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## **Summary sheet on the Montreal Protocol** (updated on August 8, 2005)

### **Chronology of the Montreal Protocol**

On September 16, 1987, the Montreal Protocol took over from the Vienna Convention of March 22, 1985 where 189 countries agreed to take "appropriate measures to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the Ozone Layer".

Several amendments were made to the Protocol after ratification by the various Parties of the Vienna Convention.

The chronology of the successive agreements is as follows:

Agreement	Date of signature	Date of entry into force
Vienna Convention	March 22, 1985	September 22, 1988
Montreal Protocol	September 16, 1987	January 1, 1989
London Amendment	June 29, 1990	August 10, 1992
Copenhagen Amendment	November 25, 1992	June 14, 1994
Montreal Amendment	September 17, 1997	November 10, 1999
Beijing Amendment	December 3, 1999	February 25, 2002

Source: UNEP

### **Measures provided for by the Montreal Protocol and its Amendments**

- In the Protocol, countries are divided into 2 categories:

*developing countries:* operating under Article 5 of the Montreal Protocol: Party whose annual calculated level of consumption of the controlled substances in Annex A is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter until 1 January 1999.

The calculated level is obtained by multiplying the amount of consumed substances by the ODP of these substances (example: 1 ton of HCFC 22 has a calculated level of 0.055 t since the ODP of HCFC22 is 0.055).

**See the list of Article-5 countries below**

*developed countries:* operating under Article 2 of the Montreal Protocol.

- The measures contained in the Montreal Protocol and its Amendments aim to achieve a gradual ban on production and consumption of ozone-depleting substances. Controlled substances are listed in the Protocol's annexes. Among them, there are two families of gases which can be used as refrigerants in refrigeration plants:
  - CFCs (chlorofluorocarbons)
  - HCFCs (hydrochlorofluorocarbons)
- The terms "production" and "consumption" are defined as follows:

*production:* amount of controlled substances produced, minus the amount destroyed by technologies to be approved by the Parties and minus the amount entirely used as feedstock in the manufacture of other chemicals. The amount recycled and reused is not to be considered as "production".

*consumption*: production plus imports minus exports of controlled substances.  
*consumption = production + imports - exports*

CFC phase-out schedules (production and consumption)

Countries operating under Article 2	Countries operating under Article 5
<p><b>CFC Annexes A and B (1)</b>  <b>phase-out by January 1, 1996</b> with possible exemptions for essential uses.</p>	<p><b>CFC Annexe A (1)</b>            . reference level: average of years 1995-1997            . freeze from January 1, 1999            . minus 50% January 1, 2005            . minus 85% January 1, 2007            . <b>phase-out by January 1, 2010</b> with possible exemptions for essential uses.</p> <p><b>CFC Annexe B (1)</b>            . reference level: average of years 1998-2000            . minus 20% by January 1, 2003            . minus 85% by January 1, 2007            . <b>phase-out by January 1, 2010</b></p>

(1) See the list of CFCs in Annexes A and B below

HCFC phase-out schedules (consumption)

Countries operating under Article 2	Countries operating under Article 5
<p>. reference level: average of year 1989: 2.8% of CFCs + 100% of HCFCs consumed            . freeze from January 1, 1996            . minus 35% by January 1, 2004            . minus 65% by January 1, 2010            . minus 90% by January 1, 2015            . minus 99.5% by January 1, 2020            . <b>phase-out by January 1, 2030</b></p>	<p>. reference level: average of year 2015            . freeze from January 1, 2016            . <b>phase-out by January 1, 2040</b></p>

HCFC phase-out schedules (production)

Limit of HCFC production	Countries operating under Article 2	Countries operating under Article 5
Deadline	2004	2016
Reference year	1989	2015
Limit of production	Average of the following 2 values: production of HCFCs* + 2.8% production of CFCs* consumption of HCFCs* + 2.8% consumption of CFCs*	

\* production and consumption values for the reference year

Nevertheless, once the freeze of production is applied, developed countries can continue to produce the equivalent of 15% of the reference value in order to help developing countries satisfy their basic domestic needs.

The Beijing Amendment bans imports and exports with countries that have not yet ratified the Protocol's Copenhagen Amendment (1992).

## Recent information on the Montreal Protocol

- The status of ratification of the Vienna Convention, of the Montreal Protocol and of corresponding Amendments was as follows as of August 2005:

Agreement	Number of countries having ratified (1)
Vienna Convention	190
Montreal Protocol	189
London Amendment	179
Copenhagen Amendment	168
Montreal Amendment	133
Beijing Amendment	93

The latest status of ratification of the Montreal Protocol and its Amendments can be found by following the "status of ratification" link on the previous page.

- The 17th meeting of Parties of the Montreal Protocol (MOP-16) will be held in Dakar (Senegal), 12-16 December, 2005.
- The latest information and the IIR report on this meeting can be found by following the "IIR News on the Montreal Protocol" link on the previous page.

## List of the 144 Parties categorized as operating under Article 5 of the Montreal Protocol

1. Albania	49. Georgia	99. Panama
2. Algeria	50. Ghana	100. Papua New Guinea
3. Angola	51. Grenada	101. Paraguay
4. Antigua & Barbuda	52. Guatemala	102. Peru
5. Argentina	53. Guinea	103. Philippines
6. Armenia	54. Guinea Bissau	104. Qatar
7. Bahamas	55. Guyana	105. Romania
8. Bahrain	56. Haiti	106. Rwanda
9. Bangladesh	57. Honduras	107. Saint Kitts and Nevis
10. Barbados	58. India	108. Saint Lucia
11. Belize	59. Indonesia	109. Saint Vincent & the Grenadines
12. Benin	60. Iran, Islamic Republic of	110. Samoa
13. Bhutan	61. Jamaica	111. Sao Tome and Principe
14. Bolivia	62. Jordan	112. Saudi Arabia
15. Bosnia and Herzegovina	63. Kenya	113. Senegal
16. Botswana	64. Kiribati	114. Serbia and Montenegro
17. Brazil	65. Korea, People's Democratic Republic of	115. Seychelles
18. Brunei Darussalam	66. Korea, Republic of	116. Sierra Leone
19. Burkina Faso	67. Kuwait	117. Singapore
20. Burundi	68. Kyrgyzstan	118. Solomon Islands
21. Cambodia	69. Lao People's Democratic Republic	119. Somalia
22. Cameroon	70. Lebanon	120. South Africa
23. Cape Verde	71. Lesotho	121. Sri Lanka
24. Central African Republic	72. Liberia	122. Sudan
25. Chad	73. Libyan Arab Jamahiriya	123. Suriname
26. Chile	74. Madagascar	124. Swaziland
27. China	75. Malawi	125. Syrian Arab Republic
28. Colombia	76. Malaysia	126. Tanzania, United Republic of
29. Comoros	77. Maldives	127. Thailand
30. Congo	78. Mali	128. The Former Yugoslav Republic of Macedonia
31. Congo, Democratic Republic of	79. Marshall Islands	129. Togo
	80. Mauritania	130. Tonga

32. Cook Islands	81. Mauritius	131. Trinidad and Tobago
33. Cost Rica	82. Mexico	132. Tunisia
34. Côte d'Ivoire	83. Micronesia, Federal States of	133. Turkey
35. Croatia		134. Turkmenistan
36. Cuba	84. Moldova	135. Tuvalu
37. Cyprus	85. Mongolia	136. Uganda
38. Djibouti	86. Morocco	137. United Arab Emirates
39. Dominica	87. Mozambique	138. Uruguay
40. Dominican Republic	88. Myanmar	139. Vanuatu
41. Ecuador	89. Namibia	140. Venezuela
42. Egypt	90. Nauru	141. Viet Nam
43. El Salvador	91. Nepal	142. Yemen
44. Eritrea	92. Nicaragua	143. Zambia
45. Ethiopia	93. Niger	144. Zimbabwe
46. Fiji	94. Nigeria	
47. Gabon	95. Niue	
48. Gambia	96. Oman	
	97. Pakistan	
	98. Palau	

**List of Parties temporarily categorized as operating under Article 5 of the Montreal Protocol (Temporary list)**

Afghanistan

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**List of CFCs in Annex A (Group I)**

Chemical formula	Substance	Ozone depletion potential*
CFCl <sub>3</sub>	CFC-11	1.0
CF <sub>2</sub> Cl <sub>2</sub>	CFC-12	1.0
C <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub>	CFC-113	0.8
C <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub>	CFC-114	1.0
C <sub>2</sub> F <sub>5</sub> Cl	CFC-115	0.6

**Group II**

Chemical formula	Substance	Ozone depletion potential*
CF <sub>2</sub> BrCl	(halon-1211)	3.0
CF <sub>3</sub> Br	(halon-1301)	10.0
C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub>	(halon-2402)	6.0

\* These ozone depletion potentials are estimates based on existing knowledge and will be reviewed and revised periodically.

**List of CFCs in Annex B (group I)**

Chemical formula	Substance	Ozone depletion potential
CF <sub>3</sub> Cl	(CFC-13)	1.0
C <sub>2</sub> FCl <sub>5</sub>	(CFC-111)	1.0
C <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub>	(CFC-112)	1.0
C <sub>3</sub> FCl <sub>7</sub>	(CFC-211)	1.0
C <sub>3</sub> F <sub>2</sub> Cl <sub>6</sub>	(CFC-212)	1.0
C <sub>3</sub> F <sub>3</sub> Cl <sub>5</sub>	(CFC-213)	1.0
C <sub>3</sub> F <sub>4</sub> Cl <sub>4</sub>	(CFC-214)	1.0
C <sub>3</sub> F <sub>5</sub> Cl <sub>3</sub>	(CFC-215)	1.0
C <sub>3</sub> F <sub>6</sub> Cl <sub>2</sub>	(CFC-216)	1.0
C <sub>3</sub> F <sub>7</sub> Cl	(CFC-217)	1.0

Group II

Chemical formula	Substance	Ozone depletion potential
CCl <sub>4</sub>	Carbon Tetrachloride	1.1

Group III

Chemical formula	Substance	Ozone depletion potential
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> *	1,1,1-trichloroethane* (methylchloroforme)	0.1

\* The formula does not apply to 1,1,2-trichloroethane.