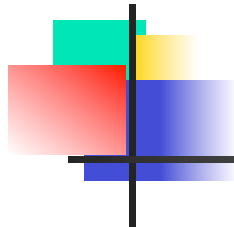




HFC demand

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HFCs

- HFCs are one of the main chemical candidates considered when converting away from ODS (next to non-fluorocarbons)
- Markets have now further developed in both Non-Article 5 and Article 5 countries, leading to considerable increases in the demand for HFCs
- Regulations are being considered (Japan and USA, others); EU F-gas regulation 517/2014 already adopted in April 2014

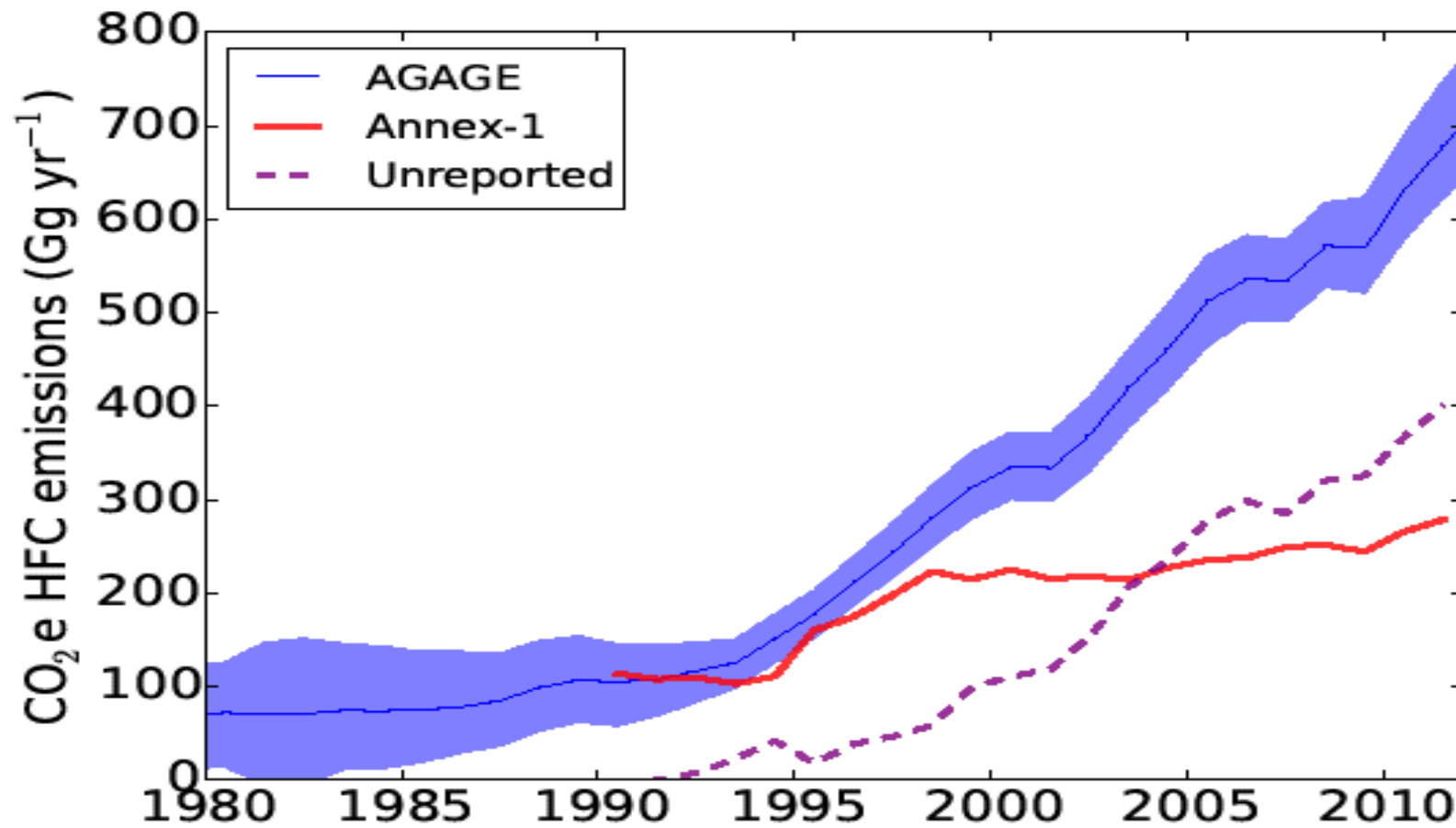


Source for HCFC - HFC demand data

- HCFC demand (= consumption) data are reported by all Parties under the Montreal Protocol
- HFC demand data are not reported
 - Emissions of HFCs are reported to the UNFCCC, there is no reporting requirement for production or demand (consumption); the emissions reporting is far from complete
 - AGAGE = emissions derived from atmospheric abundances
 - Annex 1 = reporting by Annex 1 countries
 - Unreported = difference between emissions from AGAGE measurements and reporting
 - Source: Rigby et al., 2014, Recent and future trends etc., GRL, 41, 2623-2630



Reporting of emissions (Rigby et al.)





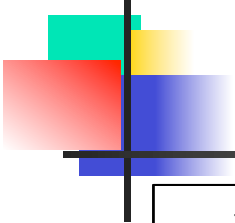
HFC demand data

- HFC demand data for this presentation have been derived from bottom-up calculations
- This method was already applied for deriving data as published in several TEAP TOC and Task Force reports; a first overview of HFC demand data to be found in the 2005 IPCC/TEAP report

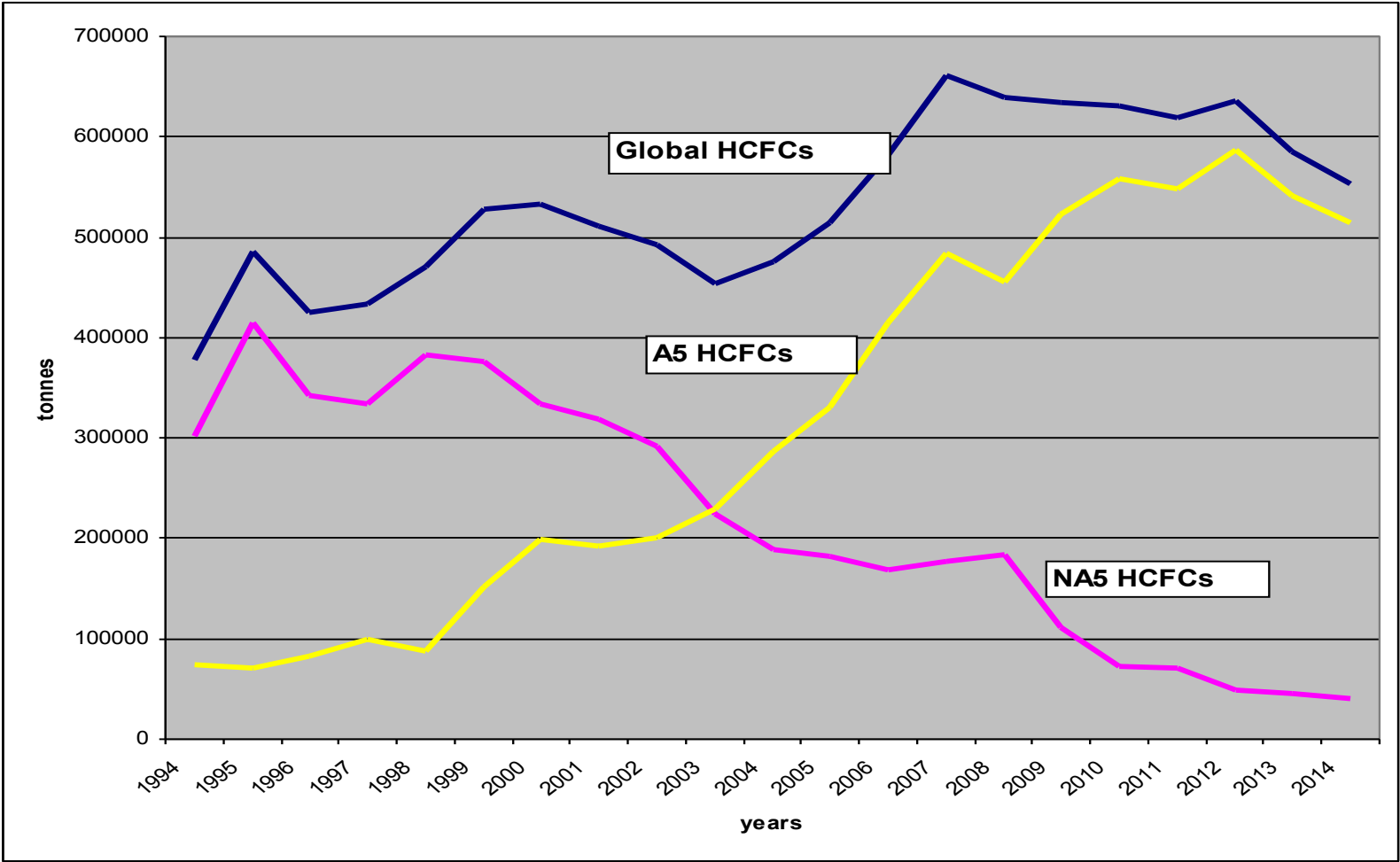


HFC demand data (2)

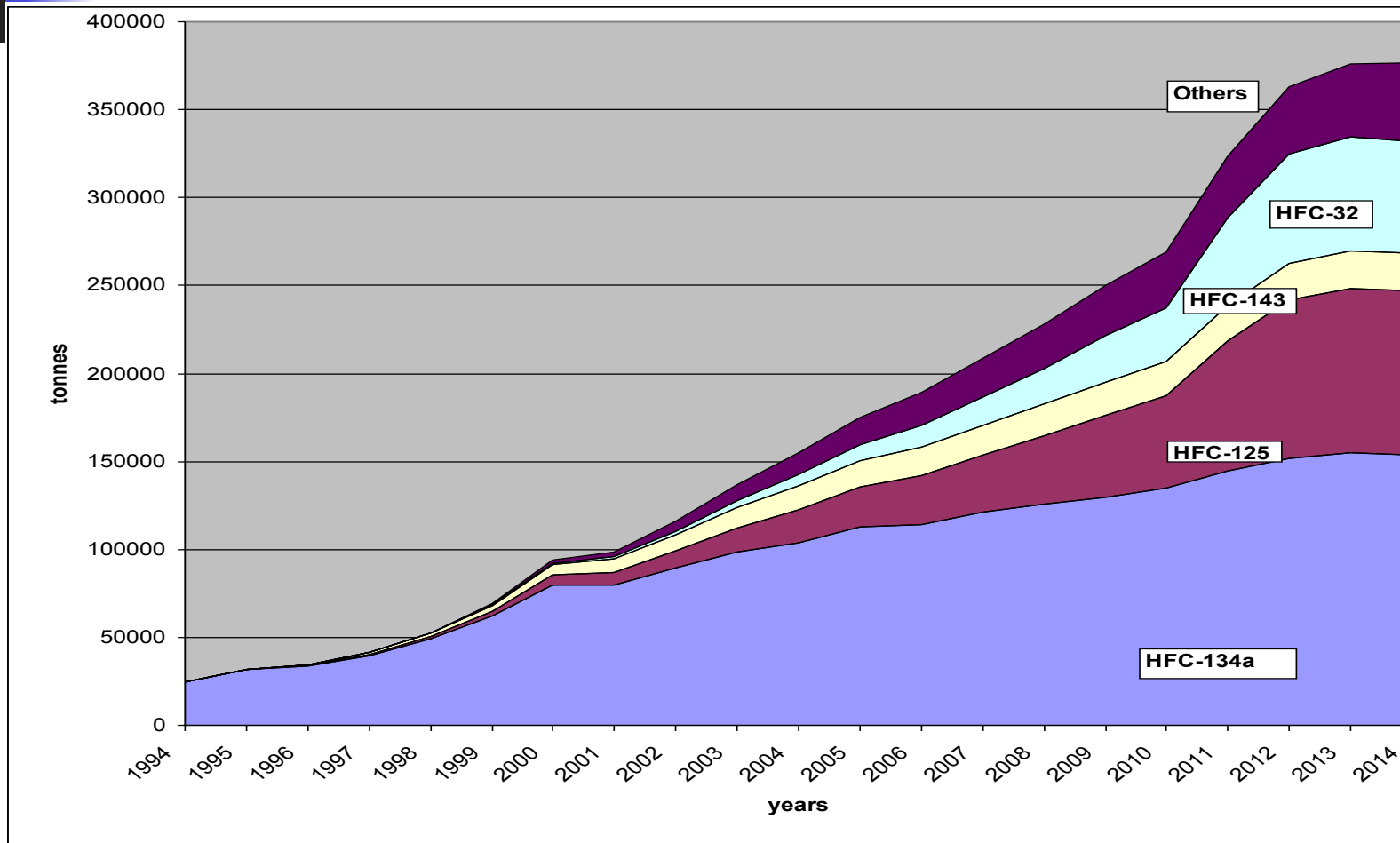
- HFC demand data mainly concern HFC-134a, HFC-125, HFC-143a, HFC-32 *; they are used in several sectors, the largest demand occurs in the R/AC sector
- HFCs such as HFC-245fa, HFC-365mfc (used for foam blowing), HFC-227ea (used in inhalers and fire protection) and HFC-236fa are considered as “other HFCs”



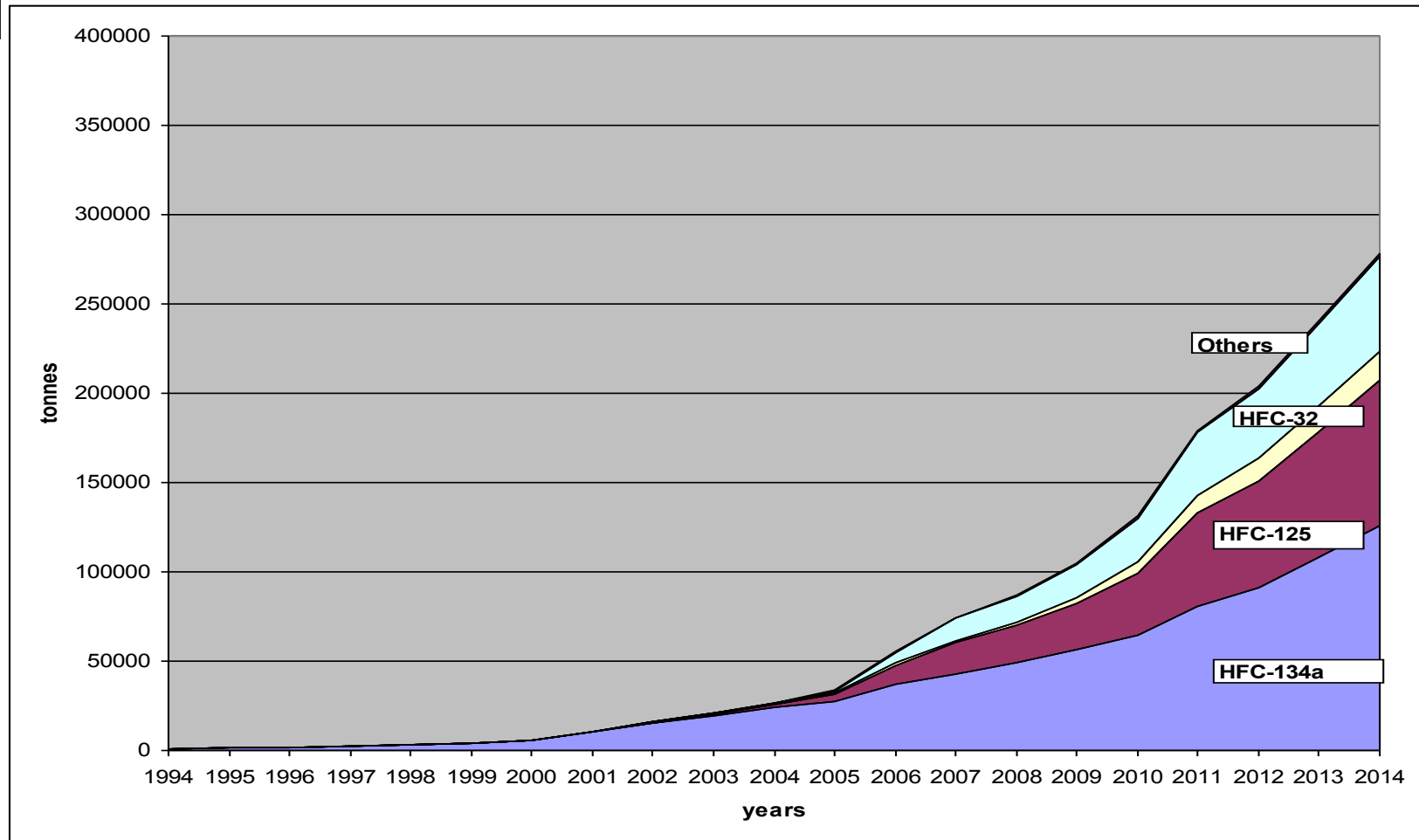
HCFC demand in tonnes

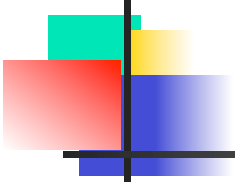


Specific HFC demand (tonnes, NA5)

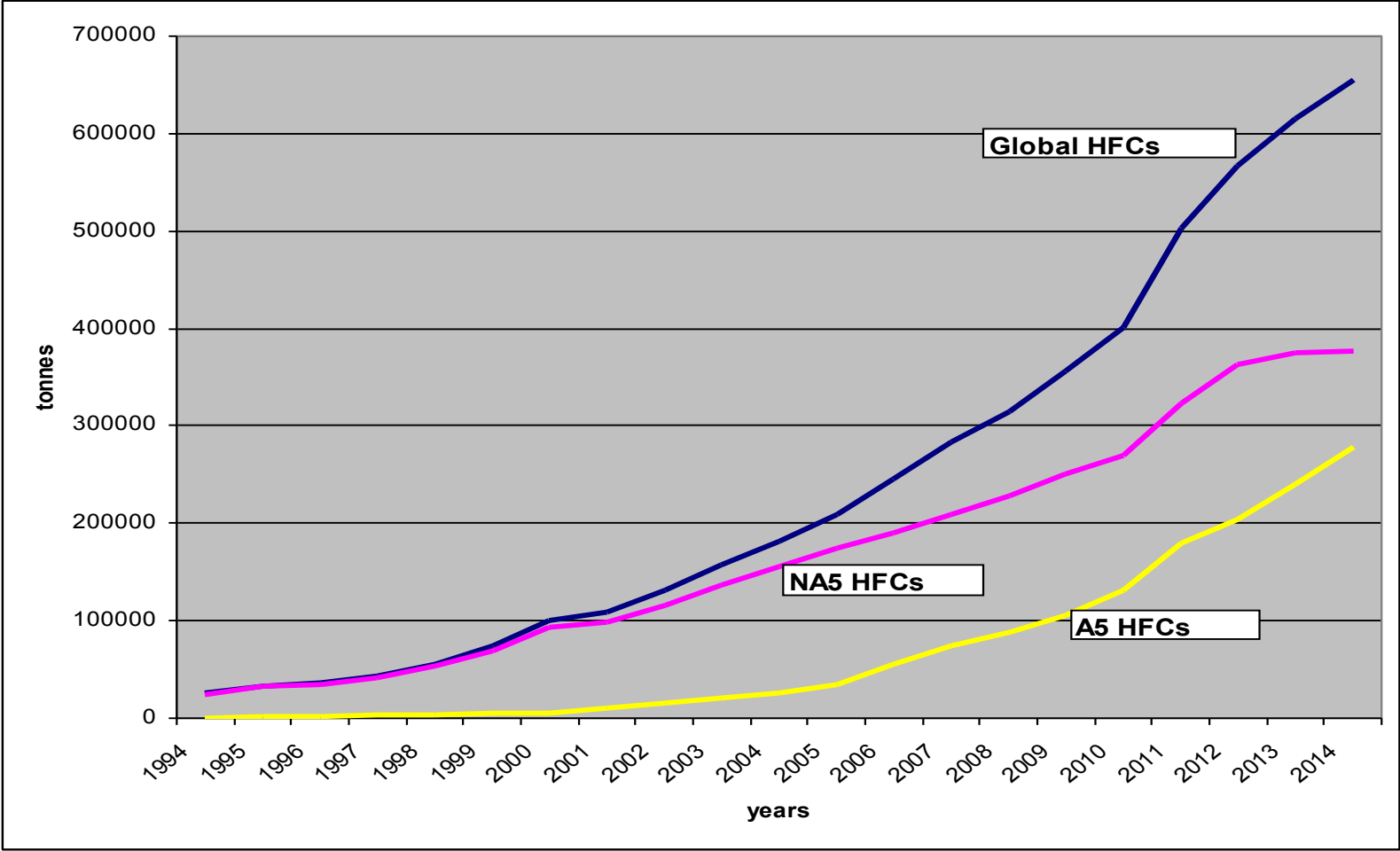


Specific HFC demand (tonnes, A5)





HFC demand in tonnes

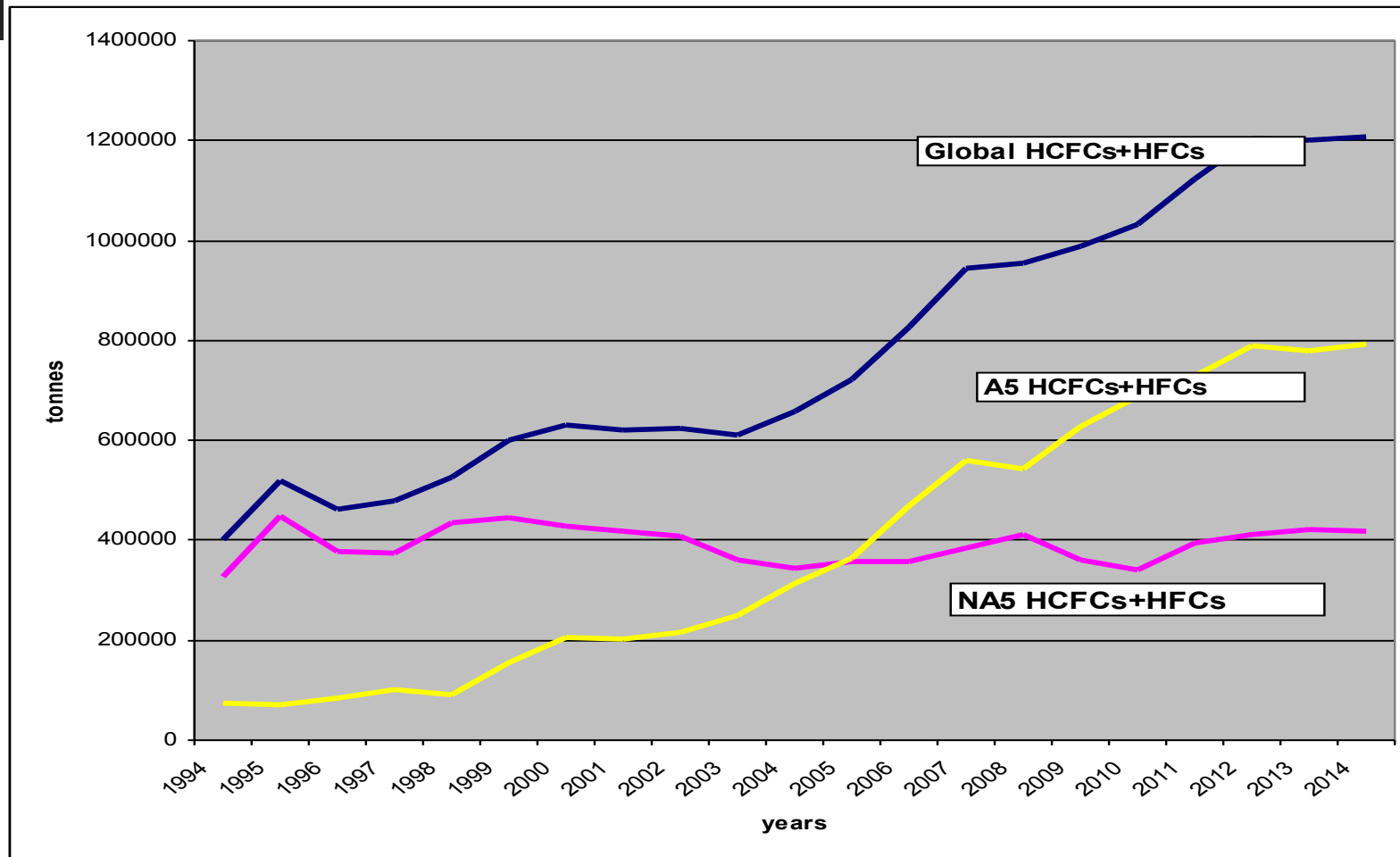




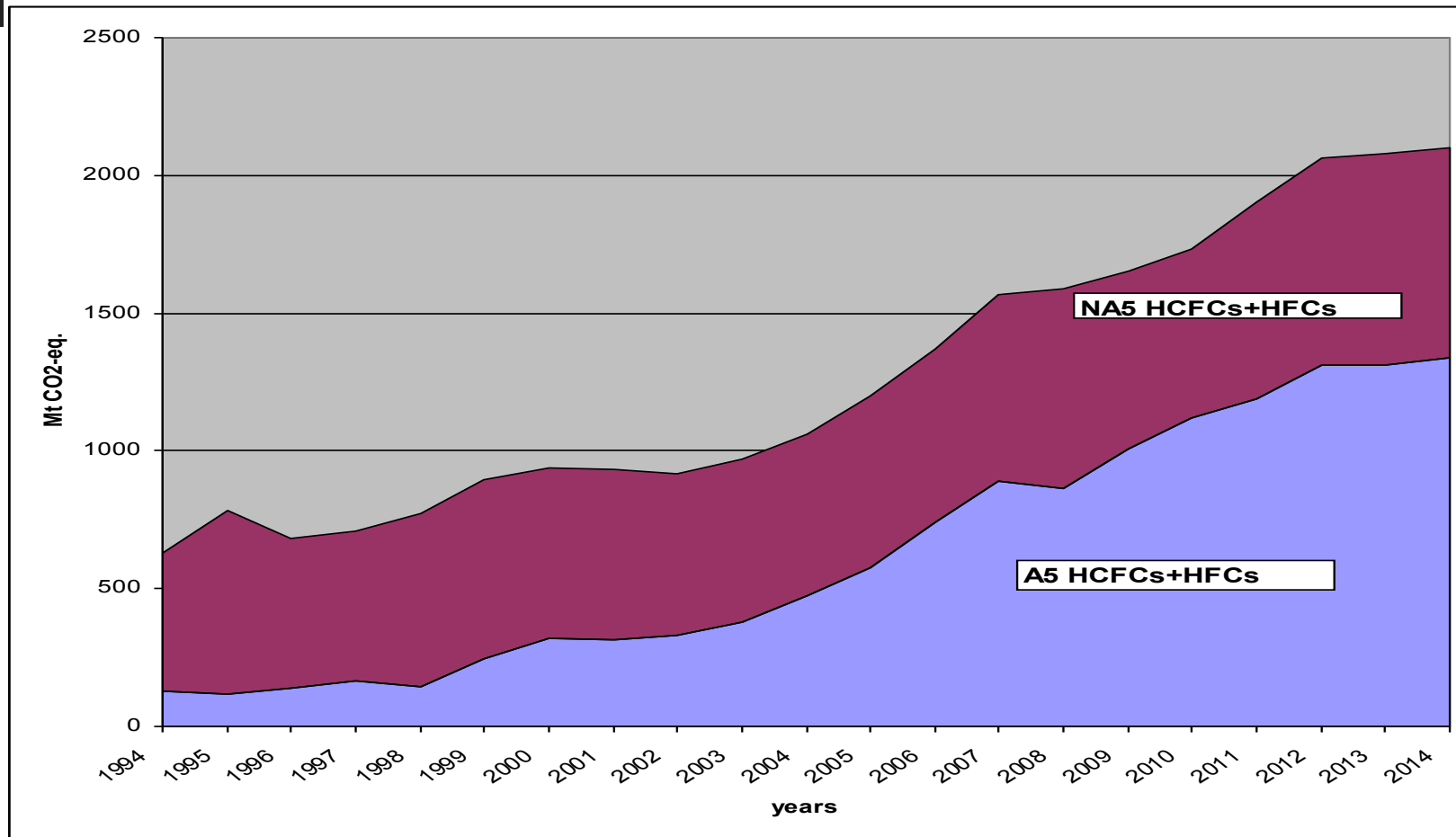
HFC annual increase in demand

- Demand for HFCs has grown by 10-12% per year in Non-Article 5 countries over the period 2001-2011, thereafter growth is estimated at 1-3% per year (2012-2014)
- Demand for HFCs has grown by up to about 30% per year in Article 5 countries over the period 2006-2011, less than 20% per year in the years thereafter

HCFC and HFC demand in tonnes



HCFC and HFC demand in t CO₂-eq.





HFC production capacities

- The main production capacity for HFCs is now installed in China
- 220-240 ktonnes production capacity (for various HFCs) is installed in Non-Article 5 countries
- Current production capacity for HFC-134a, -125 and -32 is estimated at about 750,000 tonnes total
- Current production capacity for all other HFCs is estimated at a level of < 150,000 tonnes total



Concluding remarks

- Non-Article 5 country demand for HFCs has significantly increased during the period 2004-2011 (total demand for HCFCs plus HFCs remained roughly constant)
- In Article 5 countries, HCFC and HFC demand increased until 2013; in particular the HFC demand has increased significantly during 2006-2011 (>30% annually) and is expected to rise further (<20% annually)
- Bottom-up estimates and producer estimates for HFC demand differ by about 30%; is it possible to derive more reliable estimates for the HFC demand in Non Article 5 and Article 5 countries ?