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SUSTAINING OUR ATMOSPHERE

Legislative update from the EU and Japan



ATMO
sphere
business case
natural refrigerants
June 18-19, 2014 - San Francisco

San Francisco, 19 June 2014

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Agenda

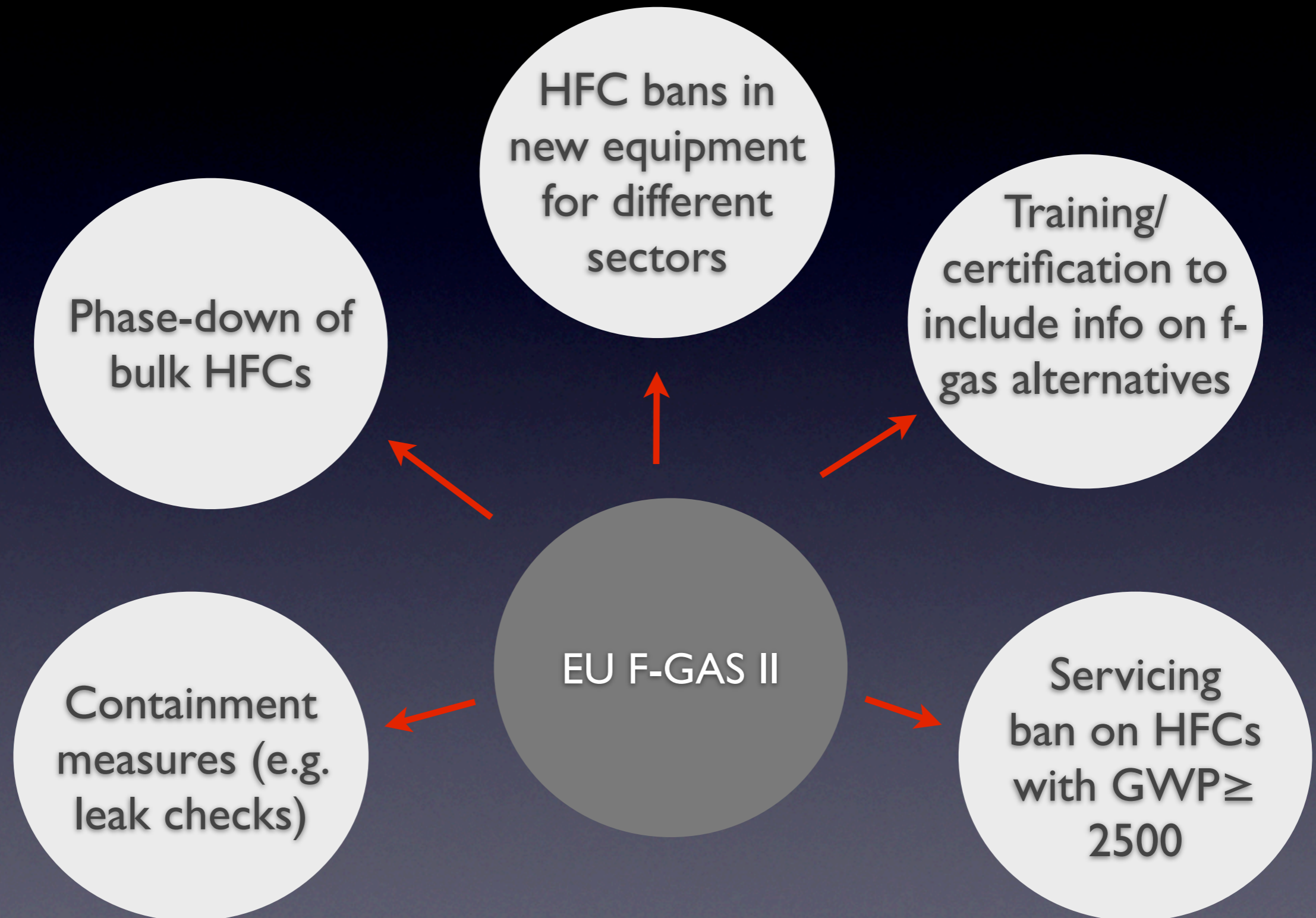


F-gas action:

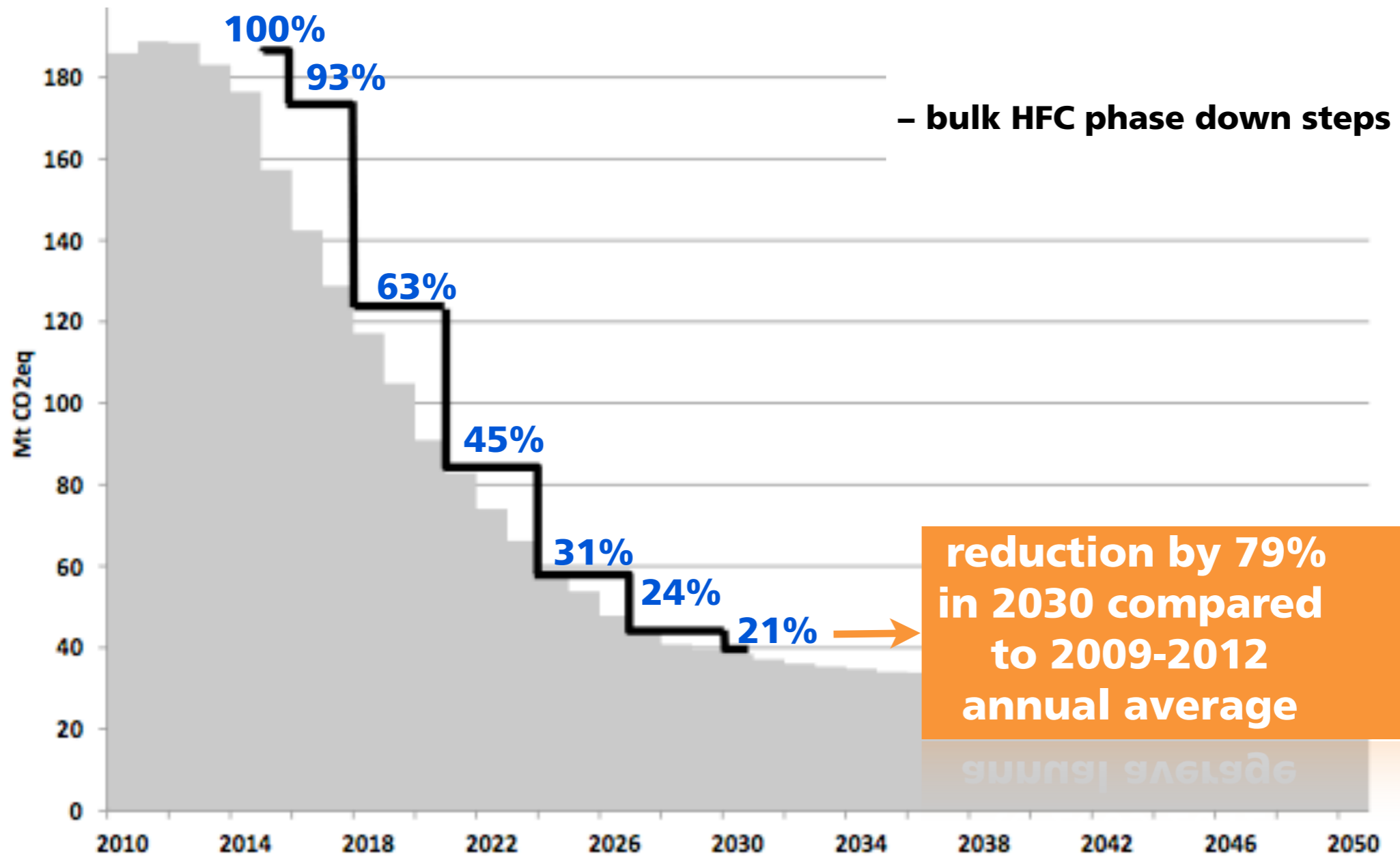
- ✓ **EU-level** - the new EU F-Gas Regulation
- ✓ **National level (Europe)** - HFC taxes and incentives for natural refrigerants
- ✓ **Japan** - update on revision of F-Gas measures

EU level action:
the new EU F-Gas Regulation (F-Gas II)

EU F-Gas II Regulation - main elements



EU F-Gas II - bulk HFC phase-down steps

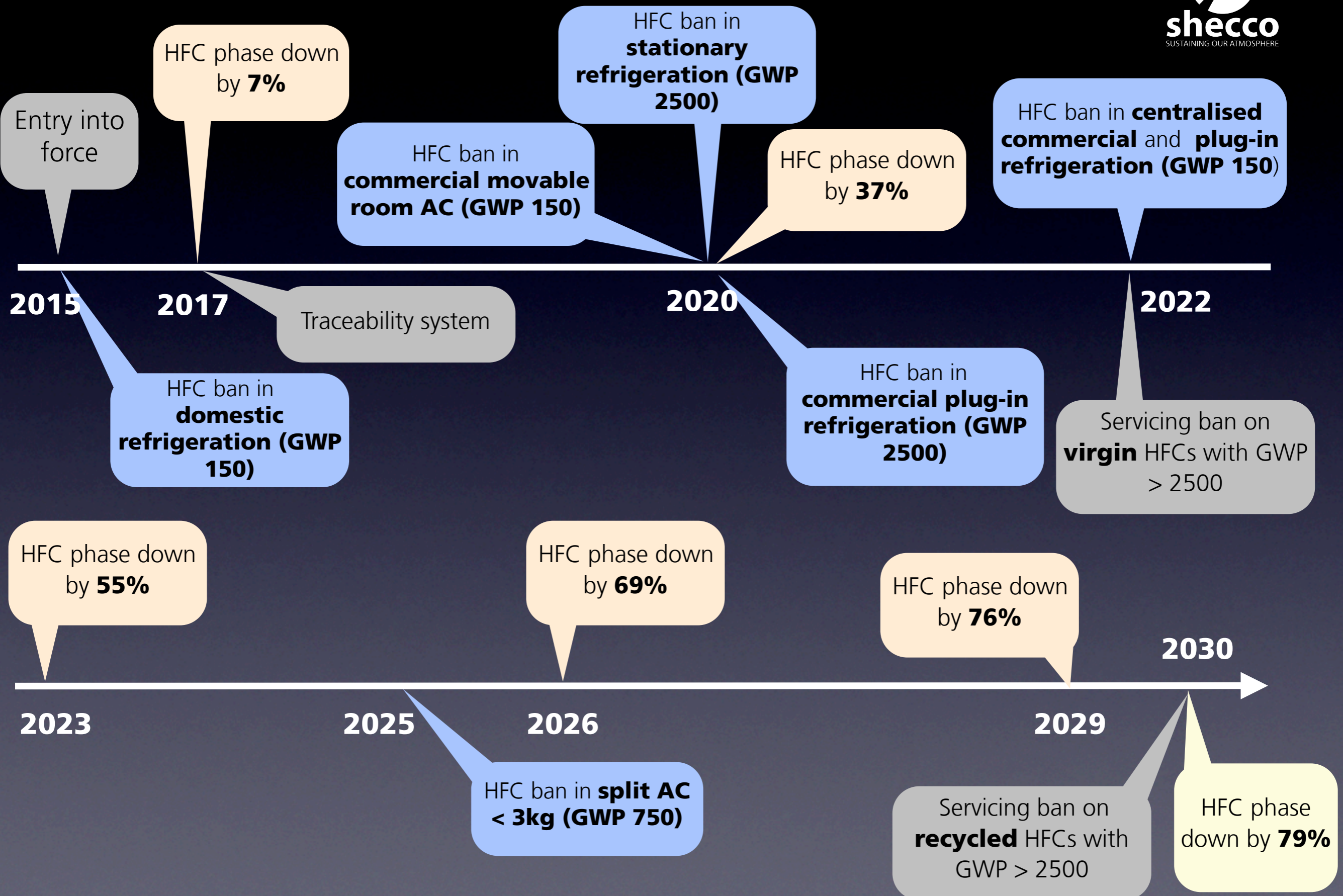


EU F-Gas II - HFC bans



SECTOR (SUB-SECTOR)		GWP limit	As of (year)
1	Domestic refrigeration	150	2015
2	Refrigerators and freezers (hermetically sealed) for commercial use	2500	2020
		150	2022
3	Movable room AC (hermetically sealed)	150	2020
4	Stationary refrigeration, except equipment intended for application design to cool products to temperatures below -50°C	2500	2020
5	Multipack centralised commercial refrigeration systems with capacity $\geq 40\text{kW}$ that contain f-gases with $\text{GWP} \geq 150$, except in the primary refrigerant circuit of cascade systems where f-gases with a $\text{GWP} < 1500$ may be used	150	2022
6	Single split AC systems containing less than 3kg of f-gases	750	2025

Timeline of (some) EU F-Gas II measures



Opportunities in EU F-Gas II review clause

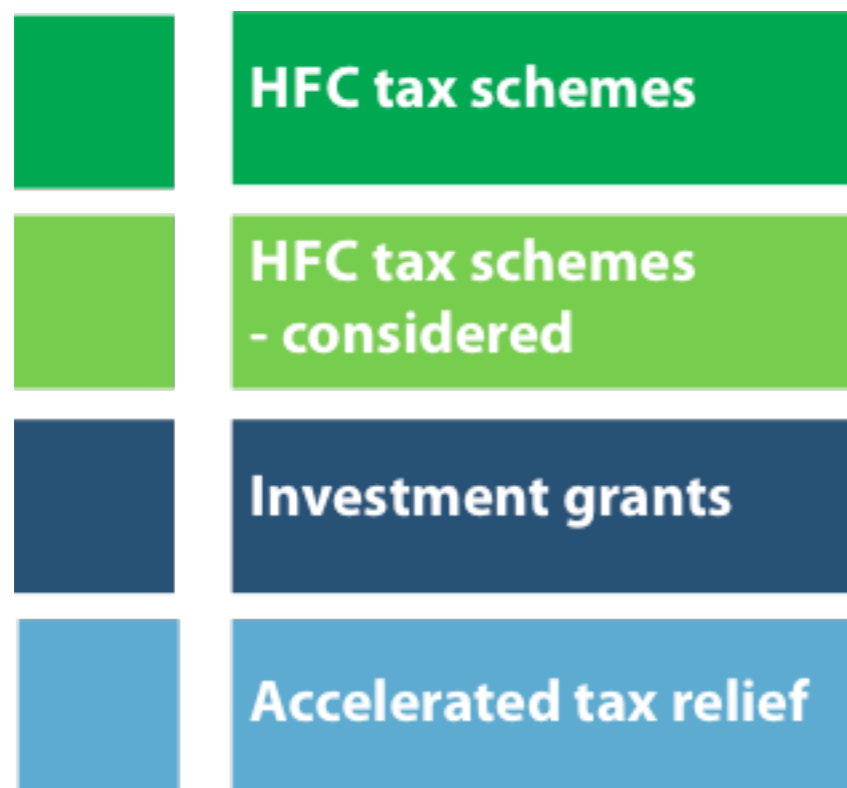


- ◎ **Reports on availability of alternatives**, feasibility of HFC bans and **possible legislative proposals** for:
 - ◎ Multipack centralised refrigeration systems (by 2017)
 - ◎ Split air conditioning (by 2020)
- ◎ Report assessing quota allocation method and possible introduction of a **fee on quotas** (by 2017)
- ◎ Report on information on **national codes, standards and legislation** of Member States with respect to alternatives (by 2017)
- ◎ Report examining available **training on HFC alternatives** and possible legislative proposal (by 2017)
- ◎ Review of **availability of alternatives to HFCs in sectors for which bans have not been specified** (by 2022)

National level action in Europe:
HFC taxes and incentives for natural
refrigerants - some examples

HFC taxes, investment grants & tax relief schemes for natural refrigerants

- ➔ **At least 10 European countries with measures in place**
- ➔ **At least 13 European countries have adopted or considered measures**



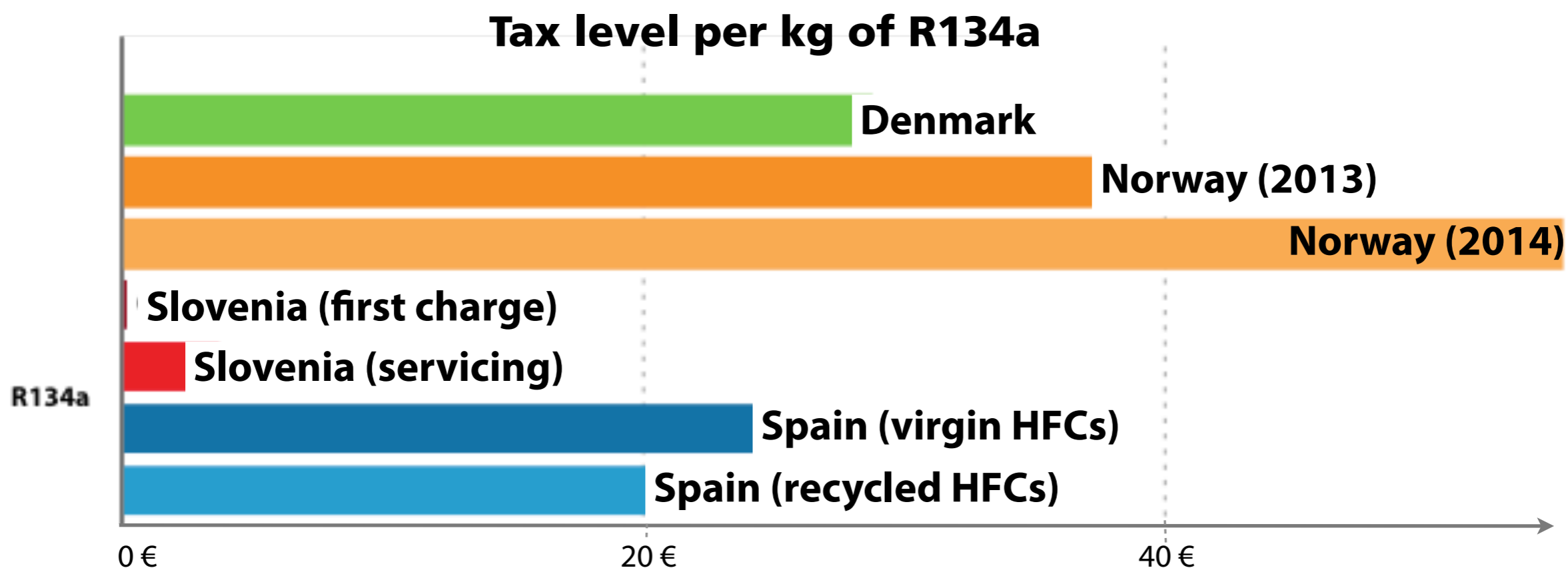
Source: GUIDE+ HFC taxes and fiscal incentives for natural refrigerants in Europe, shecco publications (2014)

HFC taxation - growing appetite in Europe

→ Tax levels can vary significantly

- by country
- first charge vs. servicing,
- virgin vs. recycled HFCs


→ Norway leads the way



Source: GUIDE+ HFC taxes and fiscal incentives for natural refrigerants in Europe, shecco publications (2014)

GERMANY: investment grants in commercial / industrial refrigeration & AC - equipment covered



-  **New rules as of January 2014, cover:**
- ✓ Compression refrigeration systems with 5 to 150 kW of electrical power
 - ✓ Compression air conditioners with 10 to 150 kW of electrical power
 - ✓ Sorption systems with 5 to 500 kW cooling capacity (use of waste heat or heat from CHP plant is one of the eligibility requirements)

 **Grant level - up to €100,000**

GERMANY: investment grants in commercial / industrial refrigeration & AC - refrigerants



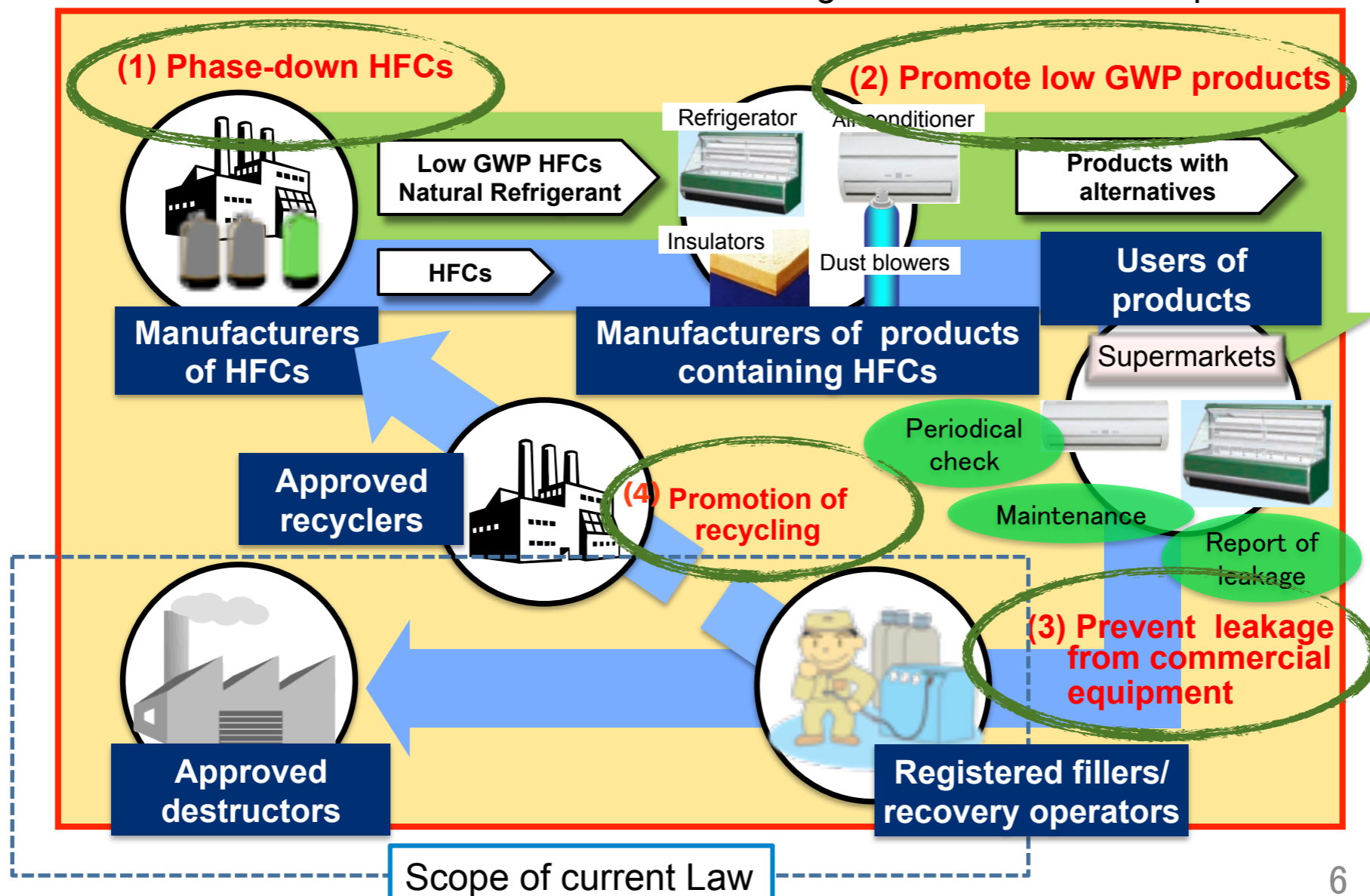
Use of natural refrigerants in compression systems:

- ✓ Required for new plants to receive the grant
- ✓ Higher grant rate for the use of non-halogenated refrigerants in existing refrigeration plants
- ✓ Grant rate of 20% of net investment costs for NEW and EXISTING plants, up to a maximum grant of €100,000

Japan action: update on revision of F- Gas measures

Japan's revised f-gas law covers entire lifecycle

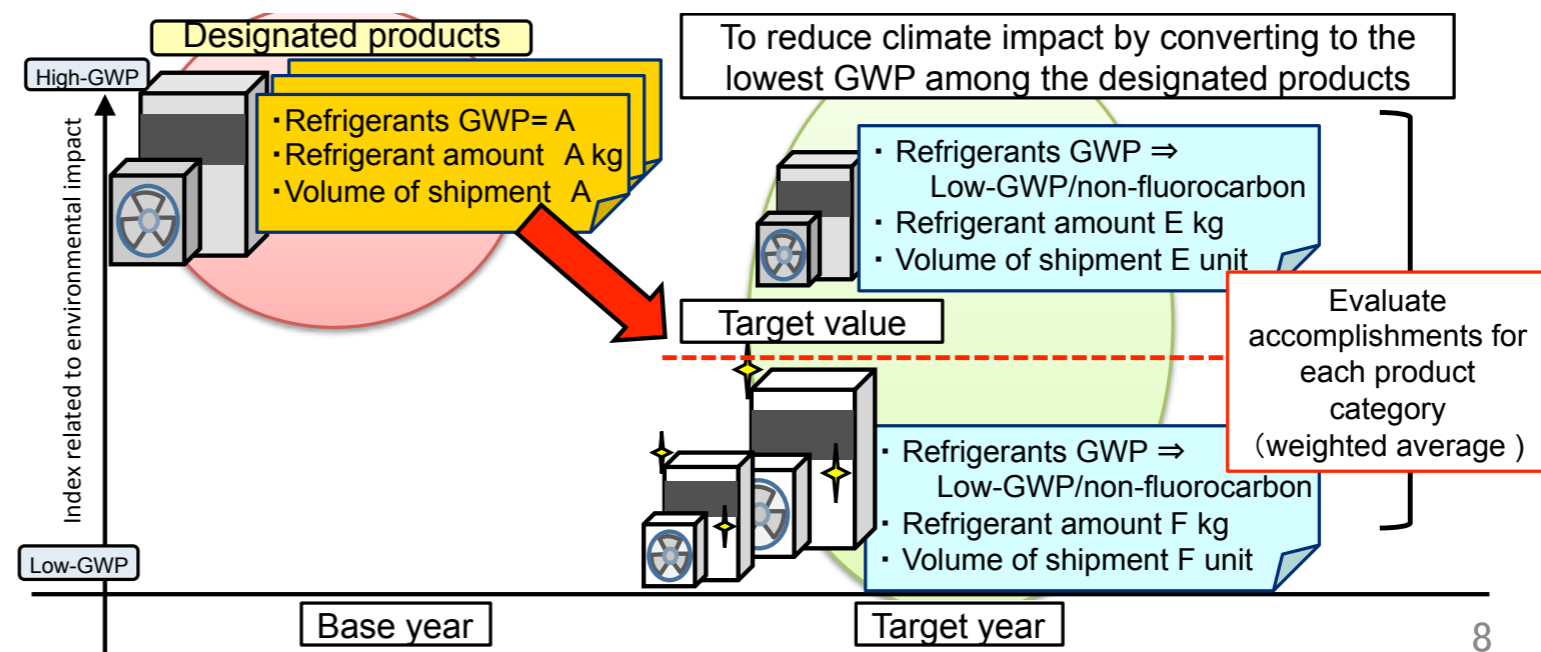
→ Framework law agreed in June 2013 foresees 4 types of measures



Source: METI presentation at ATMOSphere Asia 2014

Japan's measures to promote low-GWP refrigerants

- ➔ **Equipment manufacturers and importers will be required to transition from high-GWP HFC products to low(er)-GWP HFCs or HFC-free refrigerants**
- ➔ **GWP target values and target years are set for certain product groups**
- ➔ **Weighted average GWP values of entire production & imports are taken into account to measure compliance by manufacturers**



Source: METI presentation at ATMOsphere Asia 2014

Japan's measures to promote low-GWP refrigerants

- likely targets per product group



Product group	GWP target	Target year
Residential AC	750	2018
Light commercial AC (e.g.office use)	750	2020
Condensing units > 1.5 kW - stationary refrigeration	1500	2025
Cold store (> 50,000m ³) central refrigeration systems	100	2019
Mobile AC (passenger cars)	150	2023

Japan's revised f-gas law - next steps

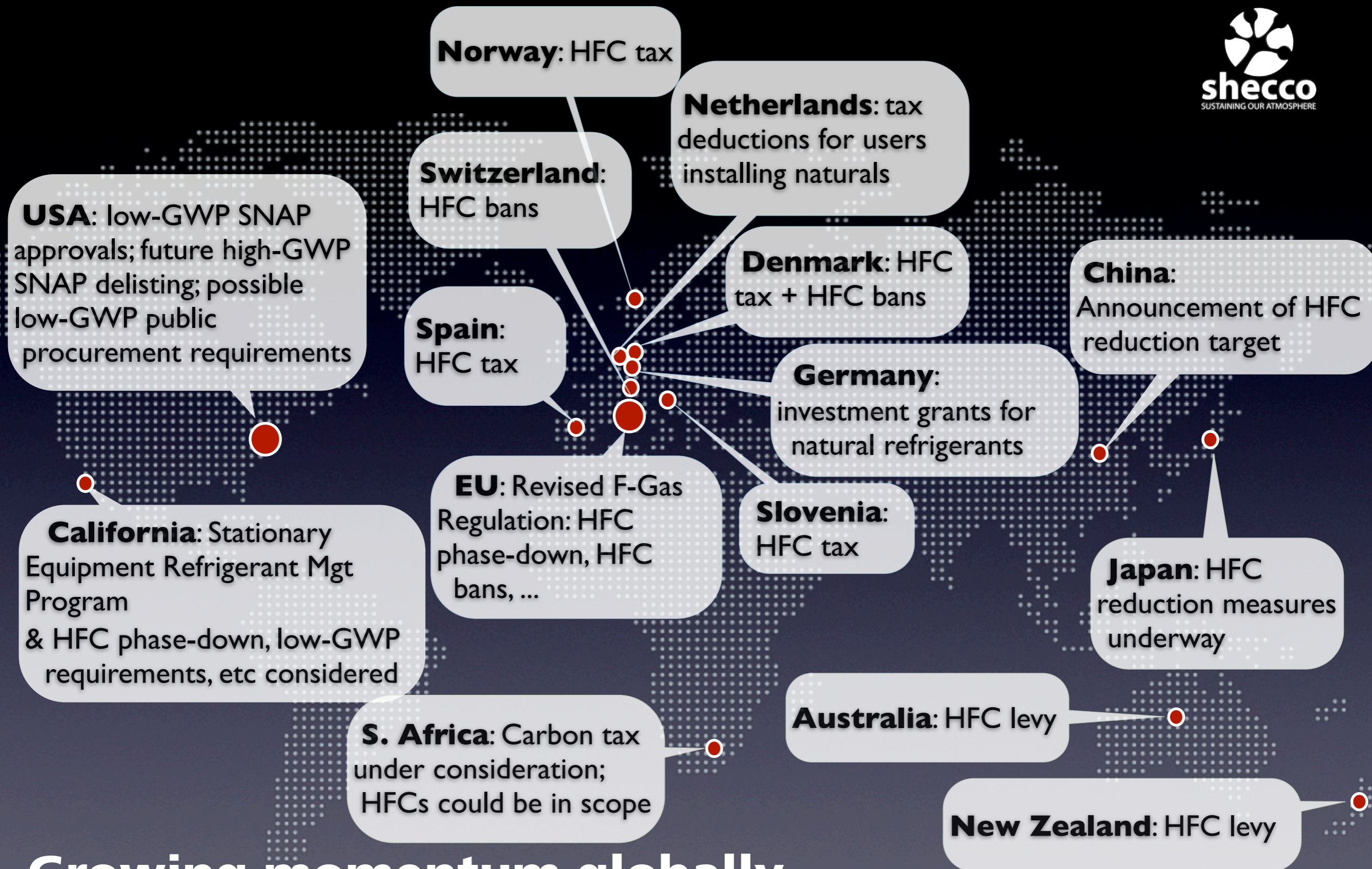


- ✓ Public comment period until 28 June on f-gas management measures (e.g. leakage checks, reporting etc)
- ✓ End June: last meeting + decision on measures targeting f-gas manufacturers (HFC phase down)
- ✓ Public comment period until end July on overall proposal
- ✓ New law expected to be finalised in autumn 2014
- ✓ **New law planned to be effective as of 1 April 2015**

Japan - support for natural refrigerants



- ✓ Several government support schemes to encourage investment in natural refrigerants
- ✓ E.g. in FY 2014, a total of USD 50 million available to support the use of natural refrigerants in refrigerated warehouses, convenience stores and supermarkets



Growing momentum globally towards HFC action

Closing remarks



- ➔ **Growing momentum globally towards action on HFCs**
- ➔ **Diversity of measures in place - HFC bans, taxation, phase-down, support for alternatives, etc**
- ➔ **Increasing restrictions for HFCs - increased demand for natural refrigerant technologies likely to spur innovation and economies of scale also in other markets, hence reducing costs globally including in North America**
- ➔ **New market opportunities for natural refrigerants**

**Growing momentum globally
towards HFC action**



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