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Study on possible HFC illegal trade

based on examination of the available import data

F-Gases Consultation Forum

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Examination of HFC import data from:

F-Gas Regulation company reports (FGR), EUROSTAT, ECHA (REACH agency), UN COMTRADE and Chinese HFC trade data

1. **Assess usefulness for checking the HFC phase-down of**:
   a. EUROSTAT HFC import data and
   b. REACH HFC data

2. **Comparisons**
   a. dataset scopes
   b. destination country
   c… FGR data and other datasets

3. **Conclusions and recommendations**

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1.a. Usefulness of EUROSTAT data in monitoring HFC phase-down

Up to 2015 import data is only for undifferentiated refrigerant gases: "fluorinated derivatives" and iodides "iodinated derivatives" of acyclic hydrocarbons (TARIC code 2903 39 90)

- only an overall timeseries for bulk HFC gas imports is possible
- new customs codes provide detail for bulk import by HFC gas type
  - only available for 2016 (most recent year available)
  - the most common HFCs now have separate codes:

Code	Chemical name	Trade name	% of bulk imports (tonnes)	% of bulk imports as CO_2e
29033921	Difluoromethane	HFC-32	11%	4%
29033923	Trifluoromethane	HFC-23	0%	1%
29033924	Pentafluoroethane and 1,1,1-trifluoroethane	HFC-125, HFC-143a	31% (21% and 10%)	58% (36% and 22%)
29033925	1,1-difluoroethane	HFC-152a	5%	0%
29033926	1,1,1,2-tetrafluoroethane	HFC-134a	48%	33%
29033927	Pentafluoropropanes, hexafluoropropanes heptafluoropropanes	HFC-245ca, HFC-236cb, HFC-227ea, HFC-245fa, HFC-236ea, HFC-236fa	5%	4%

Percentages are derived from the FGR data and include pure gases and mixtures

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1.b. Usefulness of REACH data in monitoring HFC phase-down

- REACH obligation embraces bulk HFCs including HFCs contained in mixtures (blends)
- HFCs in imported RACHP equipment are not covered
- Registration schedule according to annual tonnage bands:
  > 1000 t/a: 30 November 2010,
  100 – 1000 t/a: 31 May 2013
  1 – 100 t/a: 31 May 2018
- Most HFC importing companies would be above 100 t/a
- REACH data reported episodically
  - annual import data vary by company and substance
- Aggregation of HFC import data in the REACH dossiers cannot be expected to match FGR
- Possible to identify REACH registered companies not in FGR

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2.a. Comparison of dataset scopes for assessing FGR implementation

	Eurostat	CN Commercial data	UN Comtrade	REACH dossiers
Granularity	substance level from 2016 onwards, country level, differentiates customs procedures	company level (suppliers), country level (destination), substance level, does not differentiate customs procedures	country level, aggregates of substances, does not differentiate customs procedures	Company level, substance specific, does not differentiate customs procedures
Timeliness	in time	in time	in time	significant delay
Geography	entrance port country	probably the country of receiving company	country	matches FGR scope, but unclear for REACH service providers
	All data sets appear to use different scopes for country of destination or the involved companies: no solid comparison between country level or company level data can be made.			
Completeness	About 9% of imports subsumed under "Other", no gas-level granularity before 2016	Appears incomplete before 2015; less common gases missing entirely and possibly subsumed in other gases, leading to incorrect sums	Good	Only reported episodically
Usefulness	Useful for direct comparisons starting 2016	Detailed comparison potential from 2015	Plausibility check on the aggregate level possible when correcting for different customs procedures	More useful as registrations extend to smaller firms and clients of service providers can be identified

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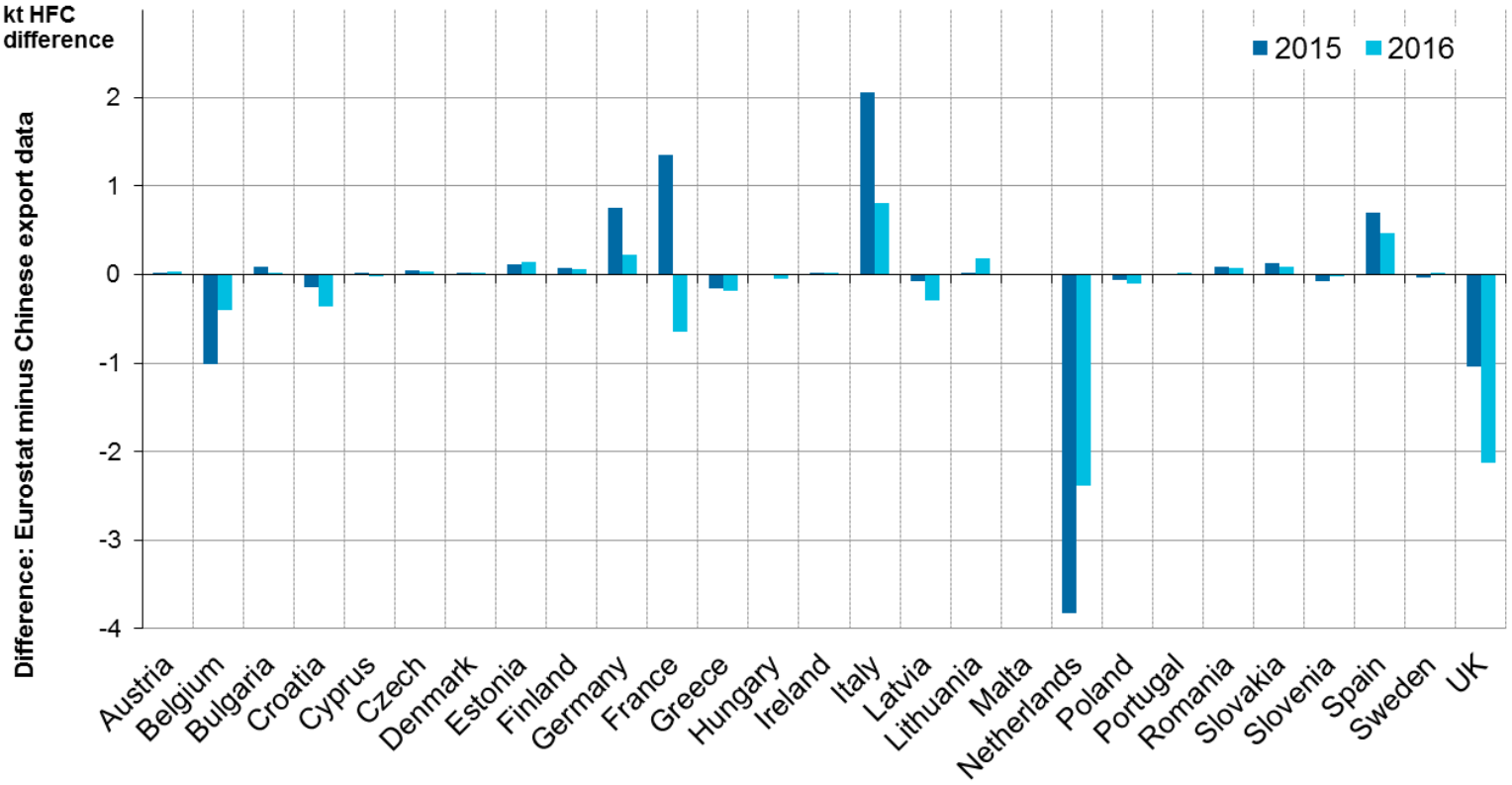
2.b. Comparison of EUROSTAT and Chinese export data by destination



Illustrating the challenge of comparing country deliveries across the datasets. The Chinese trade data shows a higher volume of deliveries to Belgium, the Netherlands, and the UK: all countries with sea-ports. Germany, France, Italy, and Spain appear under-represented in the Chinese data, they have fewer ports but significant numbers of companies and volume of imports from China.

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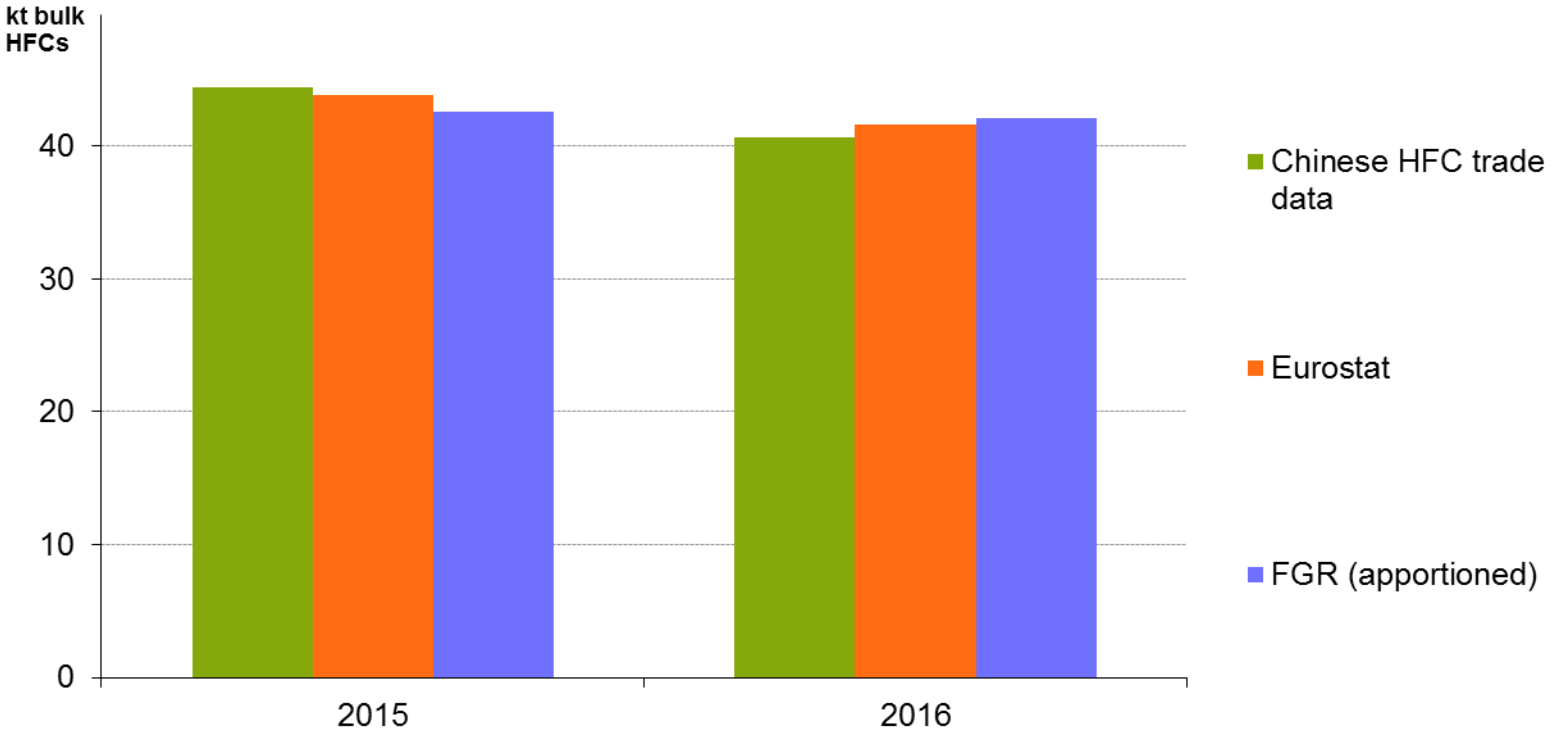
2.c. Comparison of FGR and other datasets: HFC imports from China



This comparison is an estimate because the FGR does not record the import supply country. The FGR share of HFC imports shown here was apportioned by applying the share of total supply from China as reported by Eurostat. This was 65% and 62% in 2015 and 2016 respectively. The UN Comtrade data is not shown here as it includes imports for transit and onward processing. It is not known if the Chinese data includes imports for onward processing and if this is consistent across years. The Eurostat data here is imports for free circulation. There may also be date effects increasing uncertainty in the comparisons.

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2.c.. Comparison of FGR data and other datasets

- data is in reasonable alignment when EU wide and released for free circulation is taken into account
  - i.e. not all HFCs recorded in China as exported to Europe are released from customs into Europe

- comparisons are limited by date effects, different accounting scopes and statistical differences, e.g. customs procedures

- differences in scope across datasets, mean it would be difficult to attribute anomalies to specific companies or even compare country of import

- no indications of illegal trade

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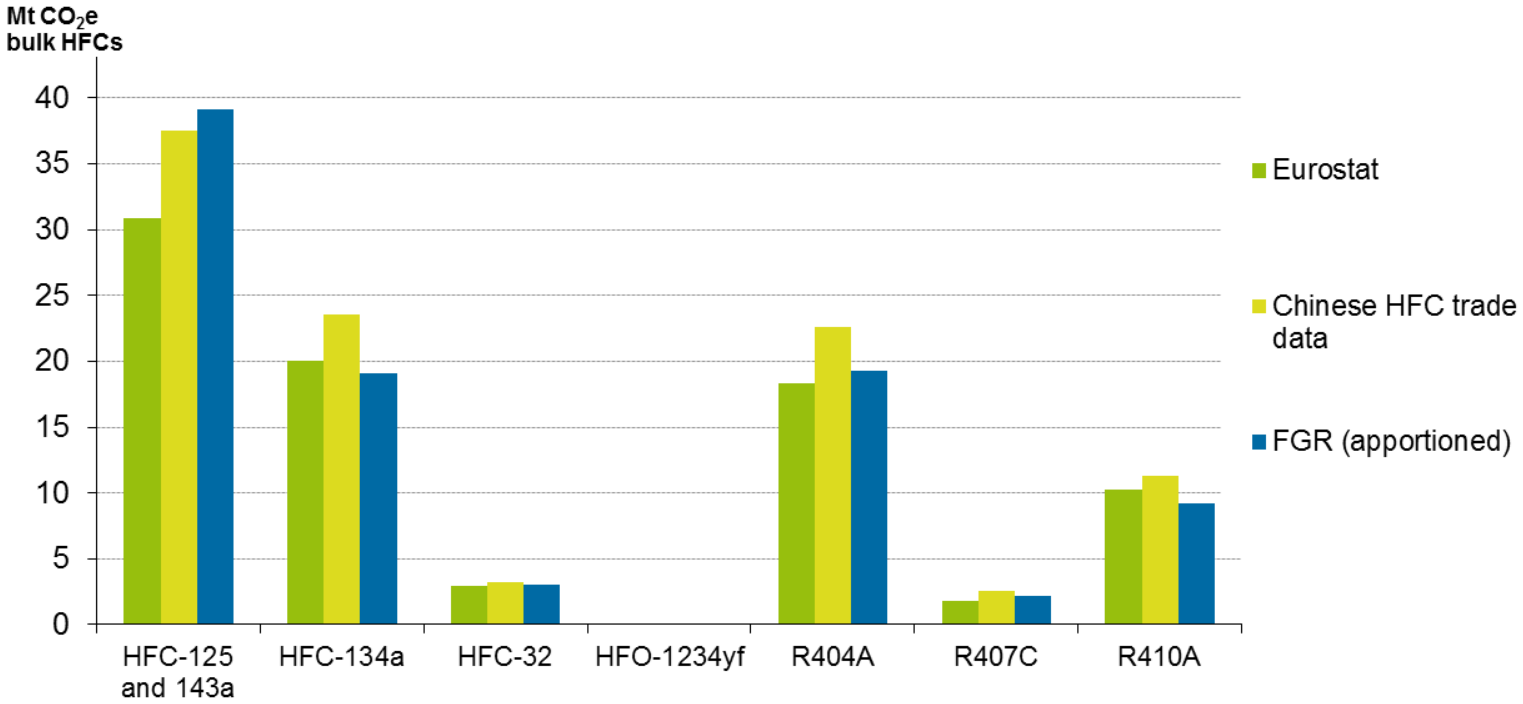
2.c… Comparison of imports from China by gas 2016 (Mt CO_2e)



The values shown for FGR are not absolute. Because the FGR does not record country of supply for imports, the share of imports was apportioned by applying the share of supply from China by gas type as reported in the Eurostat data.
While the overall import totals converge well, there are discrepancies when looking at the detail level of single gases. For 2016 Eurostat has detail for different gases, which also appear in the commercial Chinese data. Apparent miss-matches could be due to date effects and differences in statistical procedures. A statistical error would result if for example, the reporting forms only included these eight gases with no option for “other”. Note also that FGR data on blends is not accurate, as they can be reported as single substances also – but there would be no overall discrepancy.

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3. Conclusions and recommendations

- Large-scale illegal HFC imports did not appear to have taken place in 2015 and 2016 as this would have been evident from the examined data.
- Variation between data sets can be explained by the different accounting scopes (e.g. customs procedures, destination country differences) and date effects (year-end carryover).
- The exercise could be repeated in two or three years when a longer time-series with finer granularity support more detailed analysis.