HFC Phase Down -The State of Play in Ireland

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Presentation Outline

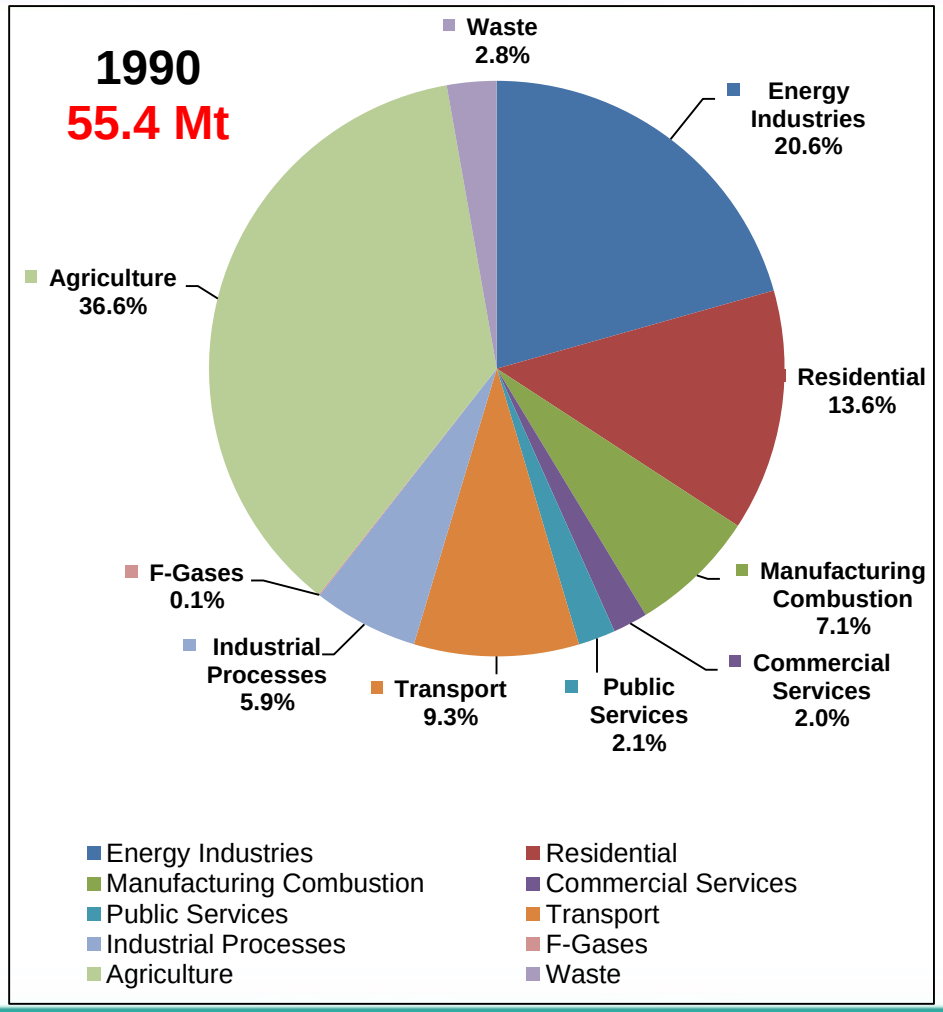
- Why are F-Gases regulated
- Who regulates F-Gases in Ireland
- Findings of 2015 Bulk Refrigerant Gas Survey
- Key Recommendations
- Useful guidance and case studies

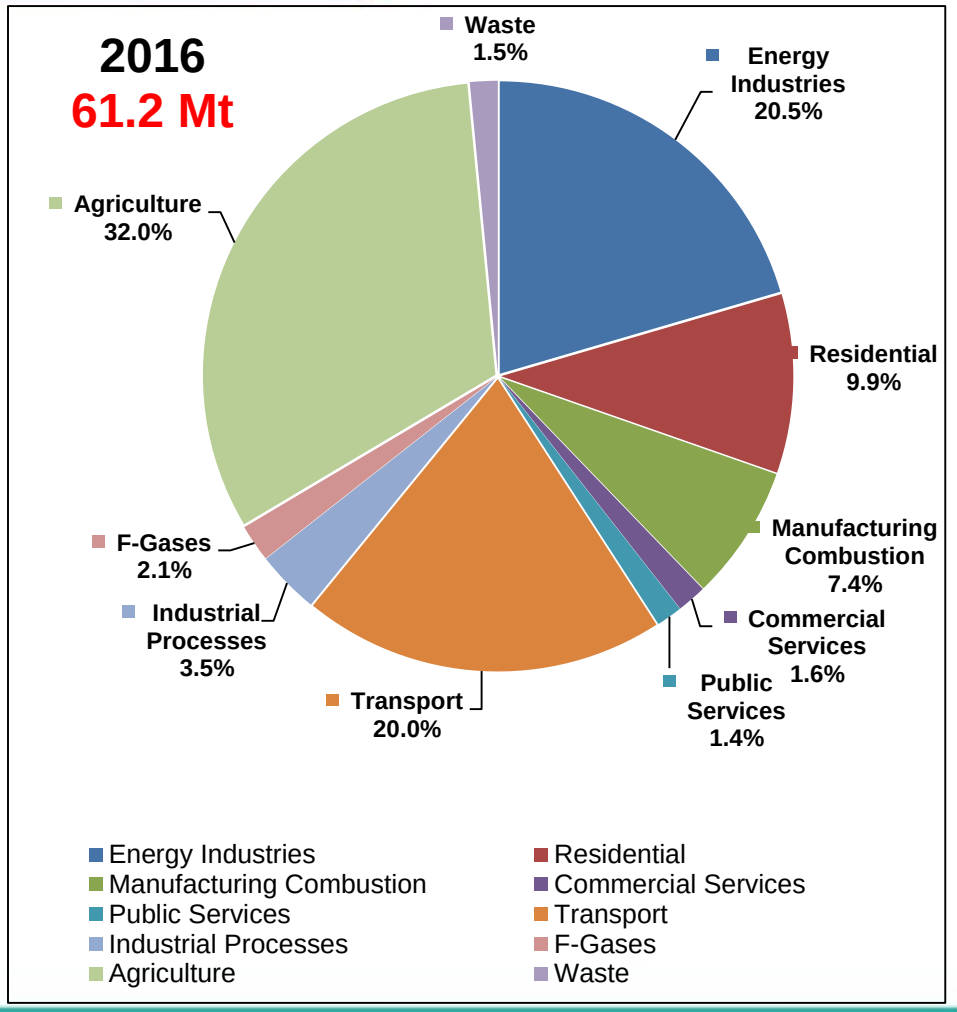
Why are F-Gases Regulated?

- **Fluorinated Greenhouse Gases (F-gases)** are very potent greenhouse gases which contribute to climate change if released to atmosphere

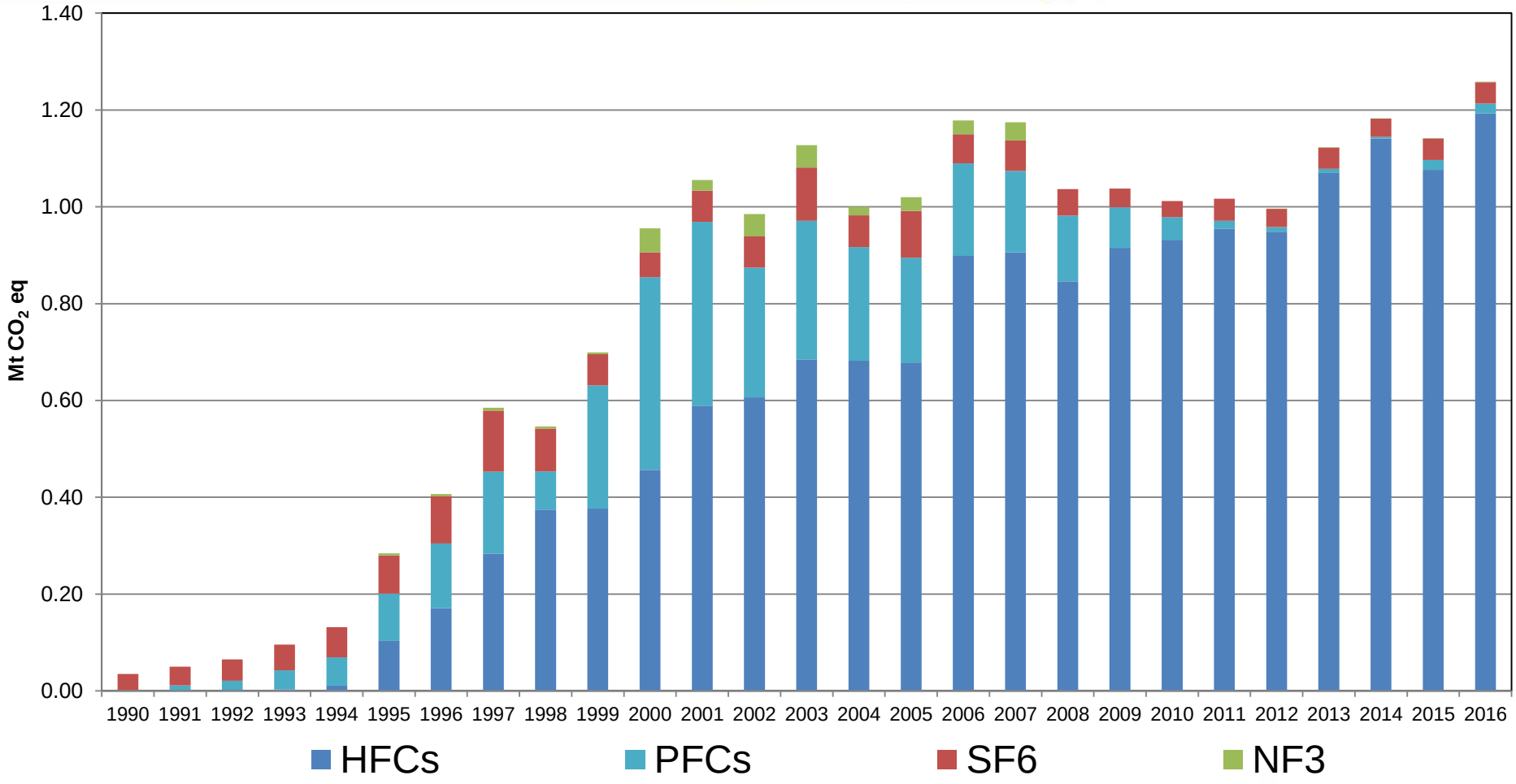
- **Global Warming Potential (GWP)** is used to indicate the relevance of a gas for warming the atmosphere

GHG emissions 1990 and 2016



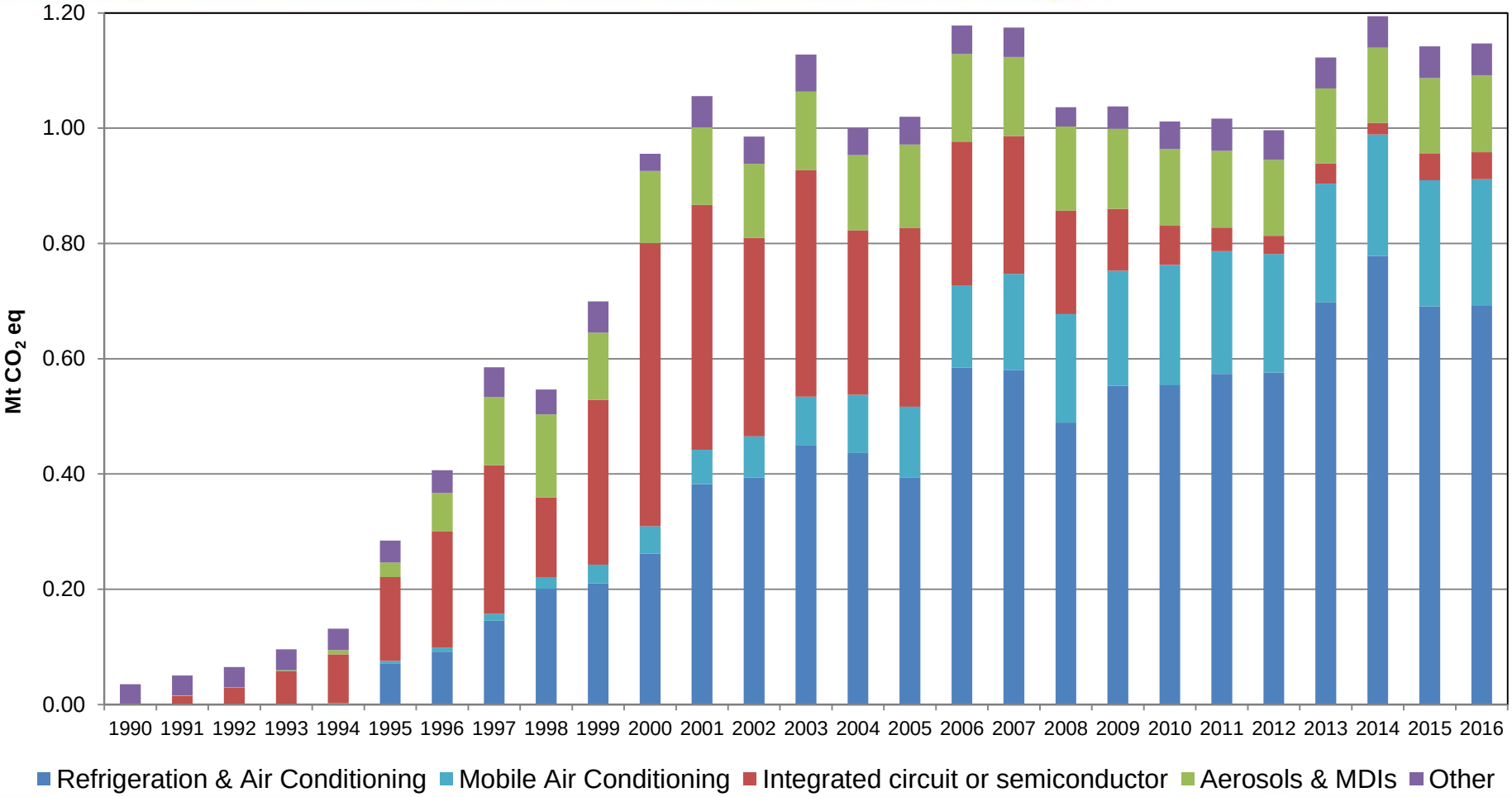


F-Gases Emissions in Ireland 1990-2016

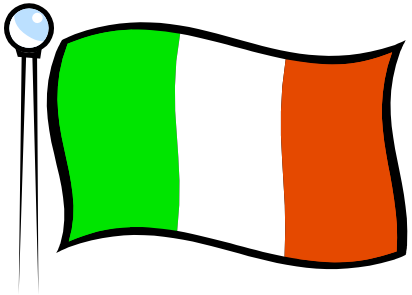


Overall emissions in 2016 are 3471% above 1990 levels

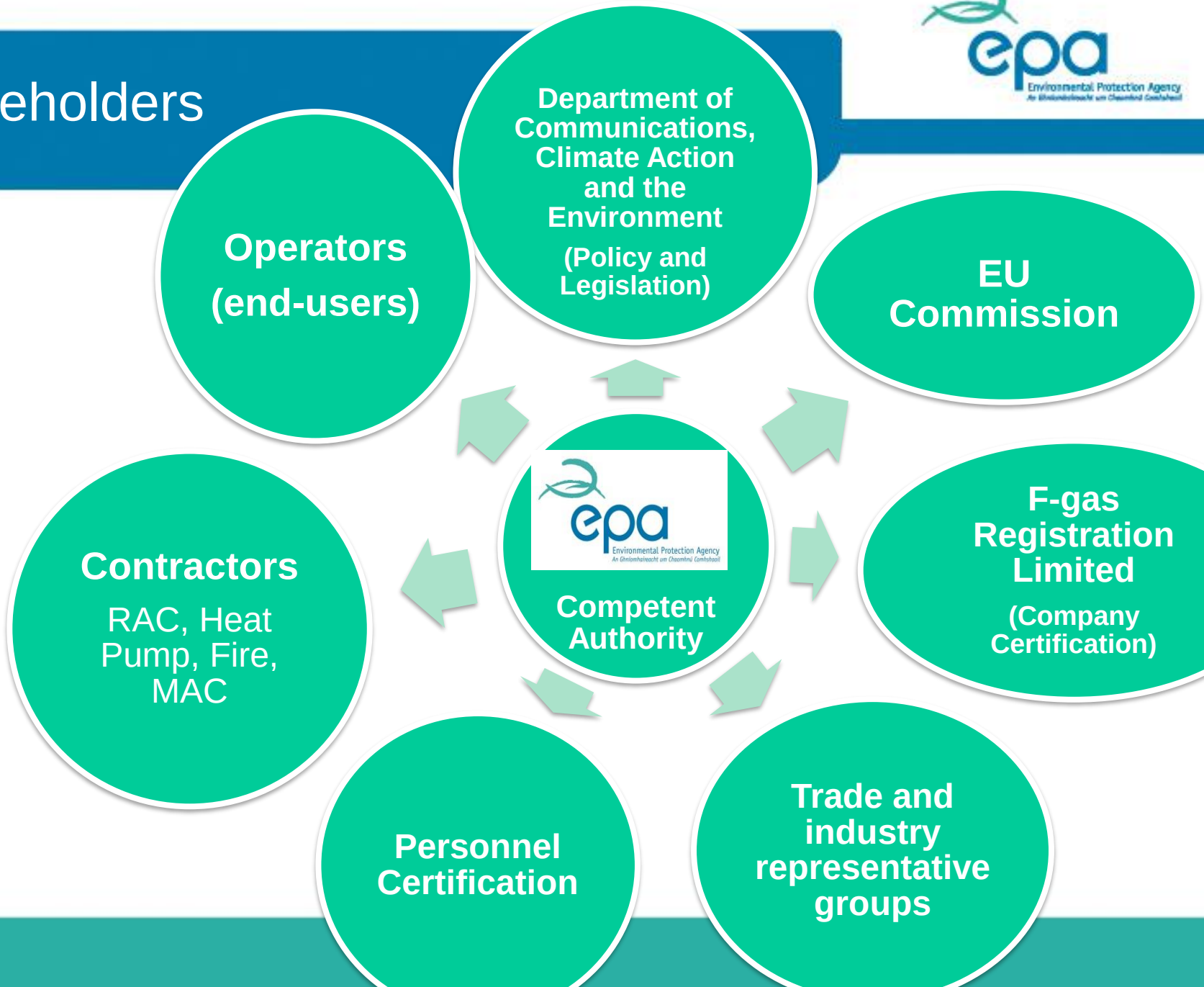
HFC Emissions In Ireland 1990-2016



F-Gas legislation

		
Kyoto Protocol (1997) Prevent greenhouse gas emissions Kigali Amendment to Montreal Protocol (2016)	EU F-gas Regulation (EU 517/2014) MAC Directive	S.I. No 658 of 2016

Stakeholders



F-Gas Restrictions

3 drivers in the F-Gas Regulation designed to move away from the use of high Global Warming Potential HFC gases

- **F-gas Phase Down** (in force since 1st January 2015)

- the **Service and Maintenance Ban** (from 1st January 2020)

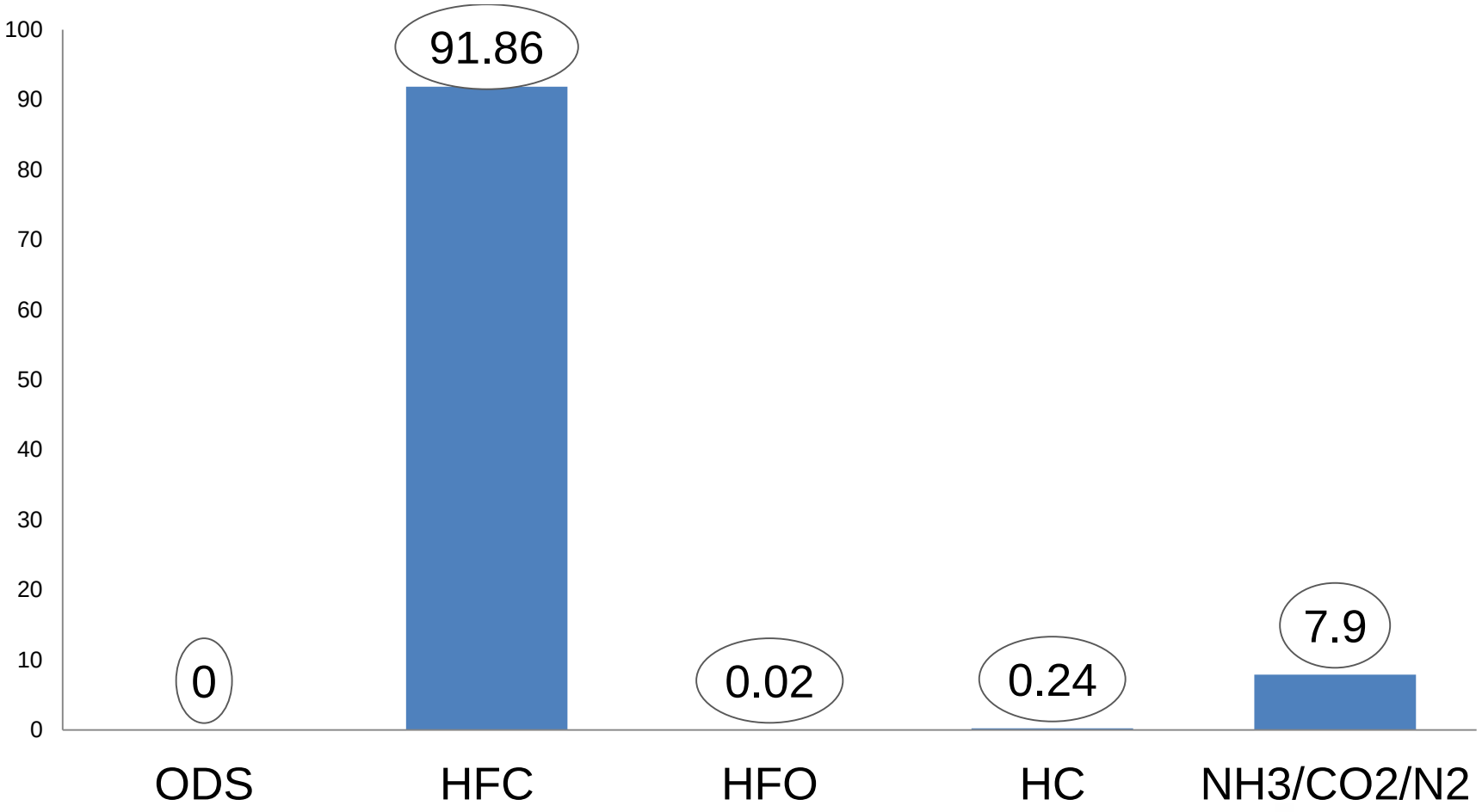
- **Placing on the Market Bans** (from July 2007 to January 2025)

EPA 2015 Refrigerant Gas Survey

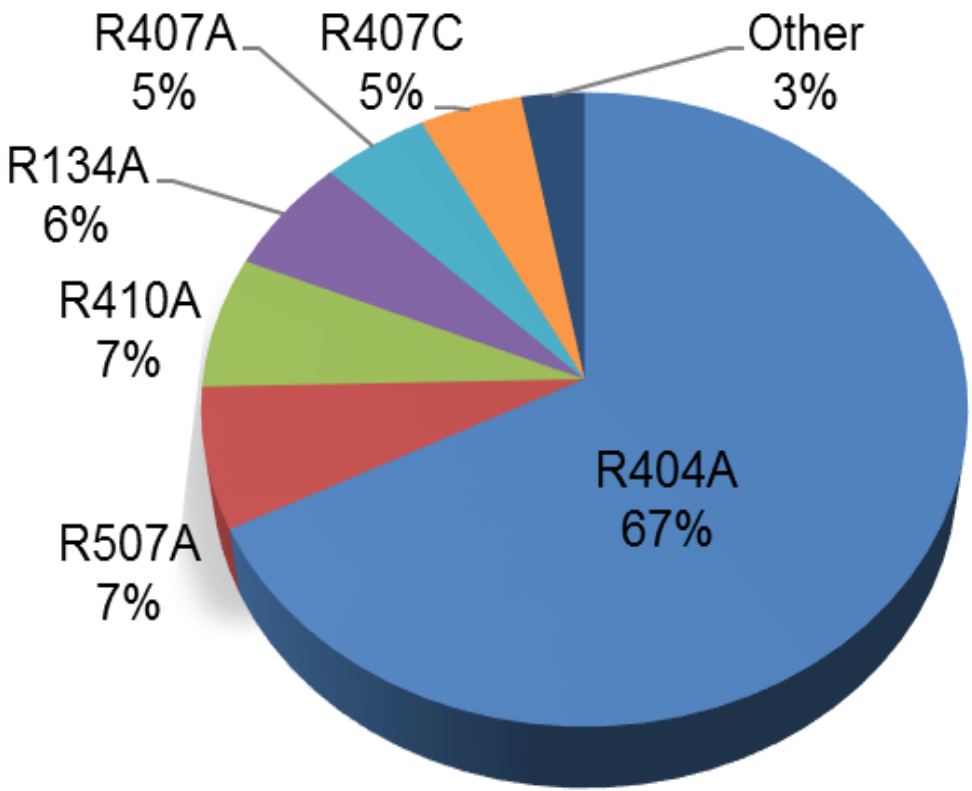
- Who was surveyed?

- Metric to track HFC use was developed to provide
  - a baseline of where Ireland stood
  - a means to track progress annually on the HFC phase down

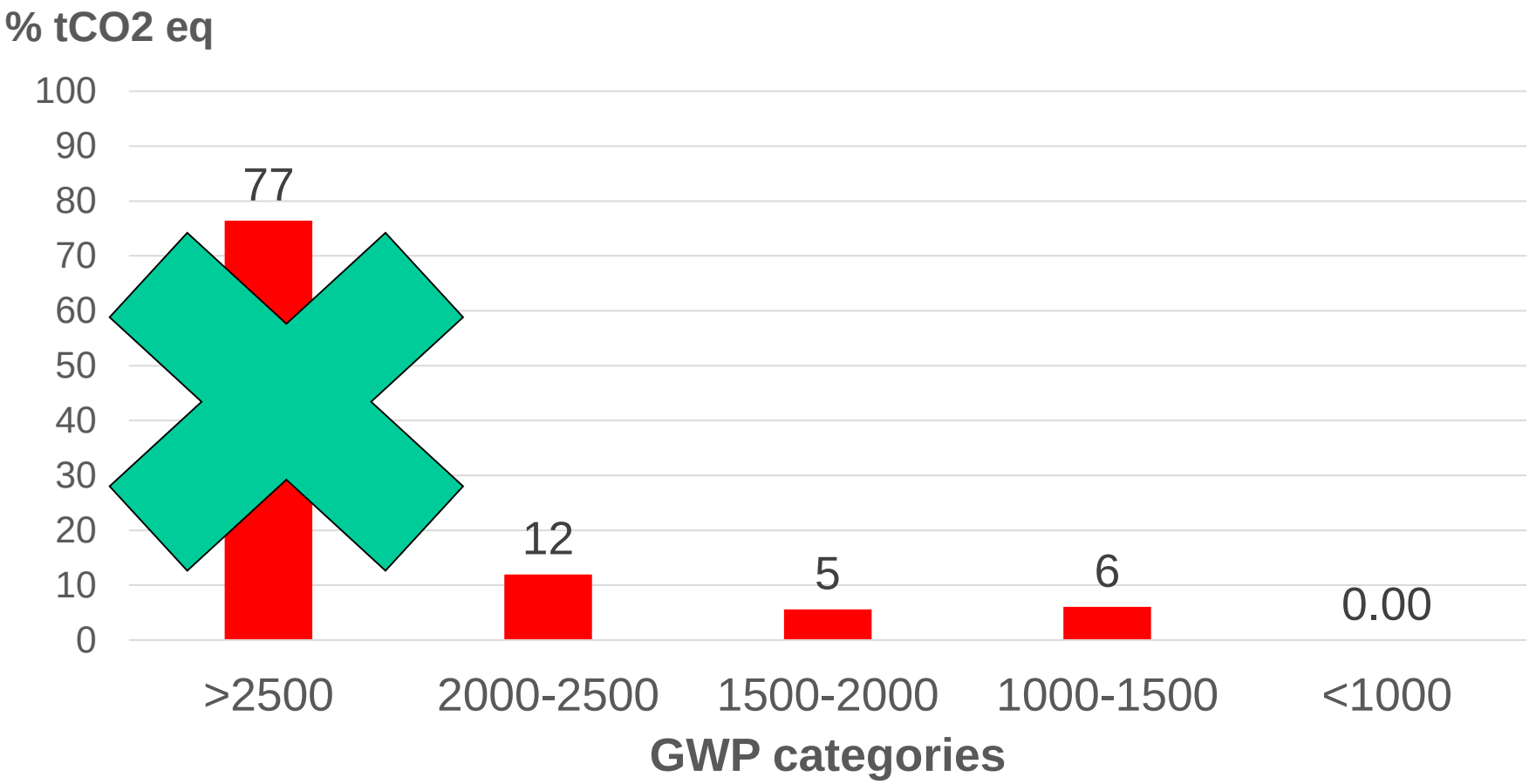
% bulk gas purchased during 2015



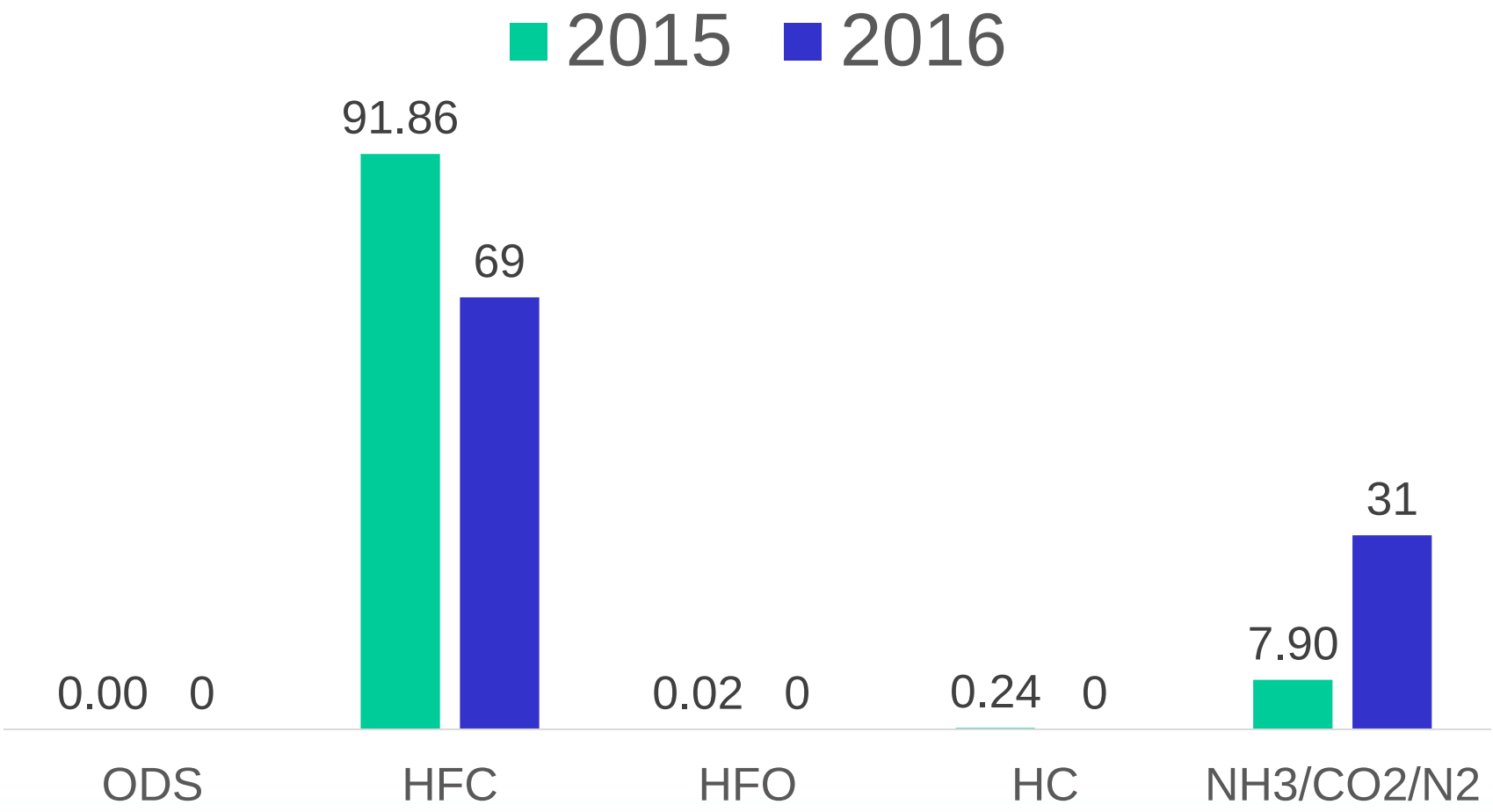
Bulk HFCs purchased by Irish Distributors (in % tCO_2 equivalent)



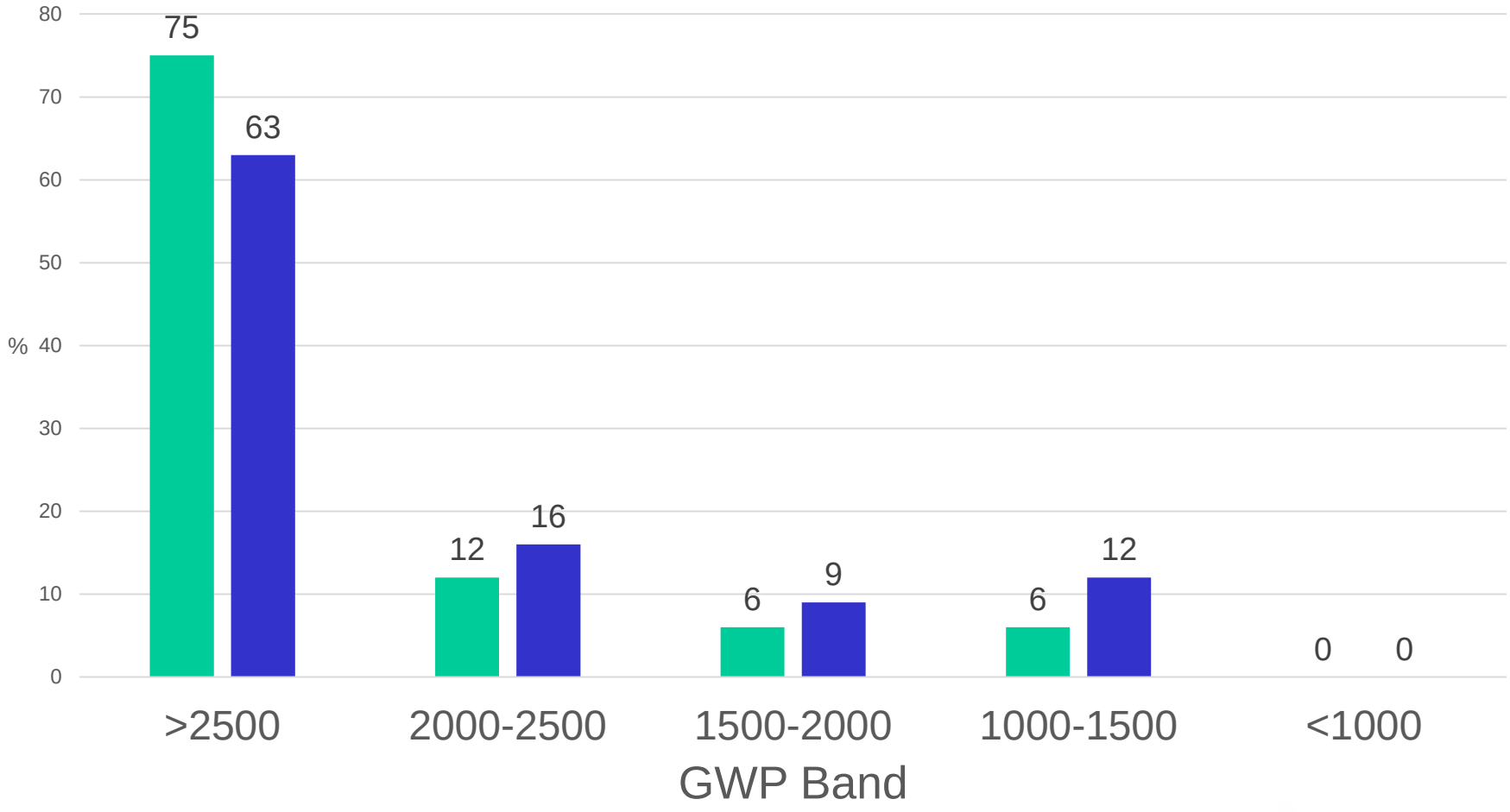
HFCs purchased in 2015 in terms of Global Warming Potential



% Bulk Gas Purchases 2015 - 2016 (note incomplete 2016 data)



HFC Band Comparison 2015-2016 (incomplete 2016 data!!)



Reclaimed HFCs

- Reclaimed gas may be used to service **existing** equipment
- In 2015, no reclaimed HFCs were purchased in Ireland
- Reclamation market expected to grow and credit now offered for recovered R404A
- Currently no reclamation facility in Ireland and gases are transported to the UK or elsewhere for reclamation
  - Post-Brexit impact?

Recycled HFCs

- Recycled Refrigerants ≥ 2,500 GWP may be used until 1st Jan 2030 to service **existing equipment** if
  - They have been **recovered** from existing equipment
  - They may only be used by
    - F-Gas certified contractor who carried out their recovery as part of maintenance or servicing
    - The end user for which the recovery was carried out

Brexit and Its Potential Impact

- 3 of 6 distributors held quota of 0.26 million tCO_2eq for 2015
- But 1.24 million tCO_2eq bulk HFC purchased
- Shortfall of 79% in quota
- Majority of this shortfall was supplied by UK companies
- Post–Brexit Irish distributors may need quota to purchase HFCs from the UK
- All Irish distributors are encouraged to apply for quota in order to maximise supply

Technician Training

- Only technicians certified in accordance with the F-Gas Regulations can recover F-Gases or install, service, repair, leak check, maintain, decommission equipment containing F-Gases
- However, each refrigerant gas has different properties such as flammability, toxicity, pressure
- Most contractors in Ireland need to upskill in order to handle lower GWP or non-F-Gas refrigerants Contractors may need some different equipment to handle more flammable refrigerants such as Hydrocarbons

Other Considerations

- **Energy use** (i.e. indirect emissions of CO_2) account for 60 - 75% of greenhouse emissions
  - Take account of energy use and building design/layout when specifying new refrigerant systems

- **Leakage** of HFCs can result in significant losses
  - Reduced leakage = reduced need for refrigerant top up
  - Ensure equipment is leaked tested by certified technicians at the minimum frequency specified in the F-Gas Regulation

Recommendations (1)

- New equipment which relies on HFCs with a GWP ≥ 2,500 tCO_2eq should no longer be installed
- Only new equipment using natural refrigerants or ultra-low GWP HFC refrigerants should be installed
- Develop interim plan to operate existing equipment which relies on HFCs with a GWP ≥ 2,500
  - Replace HFC's with lower GWP gases as an interim measure
  - Use reclaimed or recycled HFCs with a GWP ≥ 2,500 for servicing until 31/12/2029
- Recycling and reclamation of HFCs needs to be increased

Recommendations (2)

- Additional quota should be applied for by Irish gas distributors
- Ireland needs to prepare for the impact Brexit may have on its reliance on the UK
- Promotion of the transition to low GWP or alternative gases amongst operators
- Contractors who install, service, maintain and decommission refrigerant gases need to upskill

Some Useful Reading & Case Studies

- **Ireland needs to modify how it meets its Cooling Need** (EPA, 2017)
- **Retail Refrigeration - Making the Transition to Clean Cold** (University of Birmingham, 2017)
- **Chilling Facts VII** (European Investigation Agency, June 2017)
- **Lower GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO_2, ammonia and HFO case studies** (UNEP, 2016)
- **Summary Guide to the HFC Phase Down** (EPA, 2015)
- **Survey of selected fluorinated green-house gases** (Danish EPA, 2015)
- **EU F-Gas Regulation Guidance -Information Sheet 29: Low GWP Alternatives** (UK Depart. of Environment, Food and Rural Affair, 2015)
- **Low GWP Alternatives to HFCs in Refrigeration** (Danish Technological Institute, 2012)

Further information

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