



Reducing HFCs in the EU with the F-gas Regulation

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1st F-gas Regulation (2006-2014)

- Scope was F-gases, not just HFCs (also PFCs and SF6)
- Main focus on containment (minimising emissions)
 - Leakage checks
 - Training and certification of service personnel
 - End-of-life treatment
 - **Labelling/Penalties**
- Some use and marketing prohibitions (incl. **one-way cylinders, AC in cars**)
- Reporting on production, imports, exports etc..

Training and Certification

- crucial (skills, safety, awareness, environment, energy efficiency, enduser costs, market overview..)
- but took a while to accomplish (600.000 persons, 66.000 companies)

Leakage checks

- Equally important (awareness, energy efficiency, enduser costs)
- Combined with logbooks
- Enforcement cumbersome, best implemented with centralised Database (Synergy with UNFCCC obligations): Example Poland (IT, BE,..)

Recovery

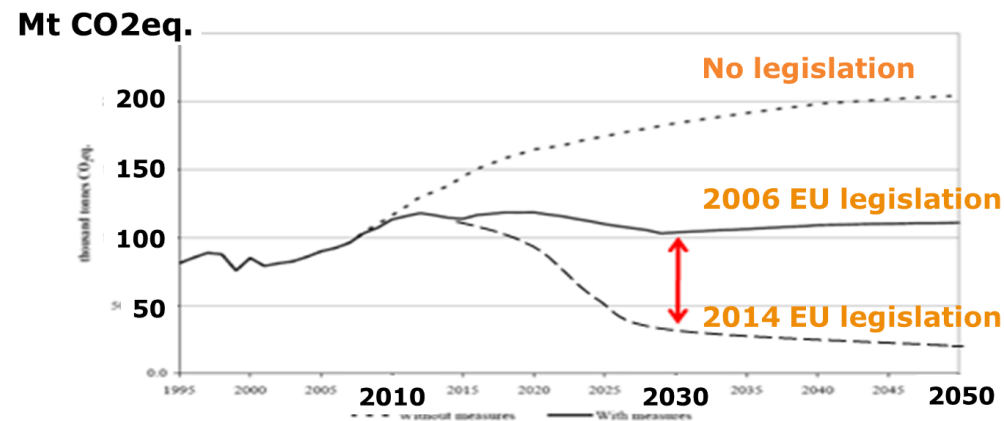
- End of life is crucial as many emissions can be avoided
- Synergies with waste legislation
- Recycling and reclamation can reduce demand

Reporting

- Important for measuring policy success and seeing trends
- Crucial for updating legislation (what works well? What does not?)
- New threats (HFES?, NF3?, HFOs?)
- Reporting to Montreal Protocol

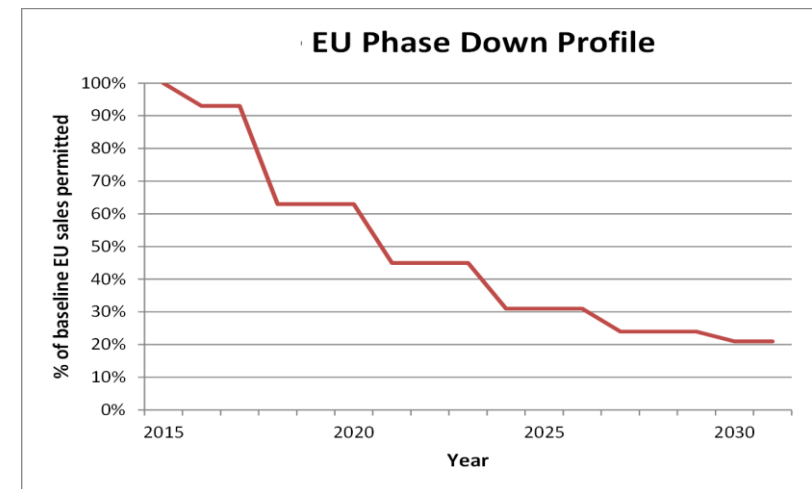
Taking stock in 2012

- All measures were useful, but did NOT reduce consumption (& emissions) to the degree that was cost-effective due to many alternatives being available



2nd F-gas Regulation (2014- present)

- All measures of 1st were maintained
- In addition, „direct“ measures to reduce consumption were introduced
 - A quota system for producers/importers („EU phase-down“)
 - Prohibitions in many areas where feasible



How the EU industry will achieve the phase-down

"Core Actions" to achieve the EPEE Roadmap



1. Actions for new equipment

- use lower GWP alternatives
- design for less refrigerant charge and low leakage



2. Actions for existing equipment

- leak prevention
- retrofit with low GWP alternatives



3. Use of reclaimed refrigerant

- recovered from equipment at end-of-life
- recovered during retrofit of existing equipment

*Phase-down is measured in climate terms (CO₂e):
There are different ways of reducing the CO₂e
of HFCs consumed*



"Stay low, move fast ..."

and you will still be cool !

Implementation of phase-down

- **Fgas Portal & Licensing System:**

Register of companies (importers, exporters, producers, etc.>), quotas, yearly report

Elaborate electronic reporting system

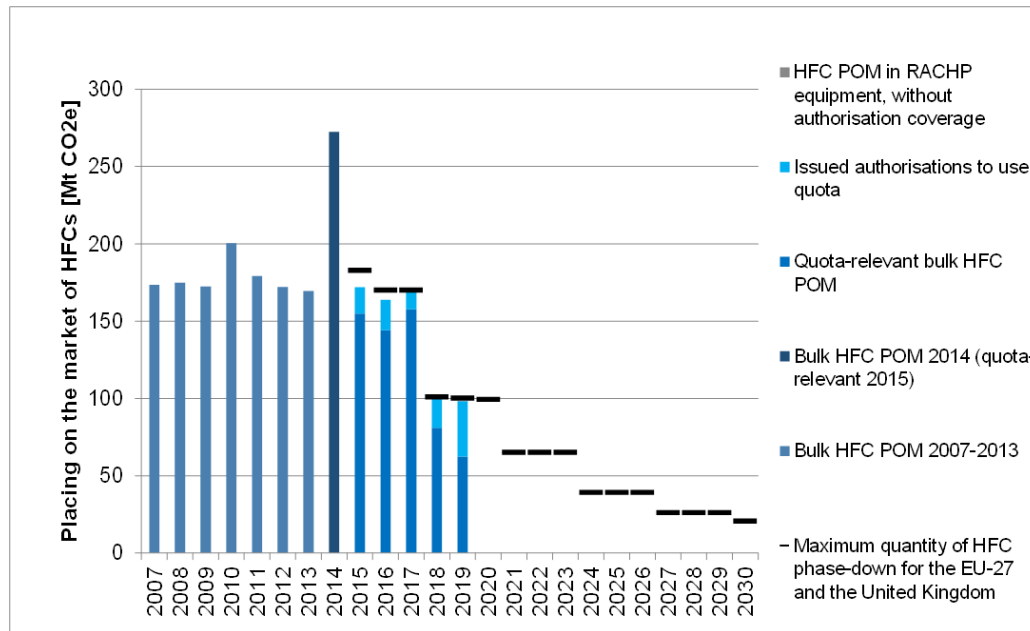
- **Ex post verification** (independent auditors)

- **Checking compliance, Market surveillance, Border control**

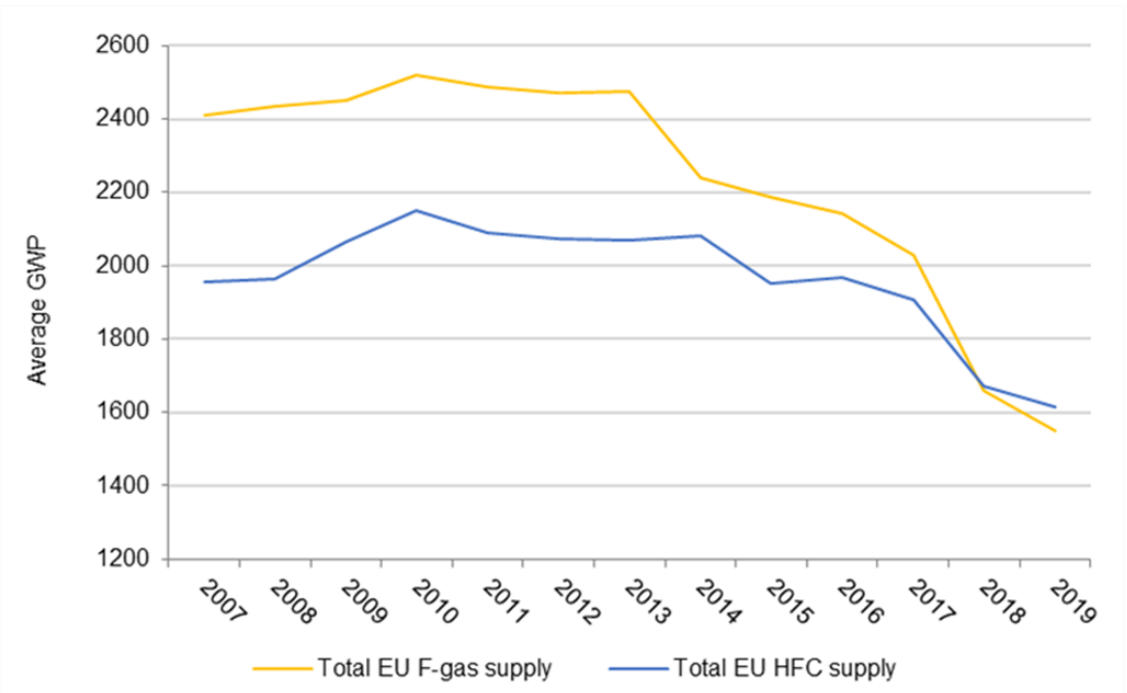
→ High administrative burden for authorities

Impacts of phase-down

Less HFCs placed on the market (in CO2e)



Average GWP of HFCs in total EU supply decreased significantly



Source: EEA F-gas report on 2019

Prohibitions

i.e. phase-out in some sectors by a certain date

- New equipment: Prohibitions per sector/date/GWP
- Prohibition to service existing refrigeration equipment with refrigerant > 2500 from 2020 (R404A/507!)

A prohibition makes sense when safe, efficient and economical alternatives are available

→ No more need for R404A in refrigeration and R410A in AC today

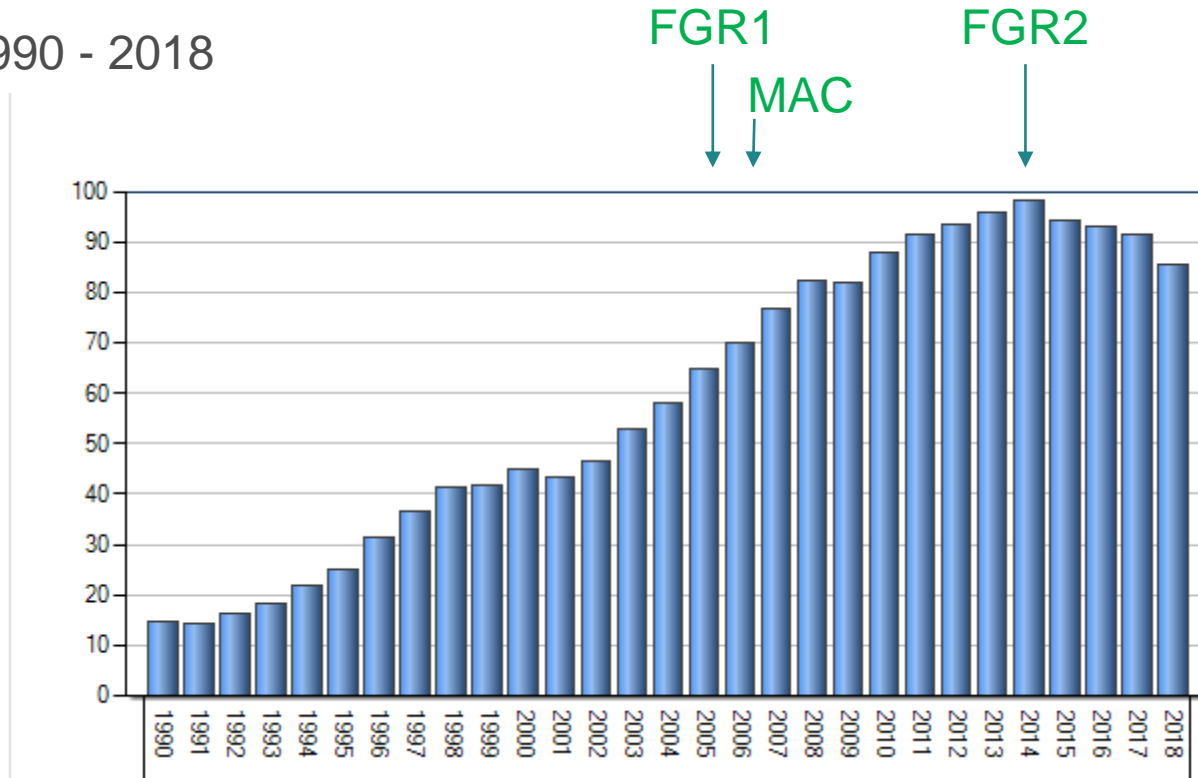
- Low hanging fruit (<150 GWP):**
- **domestic fridges**
 - **commercial sector (supermarkets): plug-ins, but also large multi-packs**
 - **AC: Plug-ins, but also small splits**
 - **Most aerosols, foams, fire protection with R-23**

Some lessons learned

- Our starting point in 2006/2014 was different from situation of many countries today:
 - Entering uncharted territory
 - Alternatives not fully available everywhere
 - The Phase-down quota system was a good, flexible tool to provide this technology push
- Today many more technical option are already available
 - Prohibitions are today more easily specified without the need for exemptions, for most sectors
- There are many quick wins: Eliminate R404A, eliminate R410A, prohibit one-way cylinders, refrigeration sector, split AC etc..
- Fiscal measures may also be useful, but charge at upper level (imports/production)
- Awareness raising is crucial, also for customs; close cooperation with competent authorities important

Actual emissions

EU HFC emissions 1990 - 2018



Source: EEA greenhouse gas data viewer

European Green Deal: New F-gas measures considered...

*Raising ambition further in line with EU Climate ambition
(55+% by 2030, carbon neutrality in 2050)*

- Steeper HFC phase-down?
- Additional restrictions on F-gas use in equipment?

SF6 in switchgear, stationary AC, MDIs, maritime sector,..?

Thank you

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