

Meeting on ODS-Recovery Carbon Projects

Capitol Building, Washington DC

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***ODS Bank magnitude and the potential
for ODS Recovery activities***

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SROC – Table 11.5a (real tonnes)

Table 11.5a. Evolution of banks (in metric ktonnes).

| 2002 | Banks (ktonnes of substance) | | | | | | | Total |
|--------------|------------------------------|--|-------------------------|--------------|-------------------------------|-----------------|----------------------|--------------|
| | Refrigeration ¹ | Stationary air-conditioning ² | Mobile air-conditioning | Foams | Medical aerosols ⁴ | Fire protection | Other ^{3,4} | |
| Halons | | | | | | 167 | | 167 |
| CFCs | 330 | 84 | 149 | 1,858 | | | | 2,430 |
| HCFCs | 461 | 1,028 | 20 | 1,126 | 8 | 4 | 11 | 2,651 |
| HFCs | 180 | 81 | 249 | 12 | | 19 | p.m. | 543 |
| PFCs | | | | | 3.5 | 0.5 | 0.1 | 1 |
| Total | 971 | 1,192 | 418 | 2,996 | | 191 | 11 | 5,791 |

| 2015 Business-as-usual scenario | Banks (ktonnes of substance) | | | | | | | Total |
|------------------------------------|------------------------------|--|-------------------------|--------------|-------------------------------|-----------------|-----------|--------------|
| | Refrigeration | Stationary air-conditioning ² | Mobile air-conditioning | Foams | Medical aerosols ⁴ | Fire protection | Other | |
| Halons | - | - | - | - | - | 43 | | 43 |
| CFCs | 64 | 27 | 13 | 1,305 | 2 | | | 1,411 |
| HCFCs | 891 | 878 | 23 | 1,502 | | 6 | 16 | 3,317 |
| HFCs | 720 | 951 | 635 | 566 | 13 | 64 | p.m. | 2,949 |
| PFCs | | | | | | 1 | 0.01 | 1 |
| Total | 1,675 | 1,856 | 671 | 3,374 | 15 | 114 | 16 | 7,722 |

Global Warming Potentials

Table TS-3. GWPs of halocarbons commonly reported under the Montreal Protocol and the UNFCCC and its Kyoto Protocol and assessed in this report relative to CO₂, for a 100-year time horizon, together with their lifetimes and GWPs used for reporting under the UNFCCC. Gases shown in blue (darker shading) are covered under the Montreal Protocol and gases shown in yellow (lighter shading) are covered under the UNFCCC. [Tables 2.6 and 2.7]

| Gas | GWP for direct radiative forcing ^a | GWP for indirect radiative forcing (Emission in 2005 ^b) | Lifetime (years) | UNFCCC Reporting GWP ^c |
|--------------|---|---|------------------|-----------------------------------|
| CFCs | | | | |
| CFC-12 | 10,720 ± 3750 | -1920 ± 1630 | 100 | n.a. ^d |
| CFC-114 | 9880 ± 3460 | Not available | 300 | n.a. ^d |
| CFC-115 | 7250 ± 2540 | Not available | 1700 | n.a. ^d |
| CFC-113 | 6030 ± 2110 | -2250 ± 1890 | 85 | n.a. ^d |
| CFC-11 | 4680 ± 1640 | -3420 ± 2710 | 45 | n.a. ^d |
| HCFCs | | | | |
| HCFC-142b | 2270 ± 800 | -337 ± 237 | 17.9 | n.a. ^d |
| HCFC-22 | 1780 ± 620 | -269 ± 183 | 12 | n.a. ^d |
| HCFC-141b | 713 ± 250 | -631 ± 424 | 9.3 | n.a. ^d |
| HCFC-124 | 599 ± 210 | -114 ± 76 | 5.8 | n.a. ^d |
| HCFC-225cb | 586 ± 205 | -148 ± 98 | 5.8 | n.a. ^d |
| HCFC-225ca | 120 ± 42 | -91 ± 60 | 1.9 | n.a. ^d |
| HCFC-123 | 76 ± 27 | -82 ± 55 | 1.3 | n.a. ^d |



SROC – Table 11.5b (M tonnes CO₂-equiv.)

Table 11.5b. Evolution of banks (in MtCO₂-eq).

| 20002 | Banks (MtCO ₂ -eq) | | | | | | | |
|------------------------------------|-------------------------------|--|-------------------------|-----------------------|-------------------------------|------------------|----------------------|------------------------|
| | Refrigeration | Stationary air-conditioning ² | Mobile air-conditioning | Foams | Medical aerosols ⁵ | Fire protection | Other ^{3,5} | Total |
| Halons | | | | | | [531 (391)] | | [531 (391)] |
| CFCs | 3,423 (2,641) | 631 (489) | 1,600 (1,209) | 10,026 (8,008) | 69 (53) | 0 | | 15,749 (12,400) |
| HCFCs | 810 (682) | 1,755 (1,480) | 36 (31) | 1,229 (1,009) | | 5 (5) | 6 (6) | 3,841 (3,212) |
| HFCs | 518 (446) | 123 (111) | 350 (323) | 16 (14) | 6 (6) | 65 (59) | 25 (25) | 1,103 (984) |
| PFCs | | | | | | 4 (3) | 1 (1) | 5 (4) |
| Total⁴ | 4,751 (3,769) | 2,509 (2,079) | 1,987 (1,563) | 11,270 (9,031) | 75 (59) | 74 (67) | 32 (31) | 20,698 (16,600) |
| 2015 Business-as-usual scenario | Banks (MtCO ₂ -eq) | | | | | | | |
| | Refrigeration | Stationary air-conditioning ² | Mobile air-conditioning | Foams | Medical aerosols ⁴ | Fire protection | Other | Total |
| Halons | - | - | - | - | - | [206 (156)] | | [206 (156)] |
| CFCs | 653 (510) | 208 (161) | 138 (104) | 7,286 (5,798) | 17 (13) | 0 | | 8,302 (6,587) |
| HCFCs | 1,582 (1333) | 1,536 (1295) | 42 (35) | 1,696 (1,391) | | 6 (5) | 9 (9) | 4,871 (4,068) |
| HFCs | 1,922 (1661) | 1,488 (1333) | 896 (826) | 644 (612) | 23 (21) | 226 (204) | 27 (27) | 5,227 (4,683) |
| PFCs | | | | | | 4 (4) | 0.1 (0.1) | 4 (4) |
| Total⁴ | 4,157 (3,504) | 3,232 (2,788) | 1,076 (965) | 9,626 (7,801) | 40 (34) | 236 (212) | 37 (36) | 18,404 (15,341) |

Changes in Global Banks & Emissions (2002-2015)

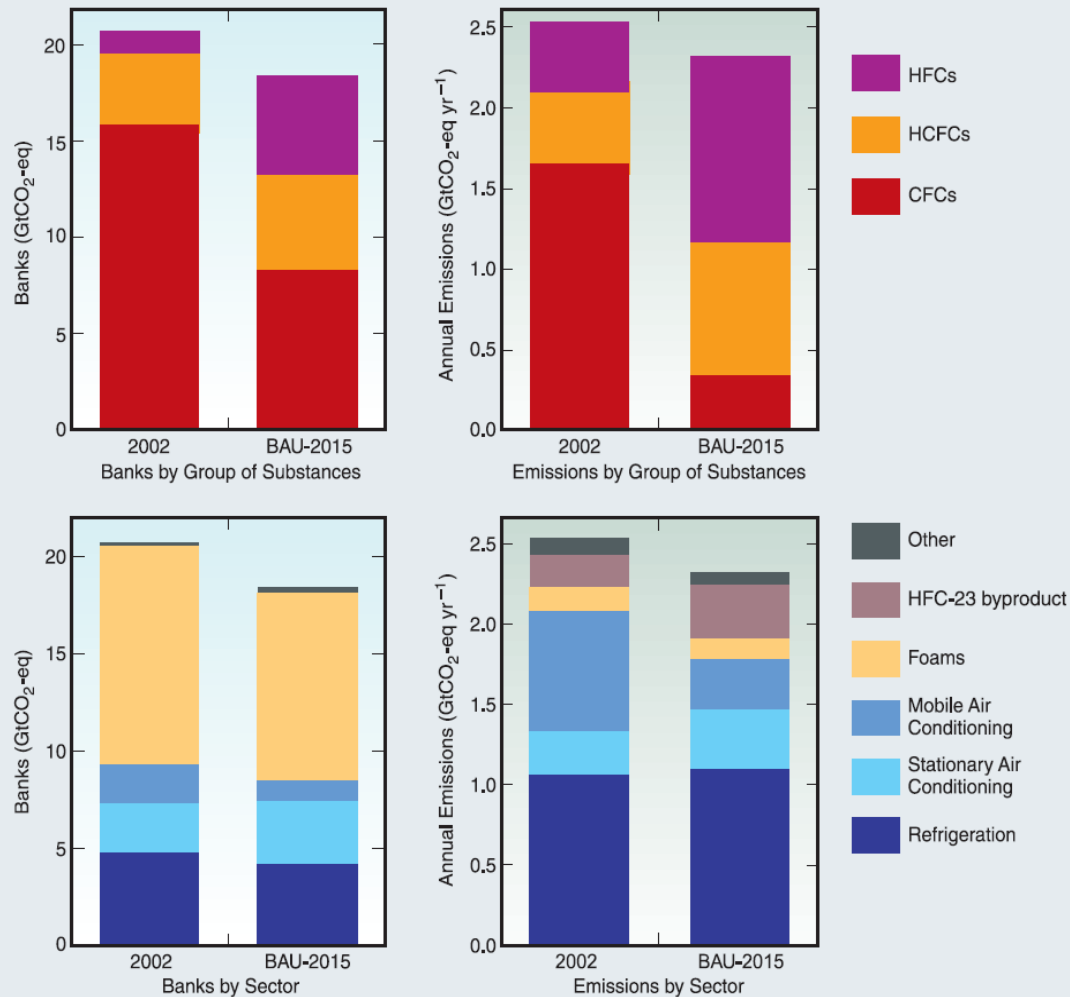
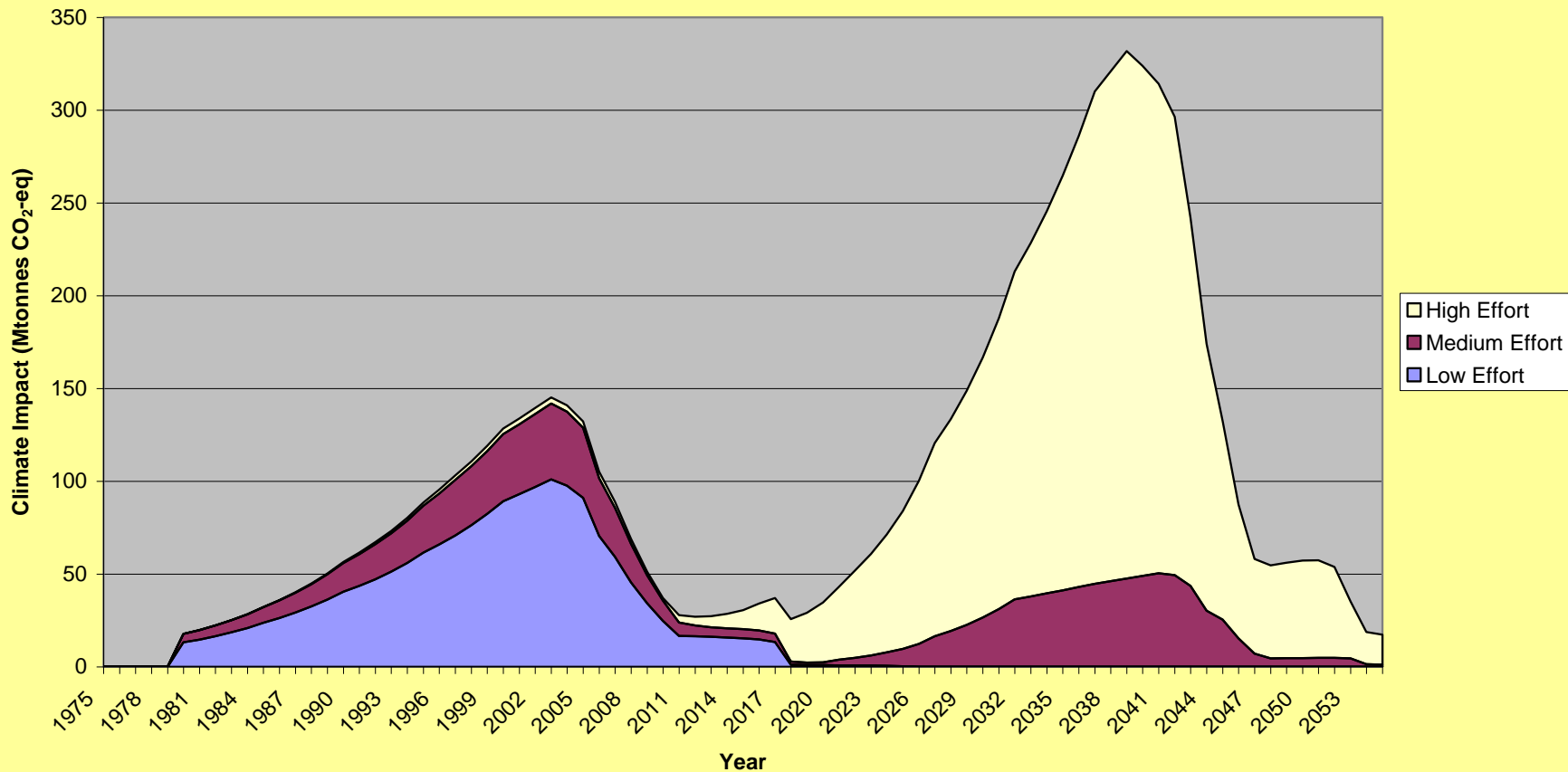


Figure SPM-4. Historic data for 2002 and Business-As-Usual (BAU) projections for 2015 of greenhouse gas CO₂-equivalent banks (left) and direct annual emissions (right), related to the use of CFCs, HCFCs and HFCs. Breakdown per group of greenhouse gases (top) and per emission sector (bottom). 'Other' includes Medical Aerosols, Fire Protection, Non-Medical Aerosols and Solvents. [11.3 and 11.5]

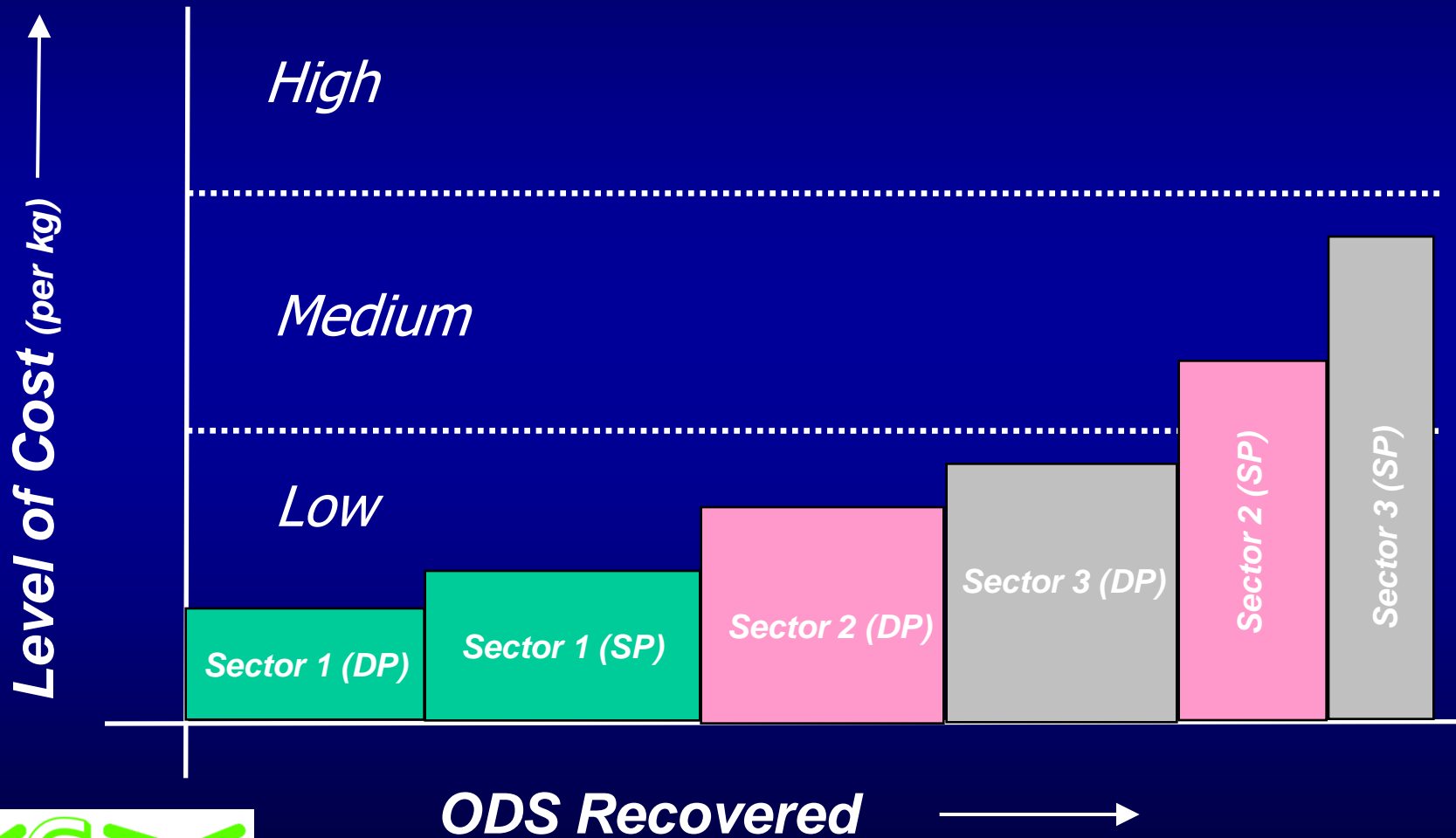


ODS Banks Reaching Waste Stream

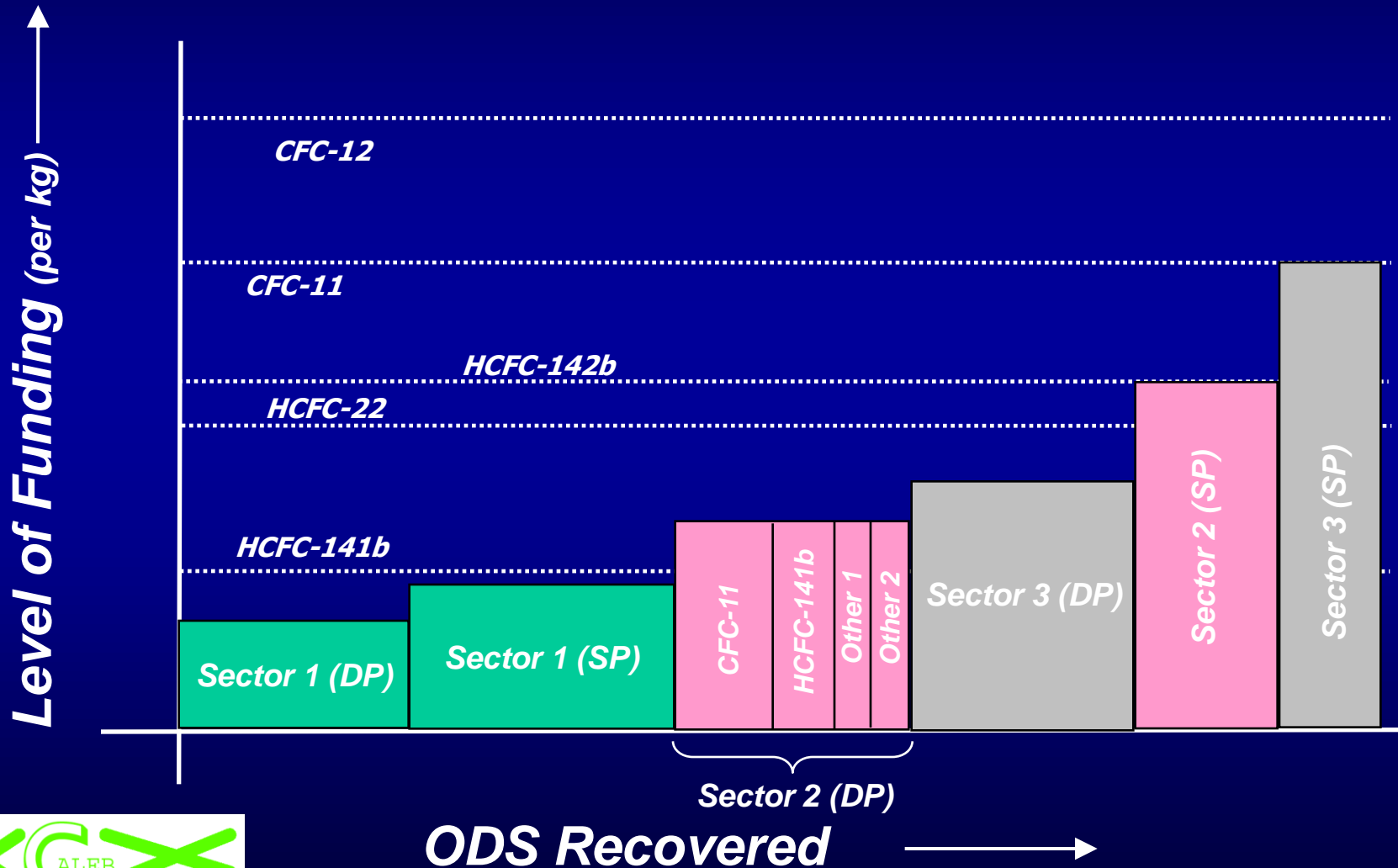
Climate Impact of ODS in Foams reaching the Waste Stream
(Developed)



Emerging Cost/Abatement Curve



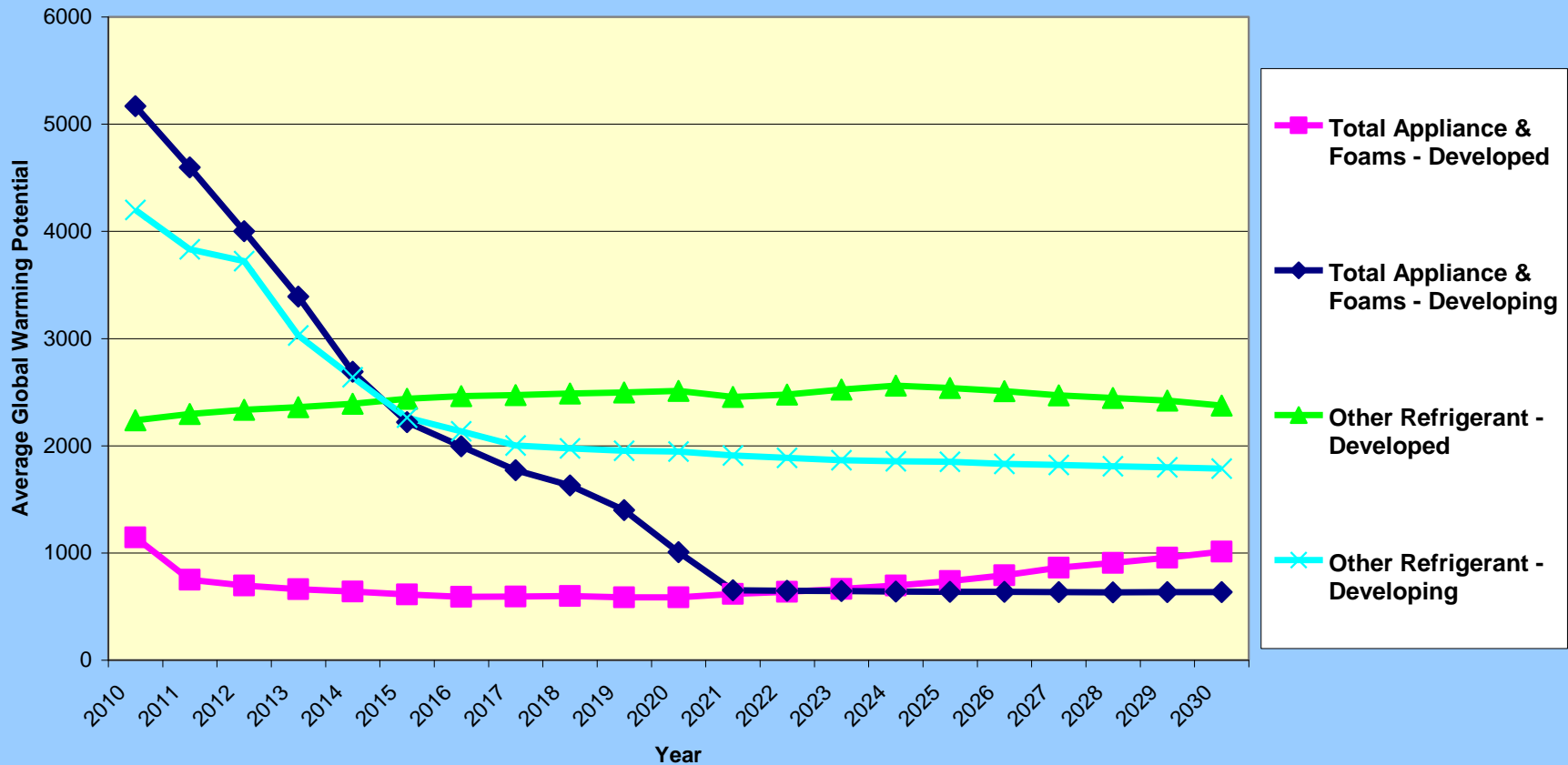
Cost vs Funding/Abatement Curve (based on climate value)



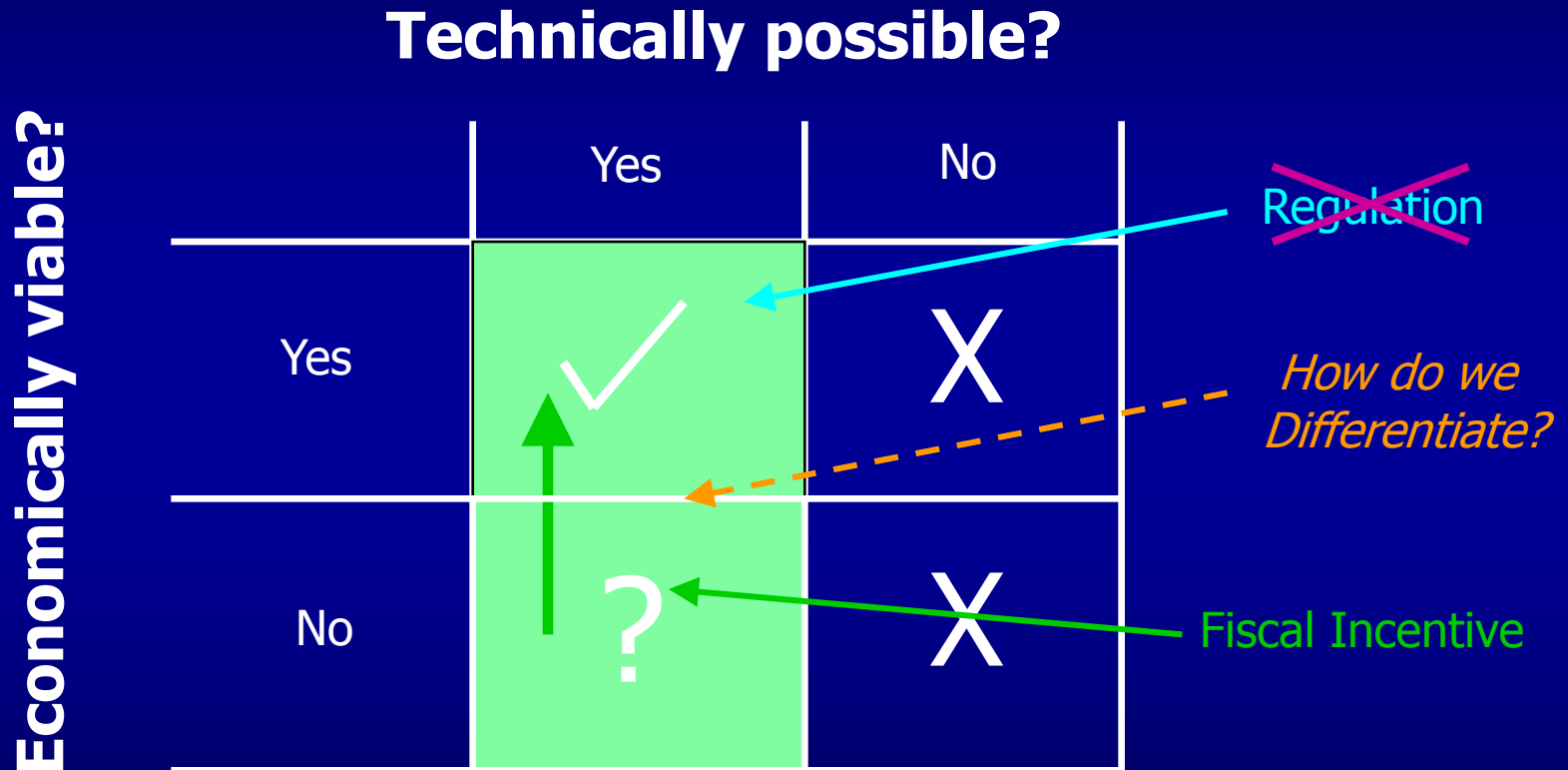
ODS Recovered →

ODS Banks Reaching Waste Stream

Average Global Warming Potentials by Region & Sector
'ODS & Replacements - Combined Low/Medium Effort'



Regulating ODS-Recovery - Buildings



Regulation makes fiscal incentive "non-additional"