European Commission

Öko-Recherche
Büro für Umweltforschung und -beratung GmbH

FREE WEBINAR

Monitoring of refrigerant prices against the background of the F-gas Regulation (EU) No 517/2014

29 May 2018 at 3pm (CEST)

Öko-Recherche GmbH
Frankfurt am Main, Germany

Öko-Recherche GmbH



- Independent **environmental research** and **consulting since** 1995
- Located in **Frankfurt/Main, Germany**
- Focus on **ozone-depleting substances (ODS)** and **F-gases**
- Providing expertise to **policy makers, businesses, associations, competent authorities** and **NGOs** at national, EU and international level

EUROPEAID

European Environment Agency

Umwelt Bundesamt

European Commission

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

UNIDO

Agenda

INTRO. Background: EU HFC phase-down mechanism

Mr Arno Kaschl

Policy Officer, EU Commission (DG Climate Action)

PART 1. Price development of HFCs since 2015

Ms Barbara Geschrey

Managing Director, Öko-Recherche GmbH

PART 2. Survey on price monitoring of HFC refrigerants and their alternatives

Ms Julia Kleinschmidt

Policy Advisor, Öko-Recherche GmbH

PART 3. Q&As on the price monitoring survey

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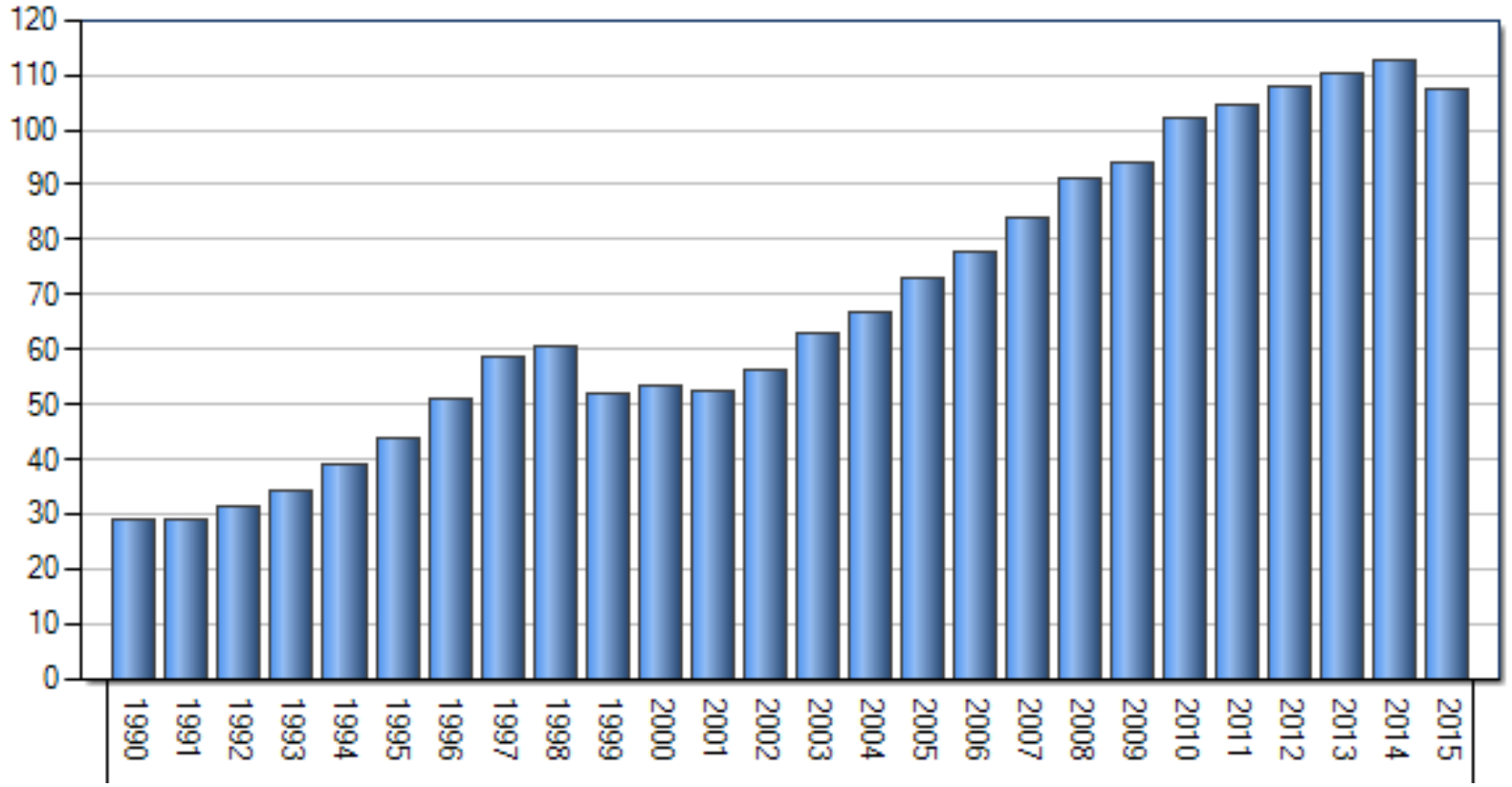
Policy Advisor, Öko-Recherche GmbH

PART 3. Q&As on the price monitoring survey

EU Fluorinated Gas Policies

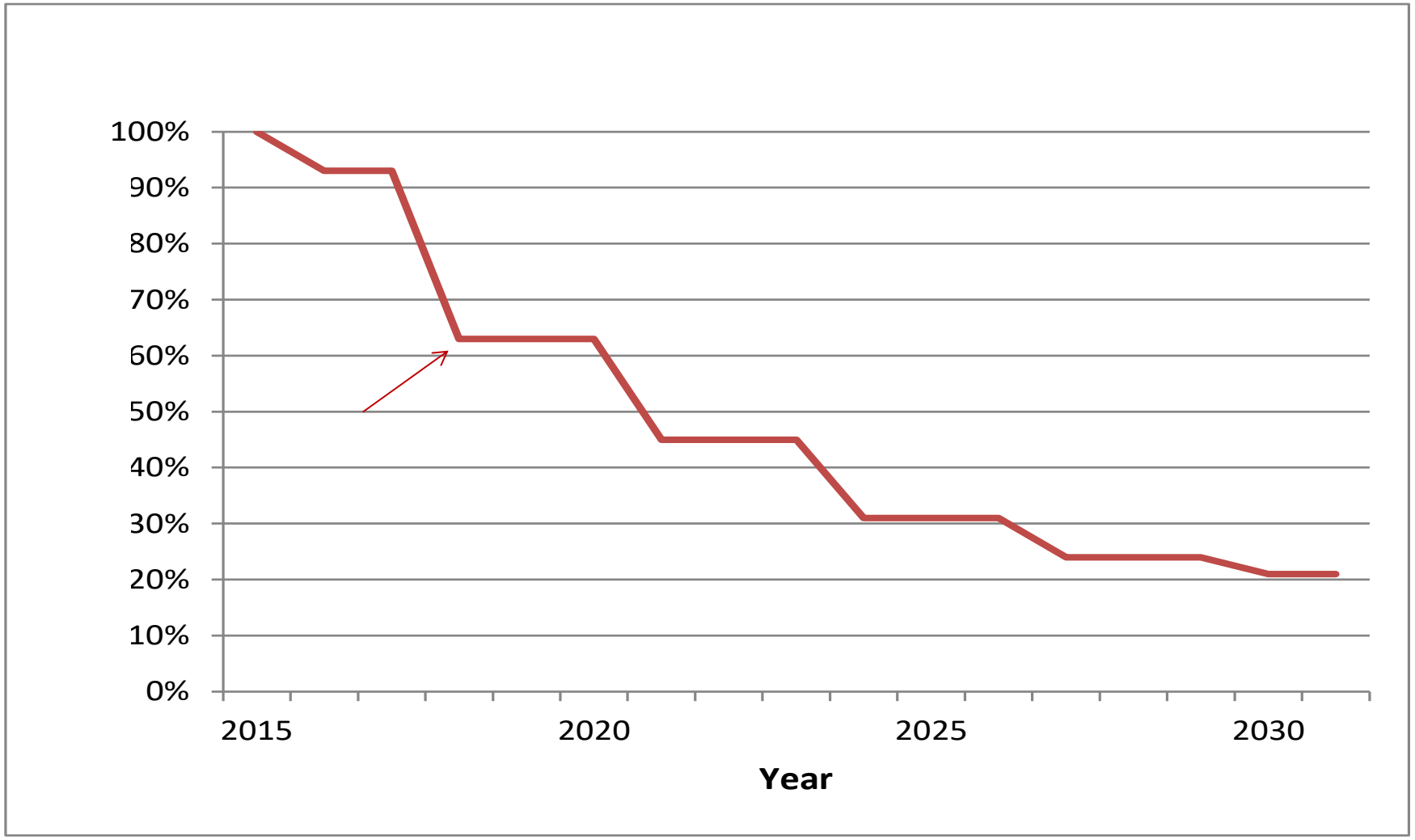
European Commission

HFC Emissions (EU)

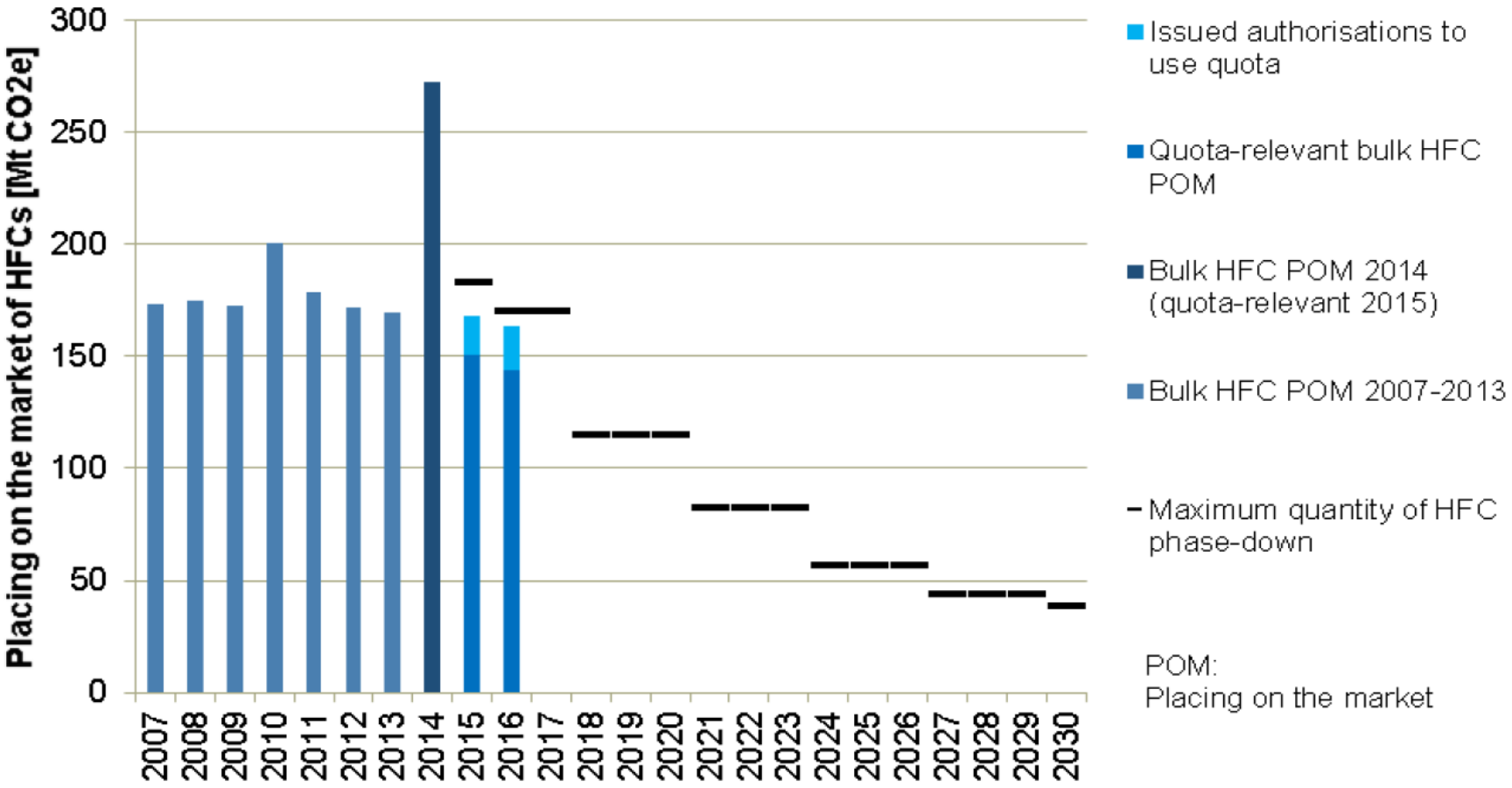


EEA greenhouse gas - data viewer:
Data sent by EU Member States to UNFCCC and the EU Greenhouse Gas Monitoring Mechanism

Policy Driver: Quota System

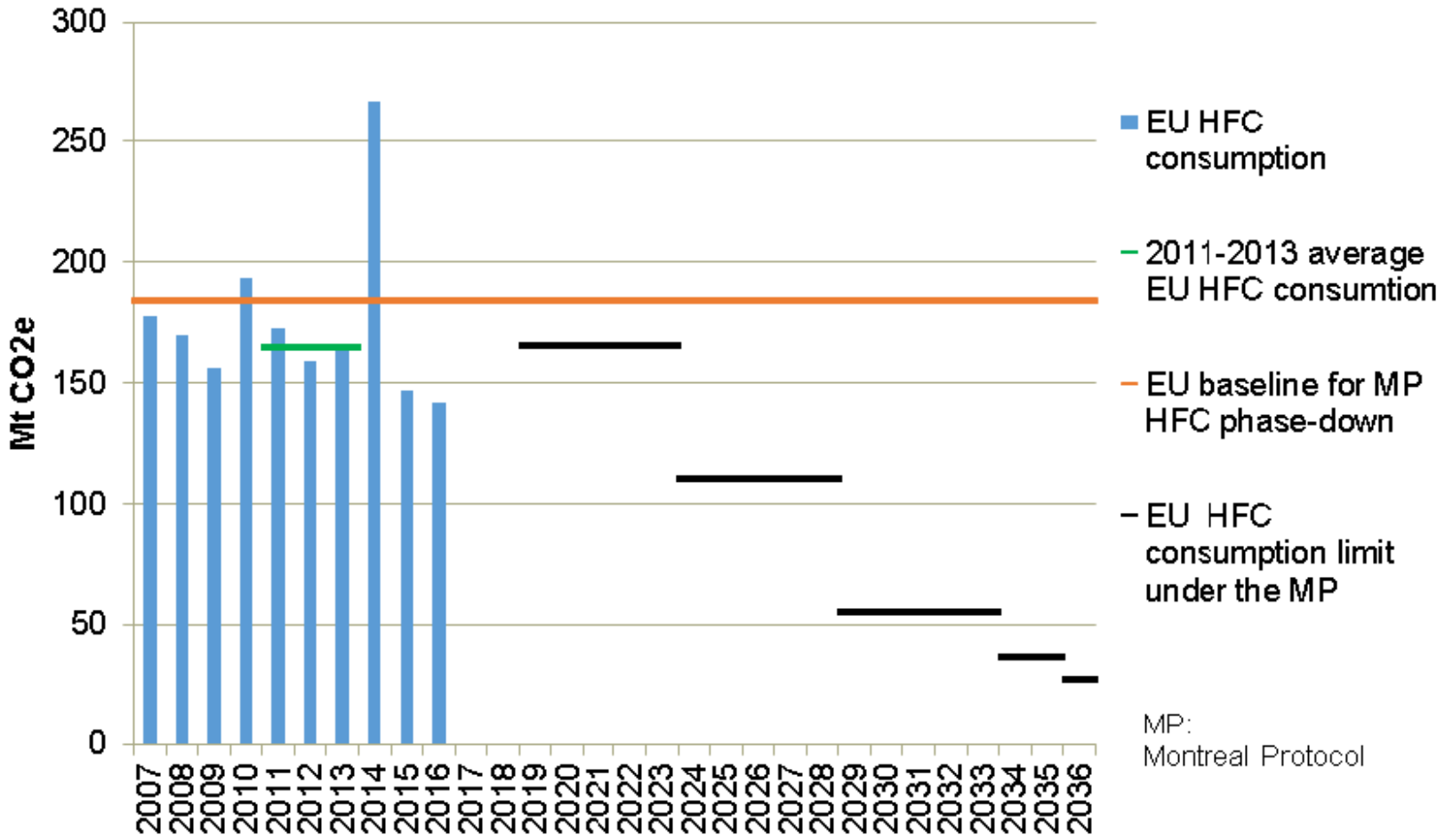


Phase-down Compliance



Source: EEA Report – Fluorinated GHG 2017

Montreal Protocol Obligations



Source: EEA Report – Fluorinated GHG 2017

"Transition": How to cope

- *Price signal → Stakeholders to react where possible, in the way possible and as quickly as possible*

- *A number of different actions can be taken*
  - **Installing new alternative equipment**
  - **Retrofitting existing equipment**
  - **Reclaiming gases**
  - **Avoiding leakage**

- *A number of alternatives on the market*

- *Annex III (prohibitions) support transition (aerosols, MAC, refrigeration/AC/foams in 2020…); MDI & other exemptions*

But: Reaction of all market players together determines the softness of the landing

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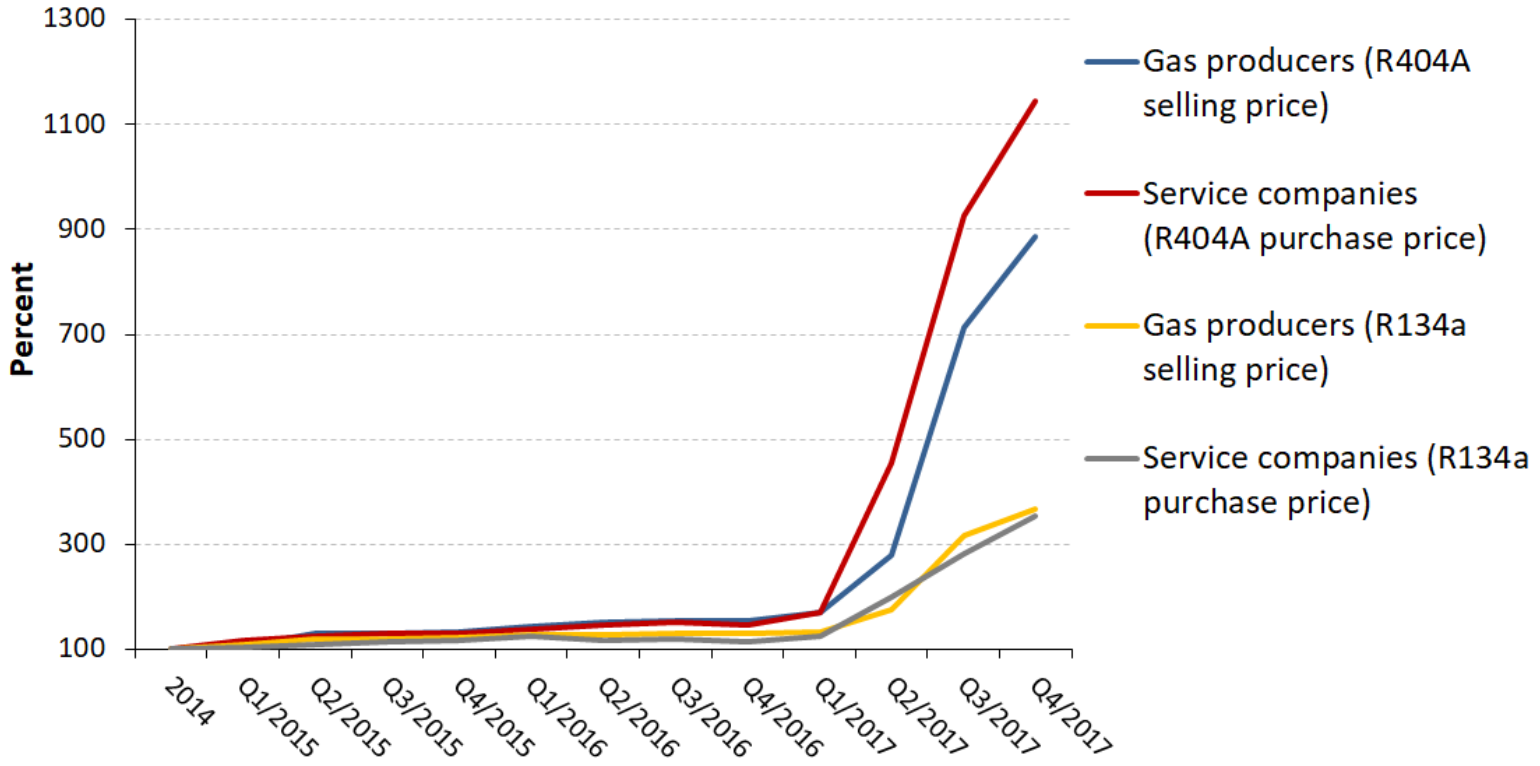
HFC price development since 2015 (I)



- HFC phase-down had **hardly any effect** on demand and prices **until the end of 2016**
- **Strong price increases** of HFCs since **mid-2017** at all levels of the supply chain
- Many companies **seem to have been surprised** by the rapid price increases (e.g. focus on Annex III of Reg. 517/2014, lack of knowledge)
- Refrigerant **costs are** clearly **passed on** from one supply chain level to the next
- **Alternative refrigerants** (e.g. HFO blends, natural refrigerants) are **increasingly used**

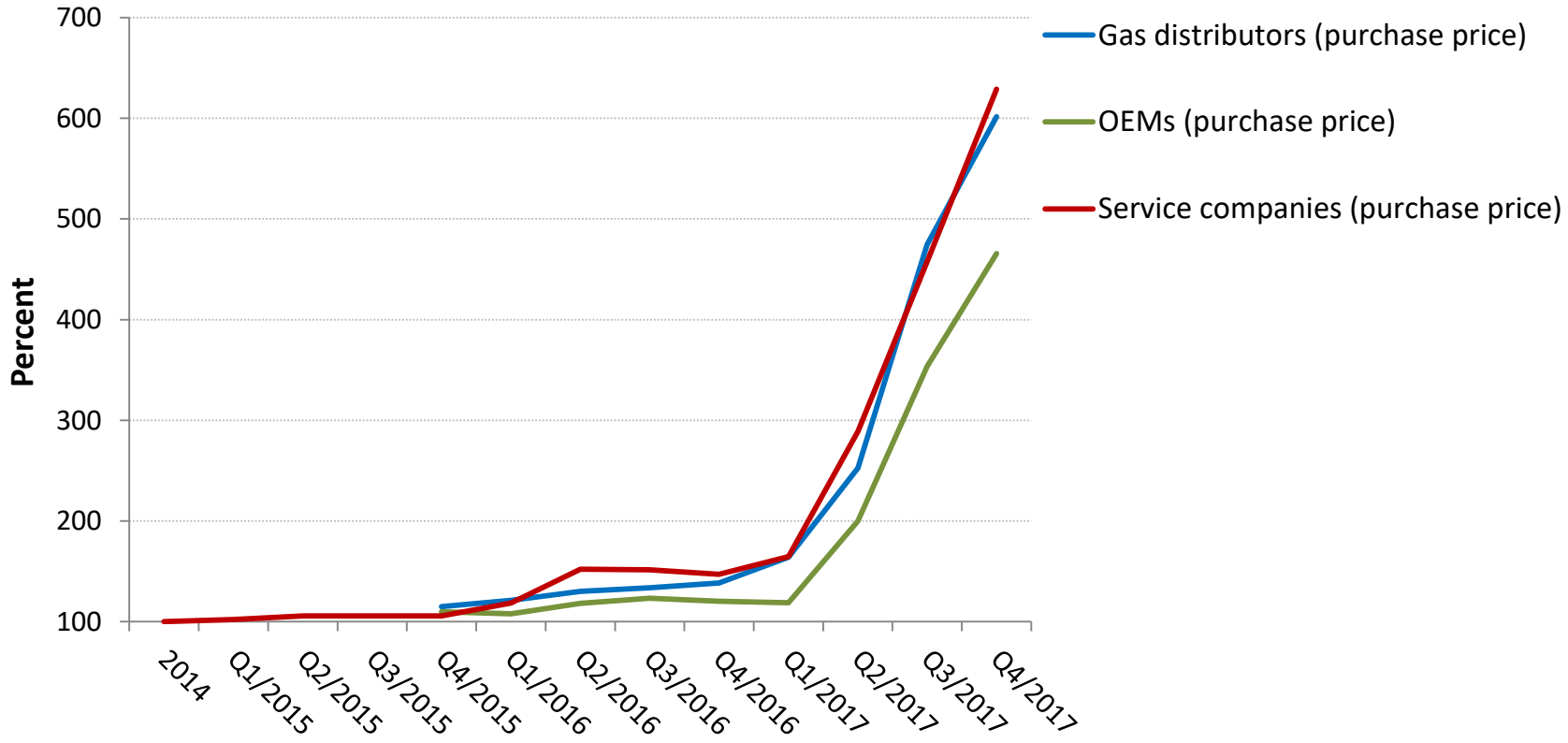
HFC price development since 2015 (II)

Price development of **R404A (GWP 3985)** and **R134a (GWP 1430)** at gas producer and service company level, indexed to 2014 prices (100 %)



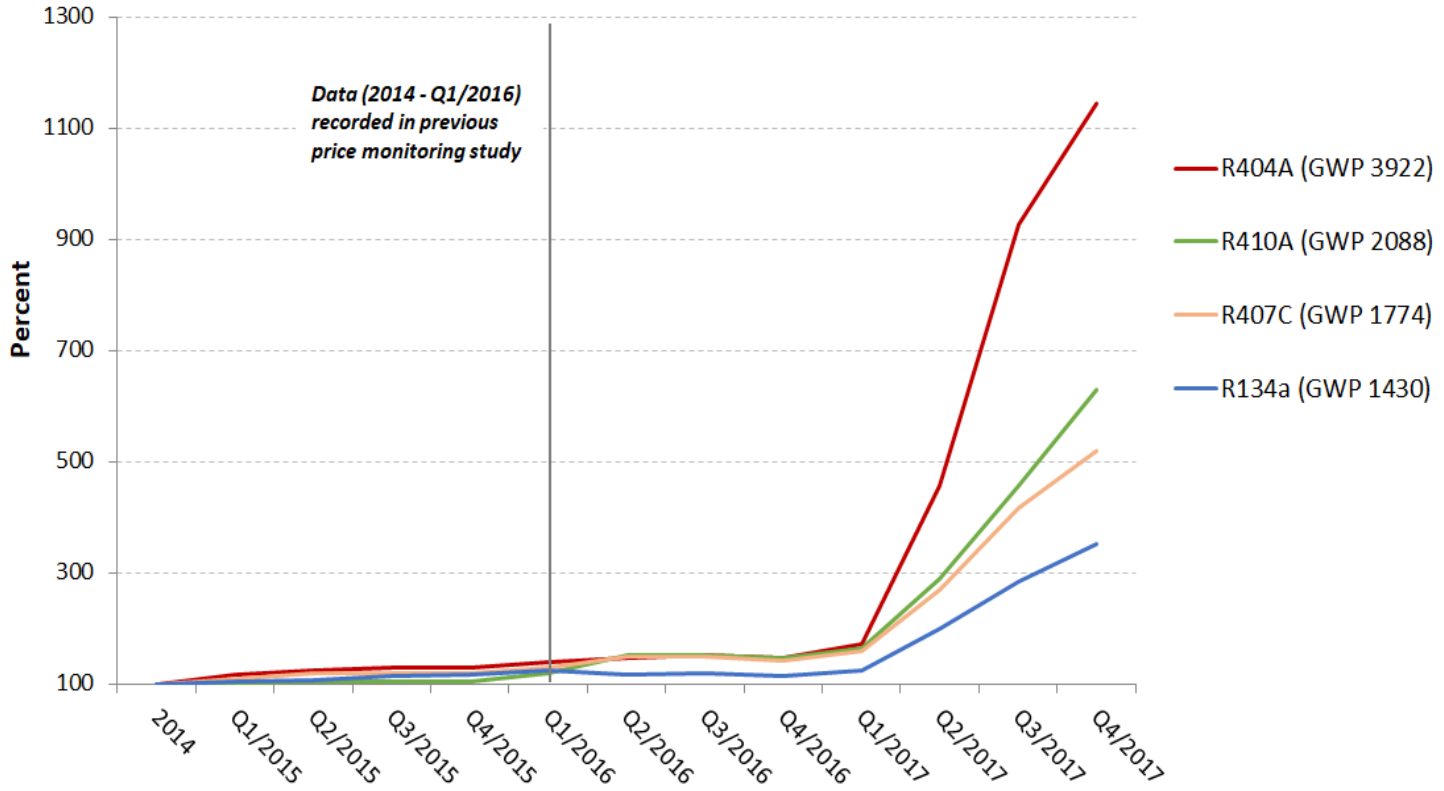
HFC price development since 2015 (III)

Price development of **R410A (GWP 2088)** at different levels of the supply chain, indexed to 2014 prices (100 %)



HFC price development since 2015 (IV)

Development of **purchase prices of various refrigerants** at service company level, indexed to 2014 prices (100 %)



Development of abatement costs

Price increase since 2014 (i.e. before Regulation (EU) No 517/2014 entered into force) – prices (in €/t CO_2e) still **within the expected range**

		in €/t CO_2e
Gas producers (selling price)	R134a	+ 8,39
	R410A	+ 6,94
	R404A	+ 7,27
OEMs (purchase price)	R134a	+ 16,40
	R410A	+ 17,39
	R404A	+ 13,65
Service companies (purchase price)	R134a	+ 16,24
	R410A	+ 19,20
	R404A	+ 16,62
Service companies (selling price)	R134a	+ 23,29
	R410A	+ 22,04
	R404A	+ 22,95

- **Purchase prices in 2014:** < 2 €/t CO_2e
- **Purchase prices at the beginning of 2018 (Q1):** **7 – 23 €/t CO_2e**
- **Forecast 2030*:** 35 €/t CO_2e possible
- **EU Roadmap 2050:** 50 €/t CO_2e
- **Current price of EU ETS emission allowances:** ~ 16 €/t CO_2e

**Study carried out for UBA in 2015*

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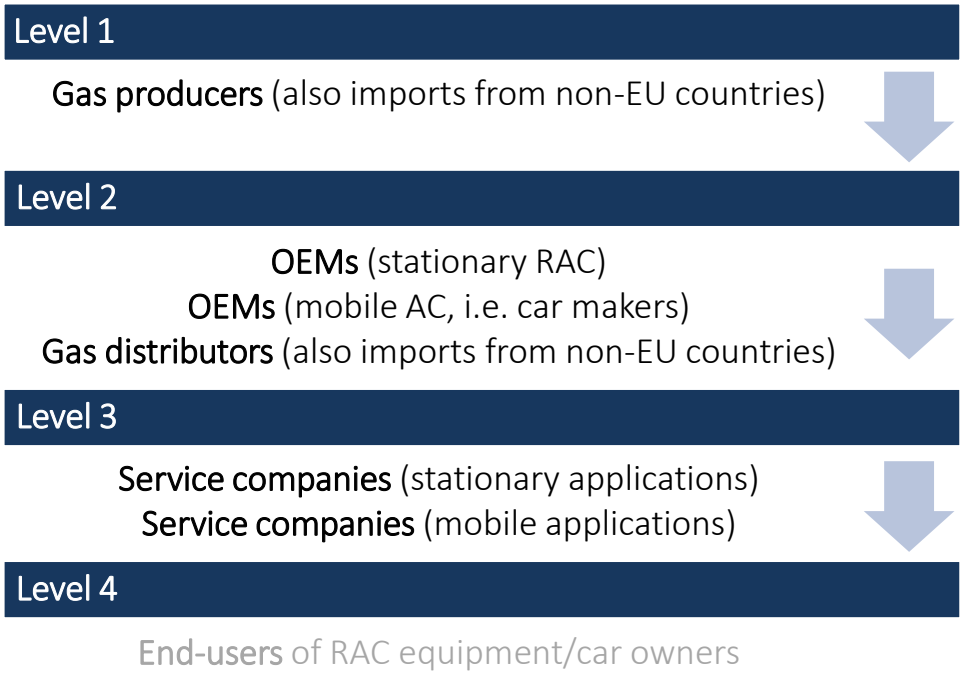
About the price monitoring survey



- Project was commissoned by the **EU Commission** (DG Climate Action)
- Started in **mid-2016**
- Takes into account **results from a previous project** (2015-2016)
- **CITEPA (France)** as project partner
- **Close cooperation with national** (ATF, BWP, VDKF, SNEFFCA) **and EU associations** (AREA, ASERCOM, EPEE, Eurovent)

► **Aim is to monitor the effects of the HFC phase-down on different levels of the supply chain**

Survey participants



Companies

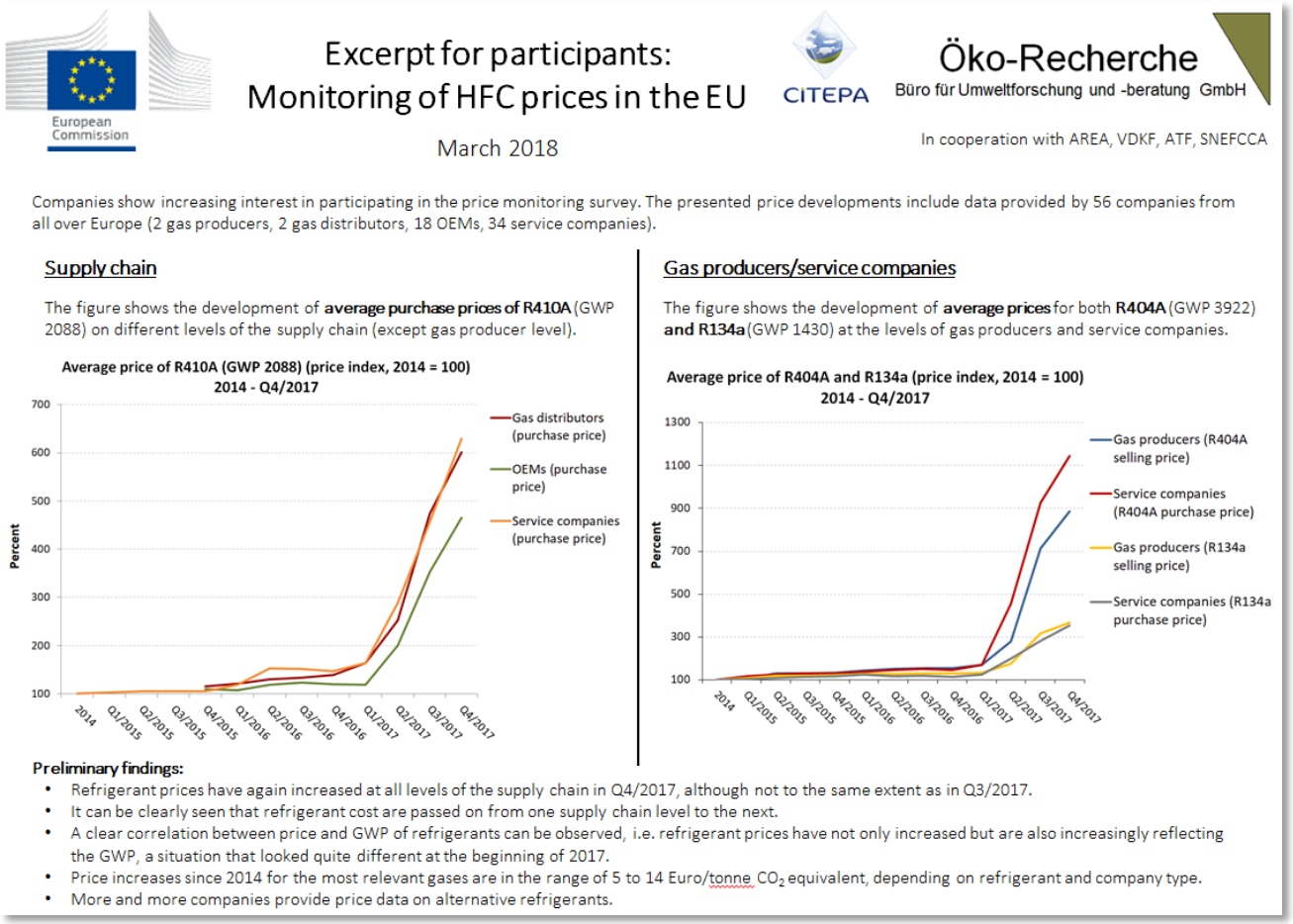
- from refrigeration, air conditioning and heat pump **(RACHP) sector**
- from **different EU Member States**
- from **all levels** of the **supply chain**
- provide data on **purchase and/or selling prices** of refrigerants on a **quarterly basis**

► **In Q1/2018:** 71 companies participated voluntarily

Survey procedure

- Questionnaires are sent out via e-mail **after the end of each quarter** (e.g. first week of July for Q2/2018)
- Questionnaires as **excel file** (German and English)
- Companies report back **within one or two weeks**
- Companies **decide which data** they want **to provide**
- All data provided is treated **strictly confidential**
- All **data is aggregated** and **normalised** so that individual contributions from companies are not revealed

Excerpt for participants



Excerpt for participants:
Monitoring of HFC prices in the EU

March 2018

European Commission

CITEPA

Öko-Recherche
Büro für Umweltforschung und -beratung GmbH

In cooperation with AREA, VDKF, ATF, SNEFCCA

Companies show increasing interest in participating in the price monitoring survey. The presented price developments include data provided by 56 companies from all over Europe (2 gas producers, 2 gas distributors, 18 OEMs, 34 service companies).

Supply chain

The figure shows the development of **average purchase prices of R410A** (GWP 2088) on different levels of the supply chain (except gas producer level).

Average price of R410A (GWP 2088) (price index, 2014 = 100) 2014 - Q4/2017

Gas producers/service companies

The figure shows the development of **average prices** for both **R404A** (GWP 3922) **and R134a** (GWP 1430) at the levels of gas producers and service companies.

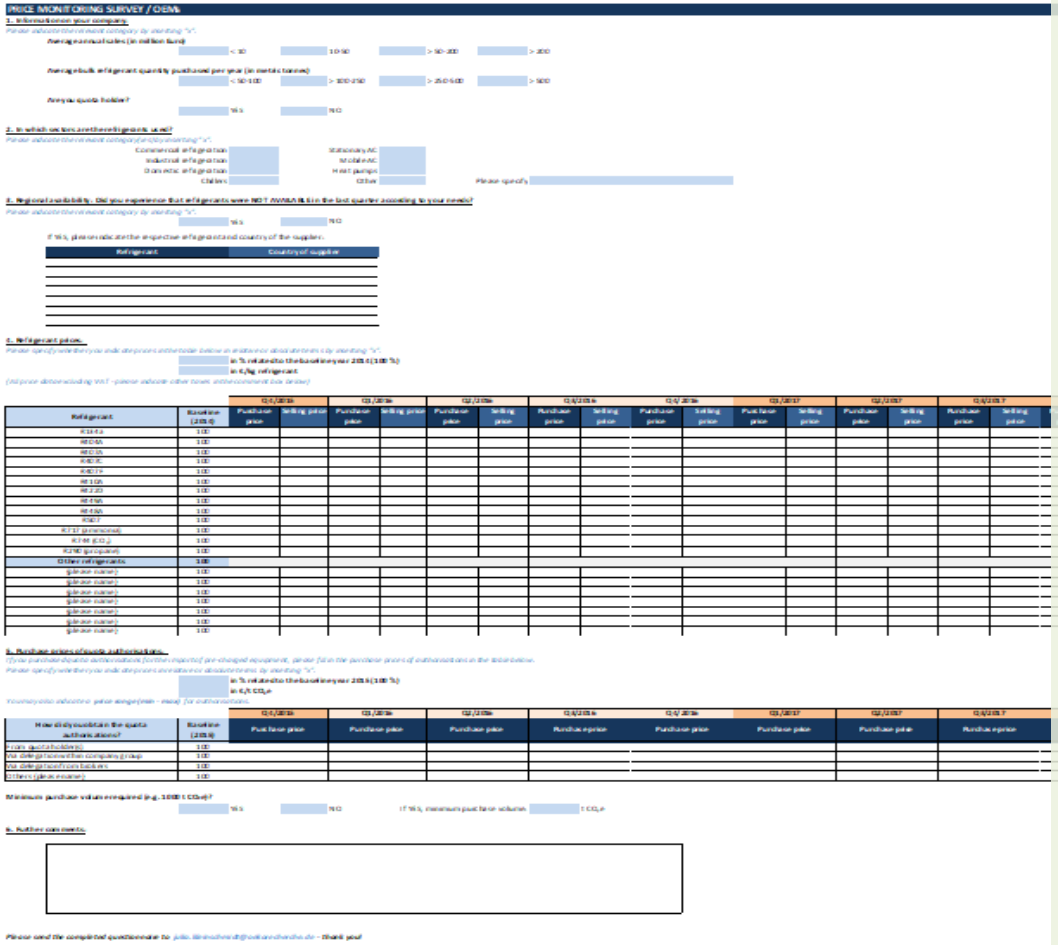
Average price of R404A and R134a (price index, 2014 = 100) 2014 - Q4/2017

Preliminary findings:

- Refrigerant prices have again increased at all levels of the supply chain in Q4/2017, although not to the same extent as in Q3/2017.
- It can be clearly seen that refrigerant cost are passed on from one supply chain level to the next.
- A clear correlation between price and GWP of refrigerants can be observed, i.e. refrigerant prices have not only increased but are also increasingly reflecting the GWP, a situation that looked quite different at the beginning of 2017.
- Price increases since 2014 for the most relevant gases are in the range of 5 to 14 Euro/tonne CO_2 equivalent, depending on refrigerant and company type.
- More and more companies provide price data on alternative refrigerants.

- In return for their participation, companies **regularly receive an excerpt** from the last price monitoring report
- Excerpt includes **price developments** and **preliminary findings**
- **Public use** of the data by EU Commission is by agreement **delayed by 3 months**

How does the questionnaire look like?


PRICE MONITORING SURVEY / OEMs

1. Information on your company

2. In which sectors are the refrigerants used?

3. Regional availability. Did you experience that refrigerants were NOT AVAILABLE in the last quarter according to your needs?

4. Refrigerant prices

5. Purchase prices of quota authorisations

6. Further comments

Six sections:

1) **Information about the company**
2) **Sectoral use of refrigerants***
3) **Regional availability of refrigerants***
4) **Refrigerant prices**
5) **Authorisation prices***
6) **Further comments**

*new since Q1/2018

Section 1: Information about your company

Example

PRICE MONITORING SURVEY / OEMs

1. Information on your company:

Please indicate the relevant category by inserting "x".

Average annual sales (in million Euro)

	< 10		10-50	x	> 50-200		> 200

Average quantity of bulk refrigerant purchased per year (in metric tonnes)

	< 50-100	x	> 100-250		> 250-500		> 500

Are you quota holder?

x	YES		NO

- Categories in this section **slightly differ** for gas distributors/OEMs and service companies

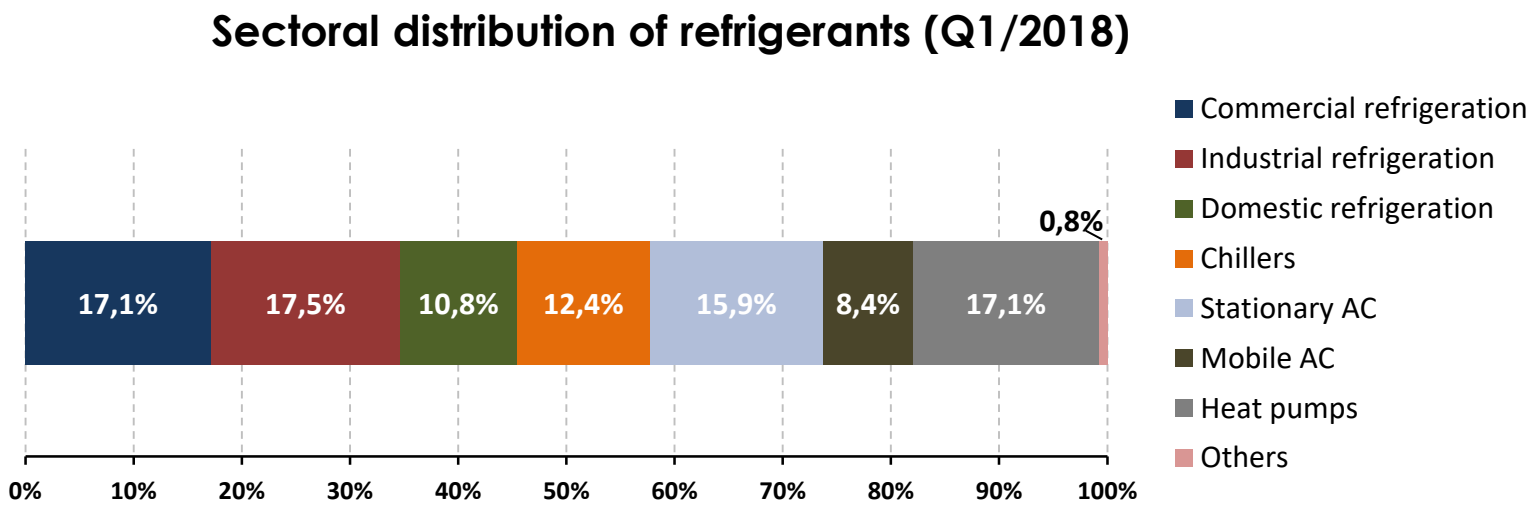
Section 2: Sectoral use

Example

2. In which sectors are the refrigerants used?

Please indicate the relevant category(ies) by inserting "x".

Commercial refrigeration	x	Stationary AC	x		
Industrial refrigeration	x	Mobile AC			
Domestic refrigeration		Heat pumps			
Chillers	x	Other	x	Please specify	Foam



Section 3: Regional availability



3. Regional availability in the last quarter: Did you experience that refrigerants were NOT AVAILABLE on the market?

Please indicate the relevant category by inserting "x".

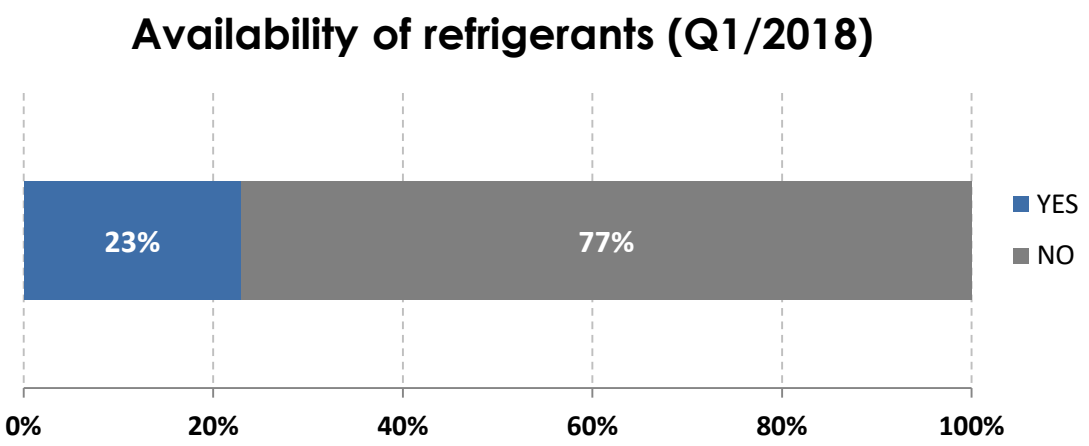
x	YES		NO

If YES, please indicate the respective refrigerant and country of the supplier:

Refrigerant	Country of supplier
R410A	Italy
R407A	Germany
R452A	France

Example

- 23% percent of the participating companies indicated that **some individual refrigerants** were not available



Section 4: Refrigerant prices

4. Refrigerant prices:

Please specify whether you indicate refrigerant prices in the table below in a) relative or b) absolute terms by inserting "x".

in % related to the baseline year 2014 (= 100 %). For other refrigerant alternatives you may also indicate another baseline year.

in €/kg refrigerant

(All price data excluding VAT - please indicate other taxes in the comment box below)

Refrigerant	Baseline	Q4/2015		Q1/2016		Q2/2016		Q3/2016		Q4/2016		Q1/2017		Q2/2017		Q3/2017		Q4/2017		Q1/2018		Q2/2018	
		Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price	Purchase price	Selling price
R134a	2014 = 100																						
R404A	2014 = 100																						
R407A	2014 = 100																						
R407C	2014 = 100																						
R407F	2014 = 100																						
R410A	2014 = 100																						
R422D	2014 = 100																						
R449A	2014 = 100																						
R448A	2014 = 100																						
R507	2014 = 100																						
R717 (ammonia)	2014 = 100																						
R744 (CO_2)	2014 = 100																						
R290 (propane)	2014 = 100																						
Other refrigerants																							
{please name}	year = 100																						
{please name}	year = 100																						
{please name}	year = 100																						
{please name}	year = 100																						
{please name}	year = 100																						
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Companies can choose whether to indicate

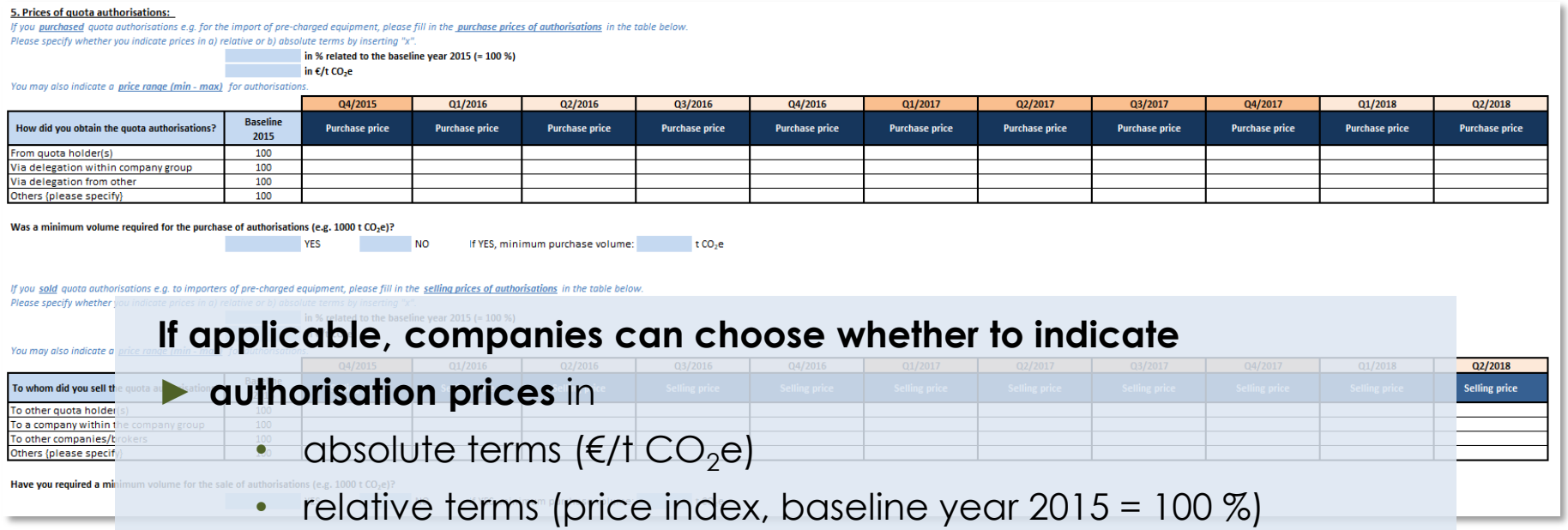
- **refrigerant prices** in
  - absolute terms (€/kg refrigerant)
  - relative terms (price index, baseline year (2014 or other) = 100 %)
- **purchase and/or selling prices**
- for the **last quarter or** also **retroactively** for previous quarters
- **prices for other refrigerants** not included in the table

Refrigerants covered in the survey so far

Refrigerant	$GWP_{100\,years}$ (AR4)	Refrigerant	$GWP_{100\,years}$ (AR4)
R32*	675	R449A	1397
R125*	3500	R450A	604
R134a*	1430	R452A	2105
R143a*	4470	R513A	613
R404A	3922	R507A	3985
R407A	2107	R717 (ammonia)	/
R407C	1774	R744 (CO_2)	1
R407F	1825	R290 (propane)	3
R407H	1495	R1234yf	4
R410A	2088	R1234ze	7
R422D	2729	R1270 (propylene)	2
R448A	1387		

- More and more companies **provide data on alternatives to high GWP refrigerants** (HFOs, HFC-HFO blends, natural refrigerants)
- Analysis of **use and prices of alternatives** will be **one focus** of the survey in the next price monitoring reports

Section 5: Quota authorisation prices



5. Prices of quota authorisations:

*If you **purchased** quota authorisations e.g. for the import of pre-charged equipment, please fill in the **purchase prices of authorisations** in the table below.*
Please specify whether you indicate prices in a) relative or b) absolute terms by inserting "x".

in % related to the baseline year 2015 (= 100 %)
in €/t CO_2e

*You may also indicate a **price range (min - max)** for authorisations.*

How did you obtain the quota authorisations?	Baseline 2015	Q4/2015	Q1/2016	Q2/2016	Q3/2016	Q4/2016	Q1/2017	Q2/2017	Q3/2017	Q4/2017	Q1/2018	Q2/2018
		Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price	Purchase price
From quota holder(s)	100											
Via delegation within company group	100											
Via delegation from other	100											
Others (please specify)	100											

Was a minimum volume required for the purchase of authorisations (e.g. 1000 t CO_2e)?

YES NO if YES, minimum purchase volume: t CO_2e

*If you **sold** quota authorisations e.g. to importers of pre-charged equipment, please fill in the **selling prices of authorisations** in the table below.*
Please specify whether you indicate prices in a) relative or b) absolute terms by inserting "x".

in % related to the baseline year 2015 (= 100 %)

You may also indicate a price range (min - max) for authorisations.

To whom did you sell th…	Baseline 2015	Q4/2015	Q1/2016	Q2/2016	Q3/2016	Q4/2016	Q1/2017	Q2/2017	Q3/2017	Q4/2017	Q1/2018	Q2/2018
		Selling price	Selling price	Selling price	Selling price	Selling price	Selling price	Selling price	Selling price	Selling price	Selling price	Selling price
To other quota holder(s)	100											
To a company within the company group	100											
To other companies/brokers	100											
Others (please specify)	100											

Have you required a minimum volume for the sale of authorisations (e.g. 1000 t CO_2e)?

If applicable, companies can choose whether to indicate

- **authorisation prices** in
  - absolute terms (€/t CO_2e)
  - relative terms (price index, baseline year 2015 = 100 %)
- **purchase and/or selling prices**
  - obtained from/sold to quota holders, within company group, other company/broker („pooling arrangement"), others
- for the **last quarter or** also **retroactively** for previous quarters
- **minimum volume** for the sale of authorisations (if it was required)

Section 6: Further comments



6. Further comments:

Please send the completed questionnaire to julia.kleinschmidt@oekorecherche.de - thank you!

- **General information on general market developments, individual observations, expectations** (price developments of and demand for individual refrigerants, market penetration of alternatives, capacity and skill deficits or improvements, legal hurdles, …)
- **Additional information** not covered by the questionnaire
- **Suggestions** to improve the questionnaire
- …

Analysis in 2018

In order to measure as accurately as possible the impacts of Regulation (EU) 517/2014, we are **reaching out to new companies** to

- Extend the **regional coverage** of the survey to analyse regional differences (in prices, etc.)
- Extend the **sectoral coverage** to non-RACHP sectors (foams, aerosols)
- Receive more information on the **use and prices of alternatives** to high GWP refrigerants
- Receive first-hand **information of possible difficulties in gas supply** (which gas? where? scope?...)

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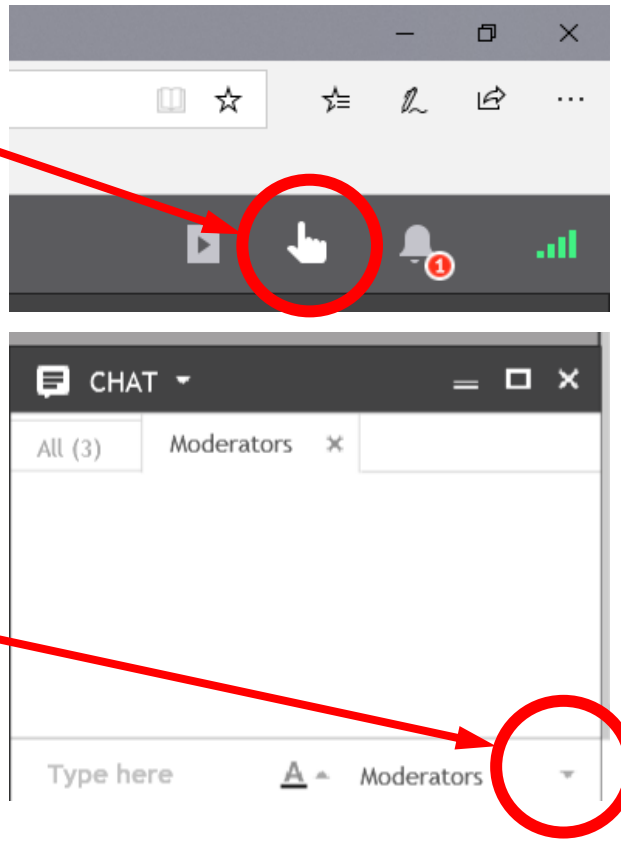
Q&As on the price monitoring survey

Please submit your question by either using the **„hand raising“ function**

or

the **chat function**

(send message to „moderators“)



Thank you very much for your participation!

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