

F-gases: policies and measures.

Lessons learned and challenges



Gudi Alkemade

Ministry of Infrastructure and the Environment

Climate, Air quality and Noise department



Content

- **Policies and measures: what has been achieved?**
 - **Key sources**
 - **Policies and measures**
 - **Emissions and trends**
- **Policies and measures: challenges**
 - **Climate Agenda: policy objectives**
 - **Lessons learned**
 - **Challenges**
 - **Strategy**



Policies and measures:
What has been achieved?



Key sources

SF6	PFCs	HFCs
High Voltage Switchgear	Aluminium production	Production of HCFC-22
Semi Conductor	Semiconductor	Emissions during use:
Small sources <ul style="list-style-type: none">• Window panes• Electron microscope• Particle accelerator		<ul style="list-style-type: none">• RAC sector• Mobile Airconditioning• Foams (blowing agent)• Fire protection• Aerosol uses• Solvent uses
		Handling activities



Policies and measures

- Early action ('90s):
 - Inventory of emission sources and policy options early '90s
 - Voluntary agreements industry → minimize HFC/PFC process emissions
 - Regulatory → minimize HFC (PFC) emissions, specifically RAC sector
- Reduction Programme non-CO2 GHG ('99)
 - Objectives and strategy
 - Instruments



Reduction Programme non-CO2 GHG – Objectives and Strategy

- Identify source, emission and level of certainty of emission
- Identify possible measures and reduction potential
- Prioritization → stepwise approach
- Develop sector/source specific measures/instruments
- Implementation
- Identify data requirements for monitoring (and reporting)

- Sectoral approach

- Involve stakeholders

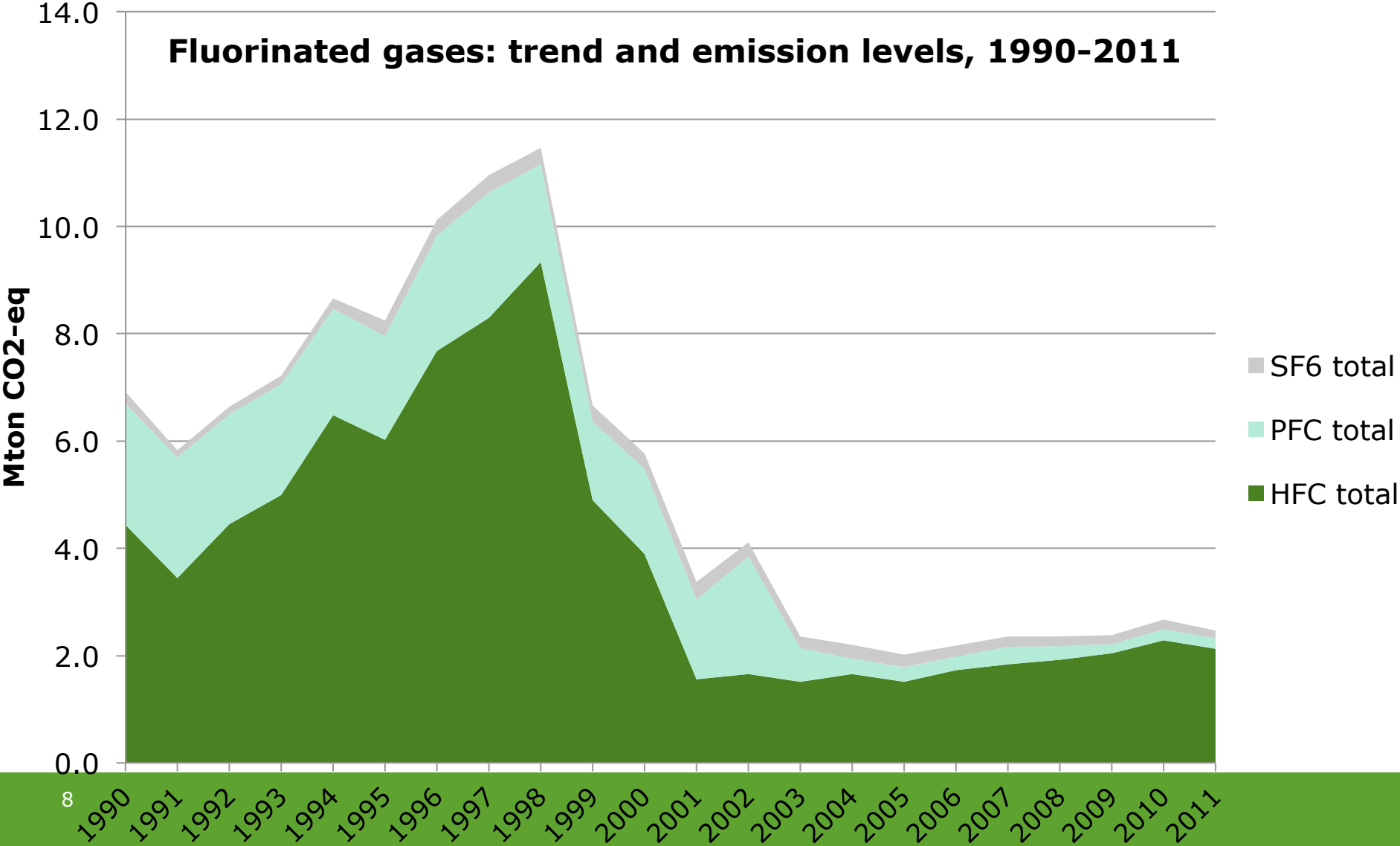


Reduction Programme non-CO2 GHG - instruments

- Voluntary agreements
- Emission limits in permit
- Regulatory requirements for emission controls
 - Precautionary measures during use
 - Recovery before end-of-life
- Promote alternatives
 - Financial incentives (tax refund schemes, R&D subsidies and demonstration projects, feasibility studies)
 - Information exchange/knowledge centre
 - Later: improve safety regulations
- Monitoring and reporting
- Later: Ban specific uses

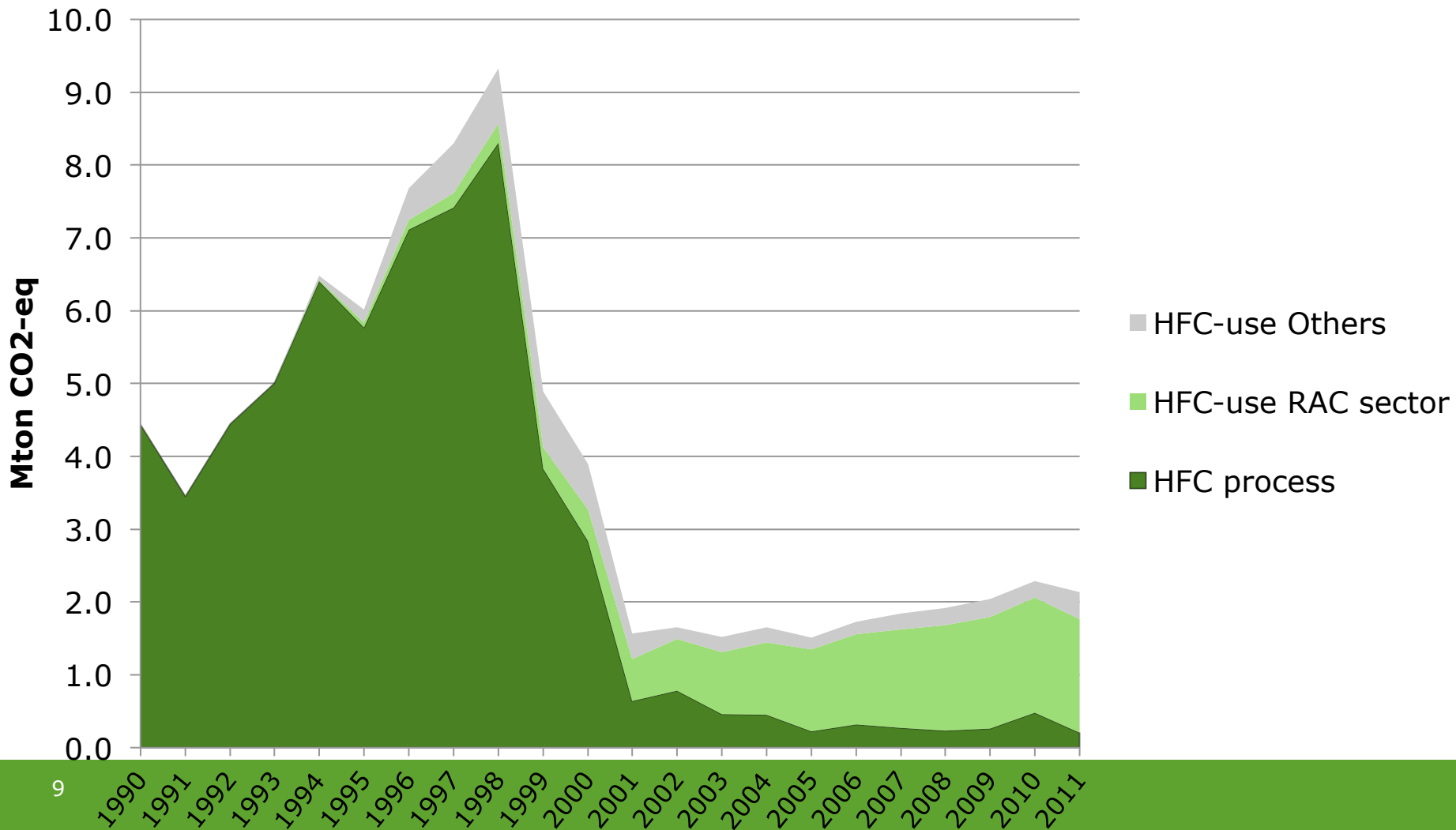


Fluorinated gases: trend and emission levels, 1990-2011



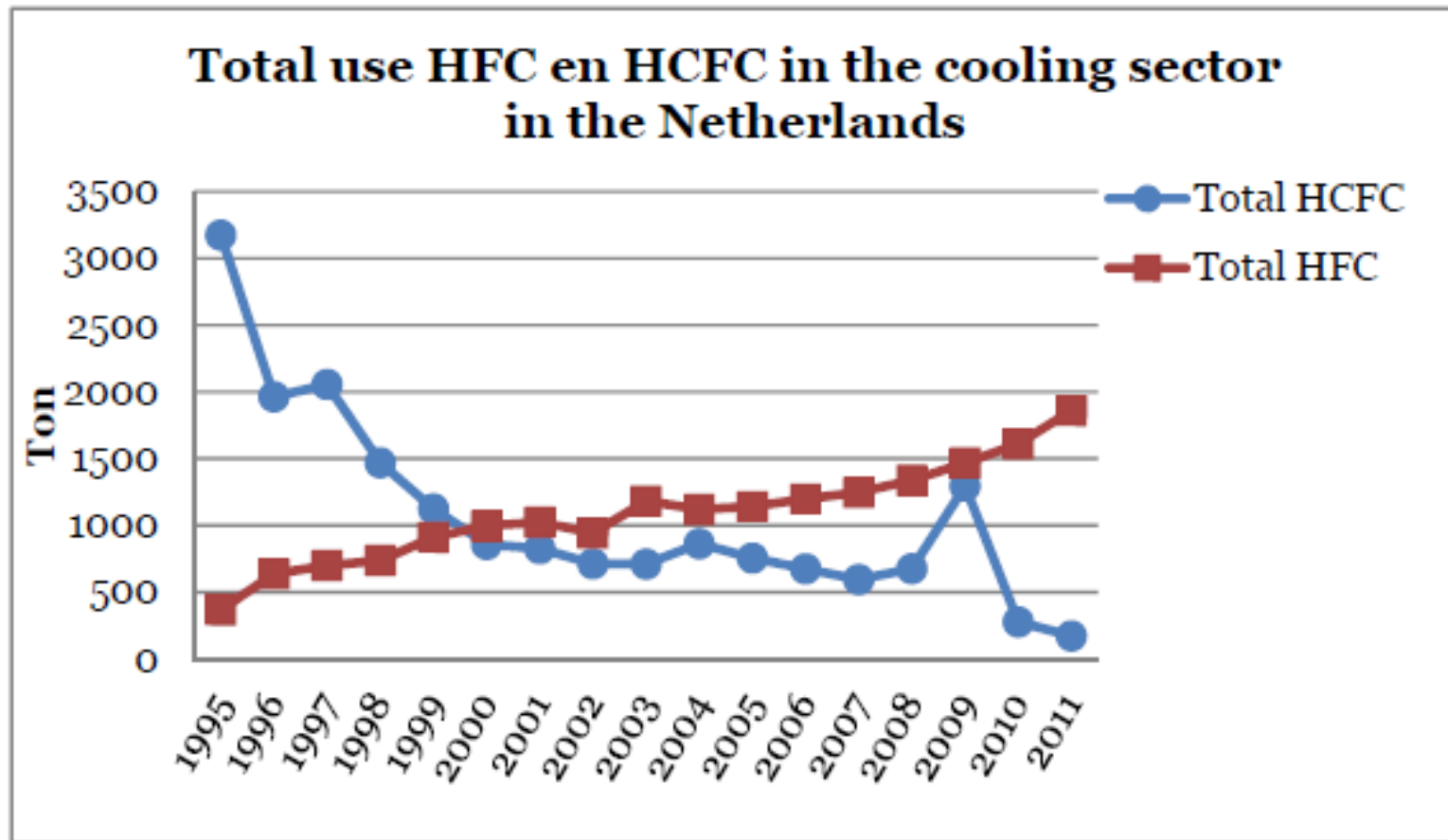


Fluorinated gases: trend and emission levels HFCs, 1990-2011





HFC trends





Projections

	SF6 BAU/WM	PFCs BAU/WM	HFCs BAU/WM
2020	50%/-50%	50%/-50%	+20% / -15%
2030	50%/-50%	50%/-50%	+35% / - 8%



Policies and measures: challenges



Climate agenda: policy objectives

- **2050**: 80-95% reduction overall GHG
- **2030**: 40% reduction (ambition)
- **2030**: 60-70% reduction F-gases (ambition)



Lessons learned

- Variety of sectors, stakeholders of uses
- Need variety of instruments
- Low hanging fruit already addressed
- HFCs growing, spec. RAC sector
- Containment policy improved:
 - Awareness
 - Leakage rates (25% of installations >300kg >95% of emissions)
 - Education and training of personnel
 - Creation of stakeholder platform
- Regulatory requirements need to be flexible (technology updates)
- Monitoring and reporting important factor to create awareness and to follow trends (eg foam sector)





Strategy

- Strengthen/improve Containment measures and Good Practices F-gases
 - Develop top 10 causes strategy for large installations
 - Improve certification system and enforcement
- Promote alternatives, taking into account energy efficiency
 - tax refund for HFC-free energy efficient equipment
 - Support training and information on alternatives for industry and Competent Authorities
- Voluntary agreements (Green Deals)
- HFC phase down (has the most potential)



Questions?