



Climate change: melting glaciers, diminishing water resources, trapped sunrays increase global warming

EU F-GAS REGULATION: PERSPECTIVES

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Introduction

Refrigeration and air-conditioning sectors are set for a radical transformation in the coming years, with Europe leading the way.

In the European Union (EU), this transformation is well underway. And with ambitious HFC phase-down steps next year in 2018 and then three years later in 2021, the pace is set to quicken. The question in Europe is not *if* climate-friendly HFC-free technologies will come to proliferate and dominate the European marketplace, but *how quickly* they will do so. On this, it should be in the interests of all stakeholders, end-users, and national authorities to avoid a burdensome, costly and risky transition from high-GWP HFC technologies to mid-GWP HFC technologies, especially since it will ultimately require another transition from mid-GWP HFC technologies to climate-friendly HFC-free technologies. Europe should make a one-time smart transition to climate-friendly HFC-free technologies today.

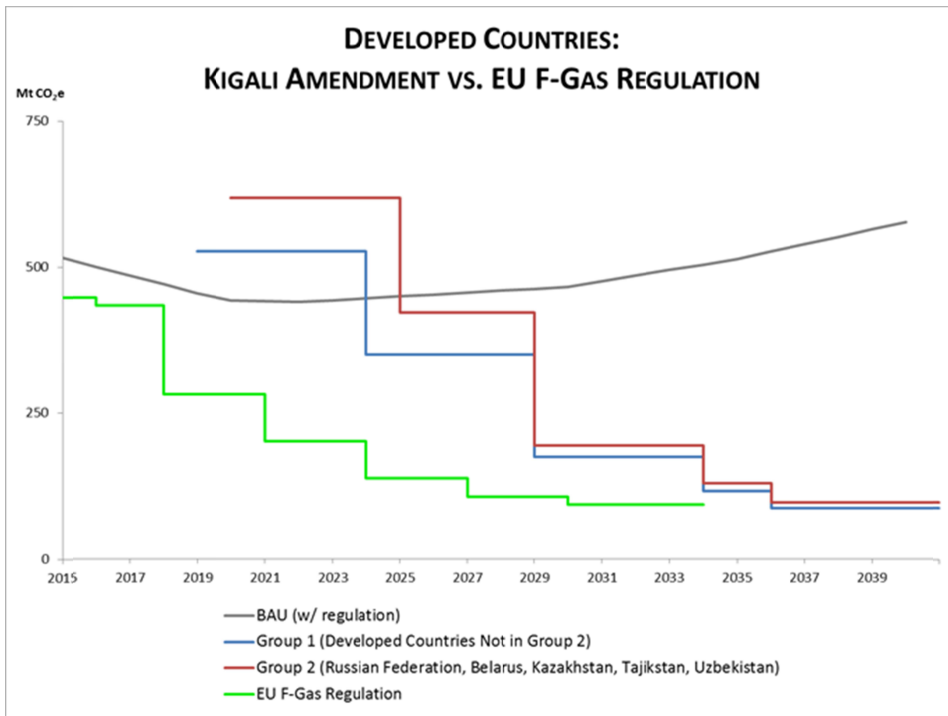
At the same time, there is a transformation set to take place internationally in developing countries. Under the Montreal Protocol, developing countries must meet a significant HCFC phase-out step in 2020. Like the EU, developing countries are confronted with the question of whether to make: (i) a double transition, i.e. a transition from HCFC-22 to HFC technologies, which will then require another transition away from HFCs at a future date; or (ii) a smart transition, i.e. a one-time transition from HCFC-22 to climate-friendly HFC-free technologies, which would mean leapfrogging HFC technologies and going directly to the final solution.

The timing of these transformations may be coincidental, but their combined impact is unmistakable: the conditions are ripe for climate-friendly HFC-free technologies to proliferate and dominate the European and global marketplace in the next few years. Such a development would finally put an end to the CFC-~~HCFC~~-HFC-HFO chemical treadmill of the last several decades, and it is premised on Europe leading the way.

What follows here is a review of the EU F-Gas Regulation with some lessons and observations gleaned during the early years of implementation, with some additional thoughts on leveraging the transition in Europe at the international level.

Unparalleled Ambition

The EU is leading the global transition to climate-friendly HFC-free technologies. In 2014, the EU adopted the EU F-Gas Regulation, which set out an economy-wide HFC phase-down starting with a freeze in 2015, followed by reductions of 7% in 2016, 37% in 2018, 55% in 2021, 69% in 2024, 76% in 2027 and 79% in 2030. This schedule is far more ambitious than the HFC phase-down agreed to at the international level last October, referred to as the Kigali Amendment, as can be seen in the figure below:



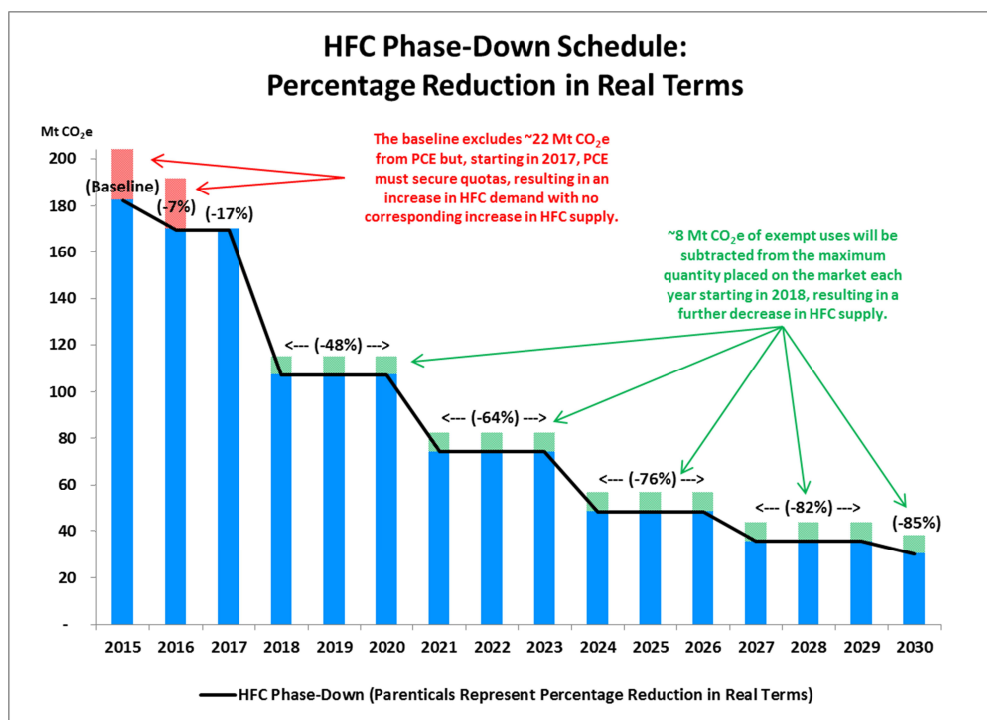
Two quick observations merit mention.

First, the EU baseline is lower. This is because it did not include any HCFC consumption whereas the Kigali Amendment did. So Europe's starting point is more stringent.

Second, the phase-down steps in the EU are sooner and more frequent. Indeed, at the same time

other developed countries are still only at freeze levels, say 2023 for example, the EU will have already more than halved its HFC consumption.

However ambitious this may seem, the truth is it is understated. In reality, the HFC phase-down in the EU F-Gas Regulation is much more ambitious than it appears. This is for two main reasons. **First**, the baseline did not include pre-charged equipment despite this equipment requiring quotas from 2017 onward.ⁱ This means an increase in demand with no corresponding increase in supply. **Second**, certain exempt uses, such as metered dose inhalers, are deducted from HFC supplies made available to the rest of the economy.ⁱⁱ This means less supply is made available to everybody else. When the HFC phase-down is adjusted to account for these, the reductions become much more significant in real terms, as can be seen in the figure below:



Thus, in real terms, the EU has already reduced HFC supplies by 17% in 2017, and will further reduce HFC supplies to almost half (48%) in 2018 and almost two-thirds (64%) in 2021.

Lessons and Observations

The EU F-Gas Regulation has not been without its growing pains, some expected while others not.

HFC Stockpiling – In 2014, the year before the HFC phase-down began, producers and importers stockpiled 62% more HFCs than the year before.ⁱⁱⁱ These stockpiles glutted the HFC market, keeping HFC price increases artificially low during 2015-2016 and contributing to a lack of urgency to transition to climate-friendly HFC-free technologies.

Skyrocketing HFC Prices – However, once HFC stockpiles started dwindling and HFC supplies started restricting in 2016 and 2017, HFC prices have begun to skyrocket. There are almost monthly announcements on HFC price increases, with the price of some HFCs having doubled in the last year.^{iv}

High-GWP HFCs – Several high-GWP HFCs will soon no longer be available. For example, Honeywell recently announced it will no longer place HFC-404A (3922) and HFC-507 (GWP 3985) on the European marketplace in 2018.^v

Illegal Trade – Discrepancies in customs and reported data indicate illegal trade may be occurring.^{vi} One fluorochemical producer estimated illegal imports of approximately 5% in 2015, mostly in the Eastern and Southern Member States, and up to 14% in 2016.^{vii} This highlights a major potential issue going forward: the disconnect between customs authorities and compliance with the EU F-Gas Regulation. Illegal trade is something that requires significant attention going forward.

Fluorspar Shortages – An unexpected additional factor may be impacting HFC prices. Fluorspar, a critical raw material during fluorochemical production, has recently been in short supply in China, causing fluorspar prices to increase by 40% since February.^{viii} This is particularly problematic for the mid-GWP and low-GWP HFCs since, in general, more fluorspar is required for their production – for example, the 40% increase in the price of fluorspar in China resulted in a 160% price increase in HFC-32.^{ix} It is unclear whether these shortages have been reflected in HFC prices in Europe, but one can imagine that if shortages continue they eventually will.

Mid-GWP HFCs – Fluorochemical producers have been active in promoting their mid-GWP HFC technologies as alternatives. But mid-GWP HFC technologies carry a significant risk, namely that they are susceptible to skyrocketing HFC prices, both as a result of reduced HFC supplies and fluorspar shortages, as well as the fact that they are only a very near-term solution at best that will require a double transition at a future date since the HFC phase-down leaves very little room for them by the mid-twenties.

Mainstreaming European Technologies Globally

At the same time as the EU F-Gas Regulation is transforming the European marketplace, another transformation is set to begin in developing countries under the Montreal Protocol. Per the HCFC phase-out under Montreal Protocol, developing

countries must reduce HCFC consumption by 32.5% in 2020, which is just two years after the ambitious 2018 phase-down step in the EU. The transformation takes place through HCFC Phase-Out Management Plans (HPMP), and almost universally these plans are avoiding high-GWP HFC technologies in these sectors. The question is, however, the extent to which developing countries will leapfrog both high-GWP and mid-GWP HFC technologies, in favor of climate-friendly HFC-free technologies. In other words, the question is how much we can leverage the EU F-Gas Regulation and its ambitious HFC phase-down to secure a similar technological transformation at the international level. It is a tremendous opportunity for European industry manufacturing components and equipment relying on natural refrigerants, and should be a focus of activity in the coming years.

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