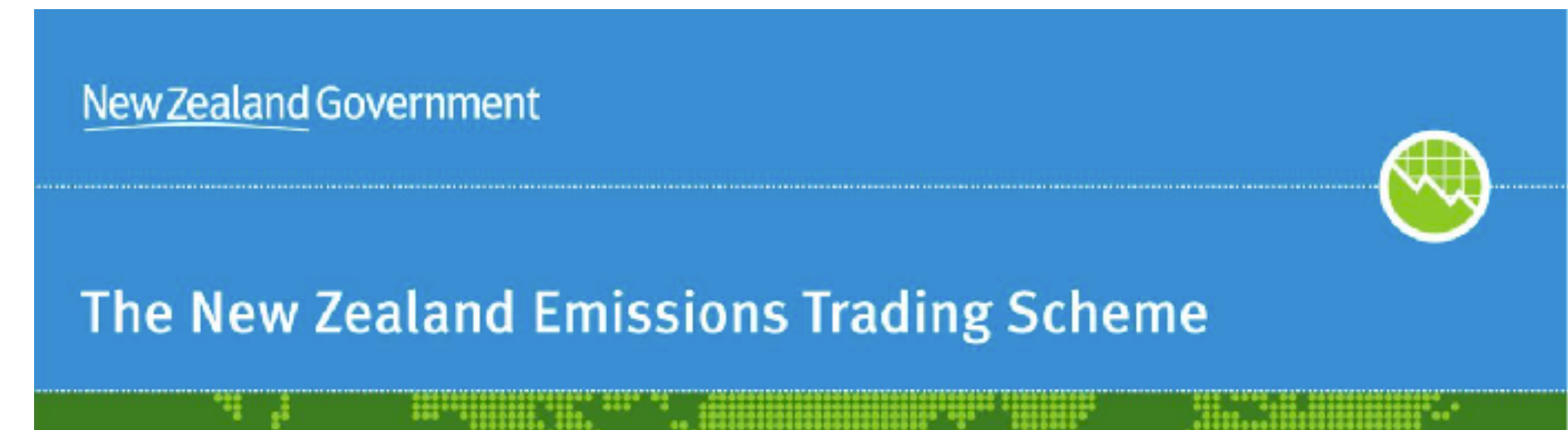
- The phase-down has a lower baseline and more frequent reduction steps than the Kigali requirements.
- New Zealand HFC phase-down plan includes:
 - HFC import licensing system;
 - Permit system for the exportation of HFCs and imports of recycled HFCs;
 - Support programs for alternative refrigerants (open for consultation).
- Targets: reduce HFC consumption by +80% and HFC imports from around 1,340 KtCO₂ to < 260 by 2036.
- **Open consultation until June, 23.**
- Will come into force by **January 1, 2019.**



Ministry for the
Environment
Manatū Mō Te Taiao



- Incentivizes a move to alternative refrigerants, but not sufficient to meet NZ Kigali obligations.
- Proposed new version includes changes for HFCs and HFOs:
 - **Stationary Energy and Industrial Processes regulation:** Clarifies the definition of importing HFCs or PFCs in bulks (impact on HFCs importers in small containers for recharging and servicing systems);
 - 2 HFOs added to the list under NZ ETS rules;
 - Extension of the list of goods subject to New Zealand's Synthetic Greenhouse Gas (SGG) Levy (mostly HFCs and R32 in motor vehicles).
- **Will into force by January 1, 2018.**

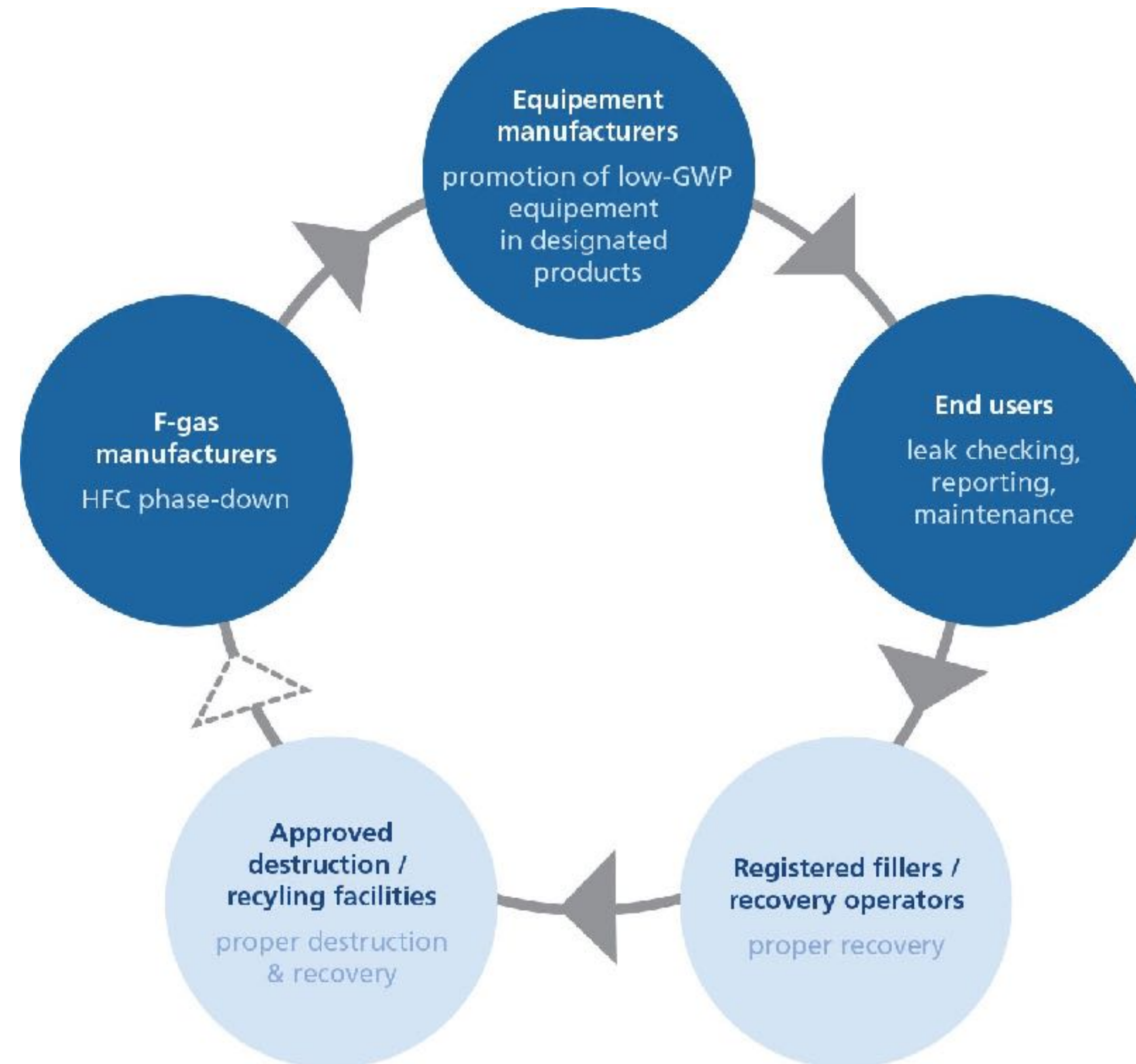


JAPAN

06








JAPAN: REVISED F-GAS REGULATIONS



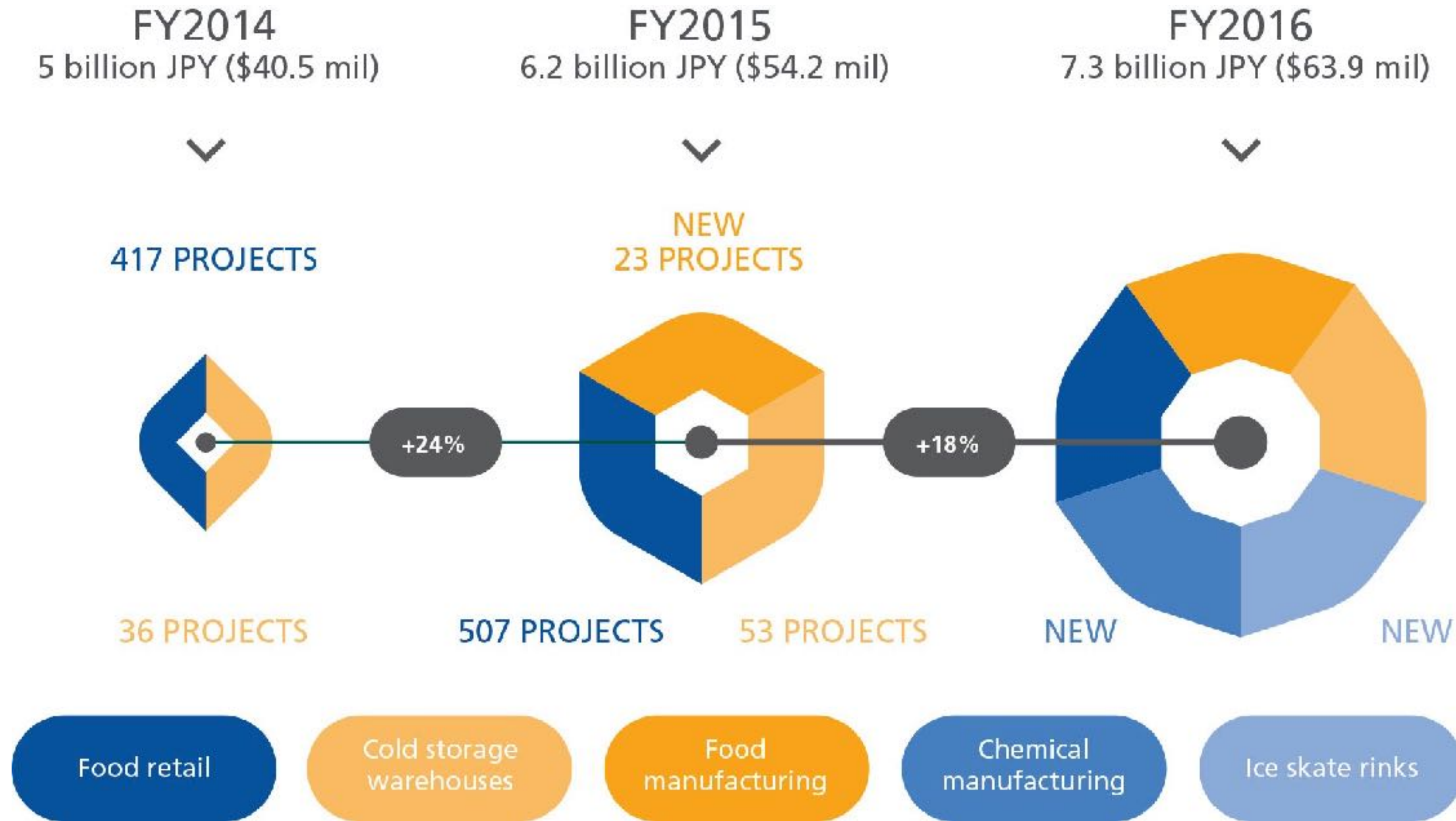
-  New measures adopted in the revised F-Gas Law
-  Original f-gas reduction measures

JAPAN: TARGETS PER APPLICATION



Designated products	Present refrigerant (GWP)	Target value (GWP)	Target year
 room air conditioning	R410a (2090) R32 (675)	750	2018
 commercial air conditioning (offices & stores)	R410a (2090)	750	2020
 condensing units and refrigeration unit > 1.5kW	R404a (3920) R410a (2090) R407c (1774) CO ₂ (1)	1500	2025
 cold storage warehouse (above 50,000 m ³)	R404a (3920) NH ₃ (0)	100	2019
 mobile air conditioning	R134a (1430)	150	2023

JAPAN: SUBSIDIES INCREASING.. BUT CHANGING FOCUS



For FY2017, strong focus on Industrial refrigeration (Cold storage, warehouses)

Closing remarks



- **Paris Agreement:** New world order on Climate change policies. China and the EU as global leaders, California a key stakeholder in the US.
- Global HFC phase down is here = **opportunities for natural refrigerants in new markets**
- **Swift policy action can facilitate leap frogging** and can avoid locking in the use of high GWP refrigerants & additional cost
- **Key topics in 2017 globally: Access to finance, standards**
- **Specific challenges in each market**