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**Programa de las Naciones Unidas para el Medio Ambiente**

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ESPAÑOL
ORIGINAL: INGLÉS

COMITÉ EJECUTIVO DEL FONDO MULTILATERAL
PARA LA APLICACIÓN DEL
PROTOCOLO DE MONTREAL
Quincuagésima sexta Reunión
Doha, 8 al 12 de noviembre de 2008

**PROPUESTA DE PROYECTO: INDIA**

El presente documento consta de los comentarios y la recomendación de la Secretaría del Fondo sobre la siguiente propuesta del proyecto:

Aerosoles

| | |
|---|---|
| • Estrategia nacional para la transición a Inhaladores de Dosis Medida (MDIs) sin clorofluorocarbono (CFC) y plan para la eliminación de CFCs en la fabricación de MDIs farmacéuticos | Italia/PNUD y PNUMA |

Producción

| | |
|---|---|
| • Eliminación acelerada de la producción de CFC (acuerdo) | Banco Mundial |

## HOJA DE EVALUACIÓN DE PROYECTO - PROYECTOS NO PLURIANUALES
## INDIA

| TÍTULO(S) DEL(OS) PROYECTO(S) | ORGANISMO BILATERAL/EJECUTOR |
|---|---|
| (a) Estrategia nacional para la transición de MDIs sin CFC y plan para la eliminación de CFCs en la fabricación de MDIs farmacéuticos | Italia /PNUD / PNUMA |
| **ORGANISMO NACIONAL DE COORDINACIÓN** | Célula del Ozono, Ministerio del Medio Ambiente y Bosques |

**DATOS DE CONSUMO MÁS RECIENTE DE SAO OBJETO DEL PROYECTO**

**A: DATOS DEL ARTÍCULO 7 (TONELADAS PAO, 2007, A OCTUBRE DE 2008)**

| | | | |
|---|---|---|---|
| CFC | 998,5 | | |

**B: DATOS SECTORIALES DEL PROGRAMA DE PAÍS (TONELADAS PAO, 2007, A SEPTIEMBRE DE 2008)**

| SAO | MDIs | Subsector/cantidad | Subsector/cantidad | Subsector/cantidad |
|---|---|---|---|---|
| CFC-11 | 186,2 | | | |
| CFC-12 | 421,9 | | | |
| **Consumo remanente de CFC elegible para financiación (toneladas PAO)** | | | | 0.0 |

| **ASIGNACIONES EN EL PLAN ADMINISTRATIVO DEL AÑO EN CURSO** | | Financiación $EUA millones | Eliminación toneladas PAO |
|---|---|---|---|
| | a) | Italia 2.000.000 | 50 |
| | b) | PNUMA 400.000 | 0 |
| | c) | PNUD 3.200.000 | 79,4 |

| **TITULO DEL PROYECTO** | (a) |
|---|---|
| Uso de SAO en empresas (toneladas PAO): | |
| SAO a ser eliminadas (toneladas PAO): | 704,0 |
| SAO a ser introducidas gradualmente (toneladas PAO): | n/a |
| Duración del proyecto (meses): | 60 |
| Monto inicial solicitado ($EUA) | |
| Componente de inversión ($EUA): | 60.531.934 |
| Componentes ajenos a la inversión: ($EUA): | 1.170.000 |
| Costo Total ($EUA): | 61.701.934 |
| Financiación de contraparte más ajustes ($EUA): | (34.942.615) |
| Monto solicitado ($EUA): | 26.759.319 |
| Costos definitivos del proyecto ($EUA: | |
| Costo Adicional de Capital: ($EUA): | 10.164.000 |
| Costos para el Desarrollo del Producto ($EUA): | 10.325.000 |
| Costos Operativos Adicionales: | 4.615.668 |
| Ajustes a la Propiedad Extranjera ($EUA): | (3.971.386) |
| Ajustes al Componente de Exportación ($EUA): | (905.115) |
| Financiación de Contraparte ($EUA): | (7.531.400) |
| Ajuste al Plan Nacional de Eliminación de India ($EUA): | (2.894.500) |
| Estrategia de Transición ($EUA): | 120.000 |
| Ejecución y supervisión del proyecto ($EUA): | 280.000 |
| Donación solicitada ($EUA): | 10.202.267 |
| Relación de costo a eficacia ($EUA/kg): | |
| Costo de apoyo al organismo ejecutor ($EUA): | 851.770 |
| Costo total del Proyecto para el Fondo Multilateral ($EUA): | 11.054.037 |
| Situación de la financiación de contraparte (Si/No): | Si |
| Hitos de supervisión del proyecto incluidos (Si/No): | Si |

(*) 2,97% de la propiedad extranjera es para Cadila; 18,42% para Cipla; 50,67% para GSK y 19,24% para Sun Pharma.
(**) 5,6 para Cipla

| **RECOMENDACIÓN[ES] DE LA SECRETARIA** | Para Consideración Individual |
|---|---|

## DESCRIPCIÓN DEL PROYECTO

1. A nombre del Gobierno de India, el PNUD como organismo ejecutor líder, ha presentado una estrategia nacional de transición a MDIs sin clorofluorocarbono (CFC) y un plan para la eliminación de CFCs en la fabricación de Inhaladores de Dosis Medida (Plan Sectorial de MDIs), para su consideración por el Comité Ejecutivo en su 56ª Reunión. El costo total del proyecto, tal como fue presentado, es de 26.759.319 $EUA más costos de apoyo al organismo de 2.123.543 $EUA.

2. El proyecto será ejecutado por el PNUD (24.639.400 $EUA más costos de apoyo al organismo de 1.847.955 $EUA), el PNUMA $EUA 350.000 más costos de apoyo al organismo de 45.500 $EUA), y el Gobierno de Italia (1.769.919 $EUA más costos de apoyo al organismo de 230.088 $EUA).

**Resumen del proyecto**

3. En conformidad con el Plan Sectorial de MDIs existen actualmente 5 fabricantes de MDIs en India. Tres de estos fabricantes producen MDIs tanto con CFC como con hidrofluoroalcano (HFA).

4. El costo total estimado del Plan Sectorial de MDIs en India, antes de cualquier ajuste debido a propiedad extranjera o financiación de contraparte, es de $EUA 61.701.934, como se describe en la Tabla 1.

**Tabla 1. Costo total estimado del proyecto de MDIs en India**

| Descripción | Cadila | Cipla | GSK | Midas Care | SunPharma | Total |
|---|---|---|---|---|---|---|
| CFCs (Toneladas PAO) | 3,5 | 526,6 | 31,7 | 18,8 | 5,9 | 586,5 |
| **Costos de inversión ($EUA)** | | | | | | |
| Costo de capital | 1.218.000 | 11.175.600 | 1.178.600 | 780.000 | 780.000 | 15.132.200 |
| Desarrollo del producto | 840.345 | 37.890.000 | - | 765.000 | 660.490 | 40.155.835 |
| Costo operativo | 124.842 | 4.411.716 | 330.680 | 308.850 | 67.811 | 5.243.899 |
| **Total costos de inversión** | 2.183.187 | 53.477.316 | 1.509.280 | 1.853.850 | 1.508.301 | 60.531.934 |
| **Costos ajenos a la inversión ($EUA)** | | | | | | |
| Asistencia técnica | | | | | | 350.000 |
| Apoyo a políticas/regulaciones | | | | | | 70.000 |
| Sensibilización | | | | | | 350.000 |
| Supervisión/administración | | | | | | 400.000 |
| **Total costos ajenos a la inversión** | | | | | | 1.170.000 |
| **Total costos ($EUA)** | | | | | | 61.701.934 |
| Relación Global de Costo a Eficacia ($EUA/kg) | | | | | | 105,20 |

5. Del costo total del proyecto, el Gobierno de India está solicitando 26.759.319 $EUA, después de la deducción del componente de propiedad extranjera de una empresa, ajustes debidos al 4,9% de exportación de MDIs a países no al amparo del Artículo 5 y un 57% de contribución de contraparte por parte de las empresas, tal como se solicitó en la Decisión 54/5. El desglose de los costos adicionales en el Plan Sectorial de MDIs se describe en la Tabla 2.

**Tabla 2. Total de costos adicionales del proyecto de MDIs en India**

| Descripción | Cadila | Cipla | GSK | Midas Care | SunPharma | Total |
|---|---|---|---|---|---|---|
| CFCs (Toneladas PAO) | 3,5 | 526,6 | 31,7 | 18,8 | 5,9 | 586,5 |
| **Costos de inversión ($EUA)** | | | | | | |
| Costo de capital | 852.600 | 7.208.262 | 223.934 | 546.000 | 546.000 | 9.376.796 |
| Desarrollo del Producto | 588.242 | | - | 535.500 | 462.343 | 12.953.085 |
| Costo operativo | 87.389 | 2.845.557 | 62.829 | 216.195 | 47.468 | 3.259.438 |
| **Total costos de inversión** | 1.528.231 | 21.420.819 | 286.763 | 1.297.695 | 1.055.811 | 25.589.319 |
| **Costos ajenos a la inversión ($EUA)** | | | | | | |
| Asistencia técnica | | | | | | 350.000 |
| Apoyo a políticas/regulaciones | | | | | | 70.000 |
| Sensibilización | | | | | | 350.000 |
| Supervisión/administración | | | | | | 400.000 |
| **Total costos ajenos a la inversión** | | | | | | 1.170.000 |
| **Total costos ($EUA)** | | | | | | 26.759.319 |
| Relación de $EUA/kg) | | | | | | 45,62 |

6. Se adjunta una copia del Plan Sectorial de MDIs presentado por el PNUD al presente informe

## COMENTARIOS Y RECOMENDACIÓN DE LA SECRETARÍA

### COMENTARIOS

7. La Secretaría ha examinado el proyecto para abordar el sector de MDIs con CFC en concordancia con lo siguiente:

a) Documentos de políticas del sub-sector de MDIs presentados a las 37ª, 49ª y 51ª Reuniones;

b) Enmiendas al programa de trabajo del PNUD presentadas a la 54ª Reunión (párrafos 19 a 31 del documento UNEP/OzL.Pro/ExCom/52/22);

c) Proyectos de eliminación de MDIs que fueron aprobados para Bangladesh, Cuba, Egipto, México, República Islámica del Irán y Uruguay; y

d) Decisiones relevantes del Comité Ejecutivo acerca de MDIs, en particular la Decisión 52/25a) sobre la aprobación de la financiación para la elaboración del proyecto de MDIs en India.

8. Dada la complejidad del Plan Sectorial de MDIs, los comentarios de la Secretaría se organizan de acuerdo a las siguientes categorías:

a) Análisis de las instalaciones de producción de MDIs en India;

b) Exenciones al uso esencial de CFCs;

c) Consumo de CFC utilizado para la fabricación de MDIs;

d) Desarrollo del producto;

e) Costos de capital y operativos;

f) Actividades de asistencia técnica, que incluyen la estrategia de transición;

g) Ajuste a la financiación aprobada para el Plan Nacional de Eliminación de India; y

h) Una propuesta de la Secretaría.

**Análisis de las instalaciones de producción de MDIs en India**

9. Al examinar la información presentada en el Plan Sectorial de MDIs, la Secretaría hizo notar lo siguiente:

a) Los niveles de producción total de MDIs en India en el período entre 2003-2007 se describen en la Tabla 3 a continuación:

**Tabla 3. Fabricantes de MDIs en India**

| **Fabricantes** | **Producción total (millones de MDIs)** | | | | |
|---|---|---|---|---|---|
| | **2003** | **2004** | **2005** | **2006** | **2007** |
| **MDIs con CFC** | | | | | |
| Cadila Healthcare Ltd. | 0,15 | 0,30 | 0,42 | 0,69 | 0,71 |
| Cipla Ltd. | 26,27 | 33,04 | 28,18 | 35,44 | 27,39 |
| GlaxoSmithKline Pharmaceuticals Ltd. | 1,15 | 0,94 | 1,21 | 0,79 | 0,94 |
| Midas-Care Pharmaceuticals Ltd. | 0,97 | 1,02 | 1,65 | 1,85 | 1,76 |
| Sun Pharmaceutical Industries Ltd. | 0,29 | 0,39 | 0,31 | 0,39 | 0,39 |
| **Subtotal MDIs con CFC** | **28,83** | **35,69** | **31,77** | **39,16** | **31,19** |
| **MDIs con HFA** | | | | | |
| Cipla Ltd. | 0,47 | 1,21 | 4,03 | 11,01 | 24,06 |
| Midas-Care Pharmaceuticals Ltd. | 0,00 | 0,024 | 0,035 | 0,15 | 0,26 |
| Sun Pharmaceutical Industries Ltd. | 0,00 | 0,00 | 0,00 | 0,029 | 0,00 |
| **Subtotal MDIs con HFA** | **0,47** | **1,23** | **4,06** | **11,19** | **24,32** |
| **Total** | **29,30** | **36,92** | **35,84** | **50,35** | **55,51** |

b) El nivel de consumo de CFC para la fabricación de MDIs tuvo un incremento de 578,9 toneladas PAO en 2003 a 763,6 toneladas PAO en 2006. En 2007, el consumo de CFC tuvo una reducción a 608,1 toneladas PAO, como se describe en la Tabla 4:

**Tabla 4: Niveles de consumo de CFC para la fabricación de MDIs en India**

| **Fabricantes** | **Consumo de CFC (toneladas PAO)** | | | | |
|---|---|---|---|---|---|
| | **2003** | **2004** | **2005** | **2006** | **2007** |
| Cadila | 2,9 | 5,9 | 7,5 | 11,6 | 8,5 |
| CIPLA | 526,6 | 687,6 | 670,9 | 698,2 | 537,7 |
| GSK | 24,6 | 20,1 | 25,9 | 16,9 | 20,1 |
| Midas-Care | 18,8 | 21,3 | 29,8 | 29,0 | 34,0 |
| Sun Pharma | 6,0 | 7,9 | 6,3 | 7,9 | 7,8 |
| **Total** | **578,9** | **742,8** | **740,4** | **763,6** | **608,1** |

c) La demanda prevista de CFC y HFA para MDIs en India entre 2008-2013 se describe en la Tabla 5:

**Tabla 5. Consumo de CFC y HFA previsto para la fabricación de MDIs**

| Propulsor | Consumo de CFC y HFA (toneladas métricas)* | | | | | |
|---|---|---|---|---|---|---|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| CFC | 604 | 484 | 338 | 203 | 71 | 0 |
| HFA | 566 | 760 | 983 | 1.205 | 1.405 | 1.556 |
| **Total** | 1.170 | 1.244 | 1.322 | 1.408 | 1.476 | 1.556 |

(*) En base a los índices de los últimos cinco años, suponiendo que exista asistencia técnica y financiera para la transición de tecnologías CFC a HFA, en ausencia de las cuales, se necesitarían tres años adicionales para la eliminación completa de CFCs.

d) La producción de MDIs con CFC tuvo un incremento de 28,8 millones en 2003 a cerca de 31,2 millones en 2007. Sin embargo, las ventas nacionales han tenido una reducción de 15 millones de unidades a algo por encima de 10 millones en el mismo período. Los niveles de ventas nacionales y la exportación a países al amparo del Artículo 5 y no al amparo del Artículo 5 de MDIs con CFC fabricadas en India se describen en la Tabla 6:

**Tabla 6. Ventas nacionales y exportación de MDIs con CFC en India**

| Parámetro | Total (millones de MDIs) | | | | |
|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 |
| Ventas nacionales | 14,90 | 15,72 | 16,21 | 18,27 | 10,33 |
| Exportaciones a países no al amparo del - Artículo-5 | 0,42 | 0,05 | 0,42 | 0,47 | 1,75 |
| Exportaciones a países al amparo del Artículo-5 | 13,52 | 19,93 | 15,16 | 20,43 | 19,30 |
| Total exportaciones | 13,94 | 19,98 | 15,57 | 20,90 | 20,82 |
| Total producción | 28,83 | 35,69 | 31,77 | 39,16 | 31,19 |
| Exportación a países no al amparo del Artículo-5 (%) | 1,5% | 0,1% | 1,3% | 1,2% | 5,6% |

**Exenciones al uso esencial de CFCs**

10. Mediante la Decisión 51/34, el Comité Ejecutivo solicitó, entre otras cosas, que se comunique a los países con plantas de fabricación de MDIs el momento oportuno para dar inicio a la consideración de la necesidad de exenciones al uso esencial más allá de la fecha de eliminación en 2010. Asimismo, a través de la Decisión 54/5, el Comité solicitó, entre otras cosas, que las propuestas de proyecto de MDIs deberían describir claramente "los volúmenes de CFCs acumulados en reserva actualmente y en el pasado, con objeto de facilitar la transición sin dificultades de MDIs con CFC y mitigar la necesidad de una solicitud temporal de exención al uso esencial". En conformidad con la propuesta del proyecto, se estimó que la conversión concluirá hasta diciembre de 2013, es decir, cuatro años de la fecha obligatoria para la eliminación total de CFCs. Sin embargo, la necesidad de exenciones al uso esencial de CFCs o de acumulación de reservas de CFCs de gradación para uso farmacéutico (incluyendo cantidades) para el período de transición (es decir, dos o tres años o más) no ha sido debidamente considerada en el Plan Sectorial de MDIs. Sobre esta base, la Secretaría solicitó información acerca de si esta cuestión fue abordada con las principales partes interesadas en India.

11. El PNUD manifestó que el Plan Sectorial de MDIs asegurará que la conversión a MDIs sin CFC se concluiría hasta diciembre de 2012 (es decir, 3 años después de la eliminación obligatoria de CFC). No existen reservas acumuladas disponibles de CFC en poder de los fabricantes de MDI para cubrir las necesidades durante el período de transición. El Gobierno ha proporcionado una información completa a las partes interesadas acerca del proceso de designación de usos esenciales. Consiguientemente, el

Gobierno de India, con el apoyo de organismos ejecutores y fabricantes de MDIs, estaría en posición de solicitar usos esenciales hasta enero de 2009.

**Consumo de CFC utilizado en la fabricación de MDIs**

12. En el contexto de la decisión del Comité Ejecutivo sobre planificación estratégica, el Comité acordó que la financiación adicional debería basarse en el compromiso de un país de alcanzar reducciones agregadas permanentes sostenibles en el consumo y la producción, según sea relevante. También reconoció que el consumo reportado en años futuros podría estar por encima o por debajo de los niveles resultantes del cálculo acordado, pero si las cifras de consumo sobrepasaban los niveles resultantes, tales incrementos en el consumo no serían elegibles para financiación (Decisión 35/57). En la 42ª Reunión, el Comité Ejecutivo aprobó el Plan Nacional de Eliminación de CFC que cubre todo el consumo remanente de CFC elegible para financiación en India, (es decir, 847 toneladas PAO). El plan de eliminación se basó en el nivel de consumo de CFC en 2003. Sobre esta base, la Secretaría señaló que el nivel de consumo de CFC a ser abordado a través del proyecto de MDIs es de 586,5 toneladas PAO (consumo de CFC en 2003) y no del consumo en 2007 de 704 toneladas PAO.

13. El PNUD reportó que el Plan Sectorial de MDIs fue formulado en base a criterios de elegibilidad relacionados a 2003. En consecuencia, solamente se han tomado en cuenta los productos desarrollados y comercializados con líneas de producción ya instaladas en 2003. Los costos operativos adicionales calculados, prevalecientes en 2003 serían significativamente más altos debido a que en ese momento las diferencias de costos entre las válvulas de CFC y las de HFA eran mayores y también existía una diferencia de costos significativa entre los propulsores de CFC y de HFA. Por lo tanto, los costos operativos calculados para los niveles de consumo de 2007 son más bajos.

**Desarrollo del producto**

14. En 2003, se fabricaron en India MDIs con CFC que contenían trece ingredientes activos diferentes, como se describe en la Tabla 7. Varios de los MDIs con CFC han sido formulados con diferentes potencias (es decir, diferentes concentraciones del mismo ingrediente activo).

**Tabla 7. MDIs con CFC por ingrediente activo y por planta de fabricación (2003)**

| No. | Ingrediente activo | MDIs con CFC fabricados por empresa | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Cadila | Cipla | GSK | Midas-Care | SunPharma | Total MDIs | %MDIs |
| 1 | Salbutamol | 30.010 | 16.905.000 | 1.044.505 | 611.800 | 56.600 | 18.647.915 | 64,6% |
| 2 | Beclometasona | | 4.663.000 | 107.475 | 117.900 | | 4.888.375 | 16,9% |
| 3 | Beclometasona/Salbutamol | | 1.925.000 | | 27.400 | | 1.952.400 | 6,8% |
| 4 | Salmeterol/Fluticasona | | 778.000 | | 10.000 | 163.771 | 951.771 | 3,3% |
| 5 | Ipratropio | 20.070 | 786.000 | | 43.000 | | 849.070 | 2,9% |
| 6 | Budesonida | 10.010 | 300.000 | | 15.200 | 51.738 | 376.948 | 1,3% |
| 7 | Ipratropio/Salbutamol | 20.070 | 293.000 | | 61.200 | | 374.270 | 1,3% |
| 8 | Budesonida/Formoterol | 69.293 | 191.000 | | 75.900 | 27.379 | 363.572 | 1,3% |
| 9 | Salmeterol | | 154.000 | | | | 154.000 | 0,5% |
| 10 | Fluticasona | | 134.000 | | | | 134.000 | 0,5% |
| 11 | Cromoglicato de Sodio | | 66.000 | | | | 66.000 | 0,2% |
| 12 | Triotropio | | 45.000 | | | | 45.000 | 0,2% |
| 13 | Formoterol | 1.910 | 31.000 | | 11.700 | | 44.610 | 0,2% |
| | **Total MDIs** | **151.363** | **26.271.000** | **1.151.980** | **974.100** | **299.488** | **28.847.931** | **100,0%** |
| | % del total por empresa | 0,5% | 91,1% | 4,0% | 3,4% | 1,0% | 100,0% | |

15. Con respecto a los datos presentados en la Tabla 7 y a la información presentada en el proyecto de MDIs, la Secretaría señaló lo siguiente:

a) En 2003, cerca de 82 por ciento de los MDIs con CFC contenían salbutamol (64,6 por ciento) o beclometasona (16,9 por ciento). Un 10 por ciento adicional contenía una combinación de beclometasona/salbutamol o salmeterol/fluticasona;

b) Una empresa, Cipla, fabrica más de 91 por ciento de los MDIs con CFC manufacturados en India;

c) GSK, el segundo fabricante más grande de MDIs con CFC, con 4 por ciento de la producción total es de propiedad parcial de una empresa de propiedad extranjera, no al amparo del Artículo 5 (50,67 por ciento);

d) No se han fabricado varios MDIs con CFC por lo menos en los últimos uno o dos años, principalmente formeterol (Cadila, Cipla, Midas-Care); ipratropio (Cadila, Midas-Care) y cromoglicato de sodio (Cipla). Por lo tanto, la solicitud de reformulación a tecnología con HFA para estos ingredientes activos no sería elegible para financiación;

El PNUD indicó que todos los MDIs antes mencionados fueron fabricados en 2003. Si 2003 es utilizado como año de referencia para elegibilidad, el desarrollo y otros costos para la reformulación de estos productos es elegible. Algunos de los productos indicados son especializados, con perfiles terapéuticos precisos y usualmente necesarios en bajos volúmenes. El requerimiento de estos productos puede variar de año a año. Más aún, todas la empresas fabricantes han confirmado que todos sus MDIs con CFC manufacturados en 2003 serán convertidos a tecnología con HFA

16. El costo total asociado con el desarrollo de MDIs con HFA para cada ingrediente activo está por encima de 40 millones de $EUA como se describe en la Tabla 8. De este costo, el Gobierno de India está solicitando 12.953.085 $EUA (lo cual representa 32,3 por ciento de los costos totales).

**Tabla 8. Total costos estimados para el desarrollo del producto ($EUA)**

| Ingrediente activo | Cadila | Cipla | GSK | Midas-Care | SunPharma | Total $ | % Total $ |
|---|---|---|---|---|---|---|---|
| Beclometasona | | 4.200.000 | | 90.000 | | 4.290.000 | 10,7% |
| Beclometasona/Salbutamol | | 2.100.000 | | 45.000 | | 2.145.000 | 5,4% |
| Budesonida | 109.528 | 4.200.000 | | 90.000 | 132.098 | 4.531.626 | 11,3% |
| Budesonida/Formoterol | 226.610 | 2.100.000 | | 90.000 | 132.098 | 2.548.708 | 6,4% |
| Fluticasona | | 4.200.000 | | 90.000 | 132.098 | 4.422.098 | 11,0% |
| Formoterol | 54.764 | 2.100.000 | | 45.000 | | 2.199.764 | 5,5% |
| Ipratropio | 54.764 | 4.200.000 | | 45.000 | | 4.299.764 | 10,7% |
| Ipratropio/Salbutamol | 113.305 | 2.100.000 | | 45.000 | | 2.258.305 | 5,6% |
| Salbutamol | 54.764 | 2.100.000 | | 45.000 | 66.049 | 2.265.813 | 5,7% |
| Salmeterol | | 2.100.000 | | | | 2.100.000 | 5,2% |
| Salmeterol/Fluticasona | 226.610 | 4.200.000 | | 90.000 | 132.098 | 4.648.708 | 11,6% |
| Cromoglicato de Sodio | | 2.100.000 | | 45.000 | | 2.145.000 | 5,4% |
| Triotropio | | 2.100.000 | | 45.000 | 66.049 | 2.211.049 | 5,5% |
| **Total costos ($EUA)** | 840.345 | 37.800.000 | - | 765.000 | 660.490 | 40.065.835 | 100,0% |
| **Total costos solicitados ($EUA)** | 588.242 | 11.367.000 | - | 535.500 | 462.343 | 12.953.085 | |

17. Al examinar los costos totales para el desarrollo del producto, la Secretaría hizo notar lo siguiente:

a) Aún cuando solamente se fabricaron MDIs con CFC para 13 ingredientes diferentes en 2003, el Plan Sectorial de MDIs está proponiendo la reformulación de 55 MDIs con CFCs diferentes, que incluyen varios ingredientes activos para los cuales las dos diferentes potencias se presentan como dos diferentes productos.

El PNUD indicó que los MDIs con el mismo ingrediente activo aún así involucran varios de los pasos para el desarrollo del producto en cada potencia, tal como estudios de desarrollo y estabilidad con objeto de registrar los productos. Cuando existen tres o más potencias, es práctica común, desarrollar la potencia más alta y la más baja y conducir evaluaciones de estabilidad convencionales, en tanto que solamente deberían conducirse estudios abreviados para las potencias intermedias (se ha tomado en cuenta debidamente este aspecto).

b) GSK no ha solicitado financiación para el Desarrollo de MDIs con HFA (es decir, los costos serán cubiertos por la empresa). Sin embargo, el MDI reformulado tendrá costos operativos más altos debido a la necesidad de envases y válvulas más costosos;

c) Los costos para el desarrollo del producto incluyen varios MDIs con CFC cuya producción se inició después de 2003, es decir: salmeterol/fluticasona (Cavila); triotropio/formoterol y levosalbutamol (Cipla) y fluticasona y triotropio (Sun Pharma). Por lo tanto, los costos asociados con la reformulación a tecnología con HFA de estos ingredientes activos no es elegible;

El PNUD señaló que estos MDIs ingresaron al suministro comercial en 2004; los lotes a escala comercial ya estaban producidos en 2003 y las solicitudes para registro presentadas. Sobre esta base, estos MDIs fueron incluidos en el Plan Sectorial de MDIs;

d) El costo de desarrollo del producto para cada ingrediente activo varía ampliamente entre las empresas manufactureras. No obstante, se está solicitando el mismo nivel de financiación para el desarrollo de cada producto, irrespectivamente de la cantidad de MDIs fabricados anualmente (es decir, Cipla está solicitando 2,1 millones de $EUA para el desarrollo de MDIs con salbutamol, con una producción total de 16 millones de unidades y 2,1 millones de $EUA adicionales para la fabricación de MDIs de triotropio con una producción anual total de solamente 45.000 unidades). Más aún, para MDIs con CFC formulados en potencias múltiples, se está solicitando financiación por lo menos para dos de las potencias (típicamente la potencia más baja y la más alta);

e) Al abordar estas cuestiones, el PNUD señaló que los costos de desarrollo del producto son una función de situaciones específicas prevalecientes en un país/empresa y dependen de la capacidad técnica de base disponible y de sistemas/gastos generales. Más aún, las exigencias reguladoras para mercados en el extranjero pueden incrementar los costos de desarrollo. En el caso de las empresas manufactureras de MDIs en India, particularmente Cipla, que tienen un mercado de exportación considerable, esto puede afectar sus costos de desarrollo de manera sustancial. Los costos de desarrollo representan gastos fijos irrespectivamente de los volúmenes fabricados y son necesarios para garantizar que el producto se desarrolle cuidadosamente, se registre apropiadamente y sea seguro y efectivo. Al reformular los MDIs con dos ingredientes activos diferentes, deben desarrollarse dos métodos analíticos para las dos potencias; debe realizarse una detección

de los componentes para la compatibilidad de la potencia individual y la interacción de los dos componentes y debe efectuarse un análisis por duplicado en todo momento durante la fase de estabilidad.

Costos de capital y operativos y actividades de asistencia técnica

18. Debido a la solicitud de información adicional acerca del componente de propiedad extranjera de las plantas de MDI en India, el PNUD reportó lo siguiente: 2,97 por ciento de propiedad extranjera para Cadila; 18,42 por ciento para Cipla; 50,67 por ciento para GSK y 19,24 por ciento para Sun Pharma.

19. Para cada línea de fabricación de MDIs establecida antes de 2003, la Secretaría y el PNUD sostuvieron discusiones detalladas acerca de la capacidad instalada, modernización tecnológica, elegibilidad de los ítems de equipo dentro del marco del equipo de base y del costo del equipo. Los costos operativos se han calculado sobre la base de los niveles de producción de 2007, no de los niveles de 2003.

20. El Plan Sectorial de MDIs incluye una solicitud de 1.170.000 $EUA para los siguientes componentes de no inversión:

a) Asistencia técnica para la ejecución de la estrategia nacional para la transición a MDIs sin CFC (350.000 $EUA) para, entre otras cosas, preparar las especificaciones del equipo a ser adquirido, evaluar las licitaciones de los proveedores, proporcionar directrices a las empresas beneficiarias durante el arranque con nuevo equipo y procesos; apoyar en la evaluación de la producción y de ensayos de calidad del producto, puesta en servicio del proyecto, incluyendo la destrucción de equipo basado en CFC, cuando sea aplicable, verificar el agotamiento de las reservas de CFC y verificar que los procesos de producción sin CFC estén operando; certificación de la conclusión del proyecto y requerimientos de informe;

b) Apoyo a políticas y regulaciones (70.000 $EUA) que incluye el control del suministro de MDIs con CFC y promoción de alternativas sin CFC;

c) Sensibilización y mejora de la capacidad de las instituciones (350.000 $EUA) que incluye diseminación de la información y actividades de sensibilización, desarrollo y distribución de materiales de promoción y fomento de la sensibilización pública; y

d) Unidad de gestión y supervisión (400.000 $EUA) que será responsable de la coordinación en la ejecución de diversos componentes de la estrategia, informes de avance, coordinación de la ejecución en el ámbito empresarial y actividades de eliminación y verificación y certificación de la eliminación de CFC en el ámbito empresarial.

21. Con respecto a las actividades de no inversión, la Secretaría hizo notar lo siguiente:

a) La población afectada por asma y que recibe tratamiento con MDIs en India es muy pequeña y ha estado disminuyendo en los últimos años;

b) Existe una mayor penetración de MDIs con HFA en el país. En 2007, los MDIs con HFA representaron cerca de 44 por ciento del total de la producción en India. Se espera que la fabricación de MDIs con HFA continúe incrementando anualmente, reemplazando a los MDIs con CFC. Más aún, actualmente Cipla y Sun Pharma están fabricando inhaladores con polvo seco;

El PNUD indicó que las principales barreras a la penetración del mercado de tecnología de MDIs con HFA son el incremento de los costos, asociado a controles reglamentarios en el precio de venta de los medicamentos y dispositivos, inadecuada diseminación de la información y la experiencia de MDIs con HFA, incluso entre los proveedores de atención de salud y la necesidad de fortalecer las políticas/regulaciones relevantes. Debido a estas barreras, los fabricantes de MDI tienen una compensación inadecuada en las ventas nacionales y, por lo tanto, se ha dado preferencia a las exportaciones. Estas barreras pueden ser superadas solamente a través de intervenciones técnicas y financieras disponibles por medio de mecanismos del Protocolo de Montreal. La base lógica para el desarrollo de inhaladores de polvo seco de dosis única localmente, fue para cubrir las necesidades de un grupo específico de pacientes ancianos que tienen dificultades para aplicarse productos con MDIs, no con la intención de reemplazar MDIs con CFC como tratamiento terapéutico para el asma y para la enfermedad pulmonar obstructiva crónica (EPOC) para todos los pacientes. Sin embargo, los inhaladores de polvo seco de dosis única no han sido bien aceptados por los pacientes y los médicos en India;

c) Aún cuando existen varias empresas manufactureras de MDIs en India, por encima del 91 por ciento de la producción total la lleva a cabo una empresa; se han convertido varias líneas de fabricación a tecnologías con HFA y tres de las empresas ya están fabricando MDIs con HFA;

El PNUD indicó que aún cuando uno de los fabricantes de MDIs con ventaja es el mayor productor en India, la estrategia de transición es compleja, involucra un gran espectro de partes interesadas y toma en consideración repercusiones sociales y de salud sensibles. No pueden ser tratadas como un simple proyecto de eliminación, puesto que subestimaría los desafíos involucrados.

Ajuste de la financiación aprobada para el Plan Nacional de Eliminación para India

22. Tomando en consideración que el consumo remanente elegible para financiación ya incluye las cantidades de CFCs utilizadas en la fabricación de MDIs, el nivel global de financiación para el Plan Sectorial de MDIs debería ajustarse en 2.894.500 $EUA para evitar doble conteo. Para el cálculo de este ajuste, la Secretaría señaló lo siguiente:

a) El Plan de Eliminación para India fue aprobado en la 42ª Reunión, en base al nivel de consumo de CFC de 2003;

b) De conformidad con el plan de eliminación, solamente se utilizaron 120 toneladas PAO de CFCs para la producción de MDIs con CFC. El nivel de consumo de CFC reportado en el plan de eliminación es mucho menor que las 639,2 toneladas PAO de CFCs reportadas en la propuesta para la preparación de un proyecto de eliminación de MDIs en India, presentado por el Gobierno a la 52ª Reunión y también es menor que el consumo de CFC de 578,9 toneladas PAO reportadas en la propuesta de proyecto presentada a la 56ª Reunión.

c) El costo del plan de eliminación para la India (así como la mayoría de Plan Nacional de Eliminación para los países que no son de bajo volumen de consumo) fue calculado utilizando el valor de la relación de costo a eficacia de 5,00 $EUA/kg de CFC utilizado en el sector de servicio y mantenimiento de refrigeración, en el que aún se utilizaban CFCs, más financiación adicional para supervisión y presentación de informes.

23. Tomando en consideración lo anteriormente mencionado, los ajustes al Plan Sectorial de MDIs serían calculados sobre la base del consumo de CFC en 2003 de 578,9 toneladas PAO (que representan el consumo más preciso en el sector de MDIs) y el valor de la relación de costo a eficacia de 5,00 $EUA/kg.

**Propuesta de la Secretaría**

24. En base a las cuestiones planteadas y a las observaciones efectuadas por la Secretaría al examinar el Plan Sectorial de MDIs presentado por el PNUD; el gran número de MDIs con diferentes ingredientes activos y potencias; la información adicional recopilada durante la revisión del proyecto al igual que la experiencia que obtuvo el Fondo Multilateral en el sector de MDIs, la Secretaría propuso al PNUD la metodología alternativa que se establece a continuación para determinar los costos adicionales del Plan Sectorial de MDIs. Esta metodología es consistente con las actuales políticas y directrices del Fondo Multilateral y ha abordado exitosamente todas las cuestiones de políticas y costos que fueron planteadas por la Secretaría durante el proceso de revisión del proyecto.

Estrategia de transición

25. El Plan Sectorial de MDIs ha identificado varios elementos clave que permitirían la transición de alternativas con CFCs a alternativas sin CFC en el sector de MDIs. Estos elementos incluyen apoyo para la revisión de políticas y regulaciones para SAO, incluyendo la consideración de incentivos fiscales para la adopción de alternativas sin CFC y procedimientos para la agilización de la aprobación de MDIs sin CFC; la consideración de la solicitud para exención al uso esencial más allá de la fecha de eliminación en 2010 y sensibilización pública y diseminación de la información. Considerando el número de plantas manufactureras, su distribución geográfica y el número de ingredientes activos en los MDIs que serán convertidos a tecnología, el costo de la estrategia de transición sería de 120.000 $EUA.

Desarrollo del producto

26. La propuesta para calcular el costo para el desarrollo de MDIs con HFA se basa en las siguientes consideraciones:

a) Se fabricaron trece ingredientes activos en los MDIs en India en 2003. Seis de ellos fueron desarrollados en más de una potencia. El PNUD ha recibido confirmación que todos estos MDIs con CFC serán convertidos a tecnología con HFA;

b) Cerca de 95 por ciento del total de MDIs fabricados contenían los siguientes ingredientes activos: salbutamol, declometasona, declometasona/salbutamol, salmeterol/fluticasona e ipratropio (Tabla 7 supra). Se están proponiendo 750.000 $EUA para el Desarrollo de MDIs con HFA para cada uno de estos ingredientes activos (este nivel de financiación está ligeramente por debajo que el de algunos proyectos de MDIs ya aprobados). Si más de una empresa fabrica MDIs con el mismo ingrediente activo, se están proponiendo 100.000 $EUA adicionales para cada una de las empresas, con objeto de cubrir costos asociados con los ensayos *in situ*, preparación de legajos técnicos y registro. Por ejemplo, 1.050.000 $EUA representarían el costo total para el desarrollo de MDIs con salbutamol, que es fabricado por cuatro empresas;

c) Se están proponiendo 375.000 $EUA para el desarrollo de una segunda potencia de los cinco ingredientes más activos. Si más de una empresa fabrica el mismo ingrediente activo, se están proponiendo 100.000 $EUA adicionales para cada una de las empresas, con objeto de cubrir costos asociados con la preparación de legajos técnicos, registro y aprobación por las autoridades de salud;

d) Se está proponiendo un enfoque similar para los ocho ingredientes activos restantes (es decir, ipratropio, budesonida, ipratropio/salbutamol, budesonida/formoterol, salmeterol, fluticasona, cromoglicato de sodio, triotropio, formoterol), con el siguiente nivel de financiación:

i) 300.000 $EUA para el desarrollo de cada uno de los ingredientes activos supra. Si más de una empresa fabrica el mismo ingrediente activo, se están proponiendo 100.000 $EUA adicionales para cada una de las empresas adicionales con objeto de cubrir costos para la preparación de legajos técnicos, registro y aprobación; y

ii) Se están proponiendo 150.000 $EUA para el desarrollo de una segunda potencia de cada uno de los ingredientes activos supra. Si más de una empresa fabrica el mismo ingrediente activo, se están proponiendo 100.000 $EUA adicionales para cada una de las empresas adicionales, con objeto de cubrir costos para la preparación de legajos técnicos, registro y aprobación;

e) Los costos para el desarrollo de la beclametasona fabricada por GSK serán cubiertos por la empresa.

27. El costo total asociado con el desarrollo de tecnología con HFA sería de 10.325.000 $EUA (antes de considerar cualquier ajuste en base a decisiones relevantes).

Costos de capital y operativos

28. El nivel de financiación para la conversión de las líneas de fabricación en las cinco plantas manufactureras de MDIs es el siguiente:

a) 726.000 $EUA para cada una de las cuatro instalaciones con resultados de producción de tamaño medio (es decir, resultados de producción entre 20 y 32 envases/min) en base a una cotización de una nueva línea de producción en dos etapas;

b) 7.260.000 $EUA para la única planta con un consumo de CFC de más de 520 toneladas PAO en 2003, calculado sobre la base de 5 líneas de producción individuales con un costo unitario de 1.452.000 $EUA.

29. Por lo tanto, el costo total de capital asociado con la conversión de tecnologías con HFA asciende a 10.164.000 $EUA, incluyendo costos de instalación puesta en servicio e imprevistos.

30. Los costos operativos se calculan en base al número total de MDIs producidos en 2003 (es decir, cerca de 28,8 millones de MDIs), y un costo unitario de 0,16 $EUA/MDI, que es el costo adicional asociado con la nueva válvula para HFA, según lo documentado en India y 0,01 $EUA para componentes adicionales. Los costos operativos resultantes ascienden a 4.615.668 $EUA.

31. Considerando el número de los diferentes ingredientes activos en los MDIs fabricados en varias líneas de producción en cinco empresas diferentes, la Secretaría propuso el establecimiento de una unidad de ejecución del proyecto y supervisión con un costo total de 280.000 $EUA, que sería responsable de, entre otras cosas, proporcionar apoyo en la elaboración de especificaciones del equipo a ser adquirido, evaluar las licitaciones de los proveedores de equipo, proporcionar directrices técnicas a las empresas beneficiarias durante el arranque con el equipo y el proceso nuevos, abordando cuestiones técnicas con la incorporación gradual de la nueva coordinación para la ejecución de los diversos componentes de la estrategia y la supervisión y verificación.

Resumen de la financiación

32. El nivel total de financiación propuesto para la eliminación total de CFCs utilizados en la fabricación de MDIs en India es el siguiente:

| **Descripción** | **$EUA** |
|---|---|
| Desarrollo del producto | 10.325.000 |
| Costos de capital | 10.164.000 |
| Costos operativos | 4.615.668 |
| Sub-total costo del proyecto | 25.104.668 |

33. De esta cifra de 25.104.668 $EUA, deben descontarse los siguientes montos:

| **Descripción** | **$EUA** |
|---|---|
| Propiedad extranjera | (3.971.386) |
| Exportación a países no al amparo del Artículo 5 | (905.115) |
| Financiación de contraparte (30%) | (7.531.400) |
| Ajuste al Plan Nacional de Eliminación para India | (2.894.500) |
| Sub-total de ajustes | (15.302.401) |

34. Consecuentemente, el costo total del Plan Sectorial de MDIs para India es el siguiente:

| | |
|---|---|
| Costo del proyecto | $EUA9.802.267 |
| Estrategia de transición | $EUA120.000 |
| Ejecución del proyecto y unidad de supervisión | $EUA280.000 |
| Gran total | $EUA10.202.267 |

35. Este nivel de financiación propuesto por la Secretaría fue acordado con los organismos bilaterales y ejecutores. La distribución del nivel de financiación entre los organismos se describe a continuación:

| **Financiación ($EUA)** | **Italia** | **PNUD** | **PNUMA** | **Total** |
|---|---|---|---|---|
| Costo del proyecto | 2.000.000 | 8.082.267 | 120.000 | 10.202.267 |
| Costo de apoyo al organismo | 230.000 | 606.170 | 15.600 | 851.770 |
| Costo total | 2.230.000 | 8.688.437 | 135.600 | 11.054.037 |

36. El Gobierno de India tendrá flexibilidad en el uso de la financiación disponible en conformidad con el Plan Sectorial de MDIs para las actividades que considere adecuadas con el objeto de alcanzar la eliminación total de CFCs en el sector de MDIs y de conformidad con las decisiones relevantes y las directrices del Fondo Multilateral.

**RECOMENDACIÓN**

37. Tomando nota de la sustancial contribución de la contraparte por parte de las empresas manufactureras de MDIs, la urgente necesidad de concluir la conversión del sector de MDIs a alternativas sin CFC y en concordancia con los comentarios de la Secretaría, el Comité Ejecutivo podría considerar la aprobación de la estrategia nacional para su transición a MDIs sin CFC y planificar la eliminación de CFCs en la fabricación de MDIs farmacéuticos en India a un costo de 10.202.267 $EUA, más costos de apoyo al organismo de 851.700 $EUA distribuidos de la siguiente manera:

a) 2.000.000 $EUA más costos de apoyo al organismo de 230.000 $EUA para el Gobierno de Italia;

b) 8.082.267 $EUA más costos de apoyo al organismo de 606.170 $EUA para el PNUD; y

c) 120.000 $EUA más costos de apoyo al organismo de 15.600 $EUA para el PNUMA.

## ELIMINACIÓN ACELERADA DE LA PRODUCCIÓN DE CFC

### Introducción

38. El Banco Mundial presenta en nombre del Gobierno de India al Comité Ejecutivo en su 56ª Reunión, un proyecto de acuerdo revisado entre India y el Comité Ejecutivo que se adjunta en el Anexo I al presente documento, para la eliminación acelerada de la producción de CFC. Para facilitar la lectura, se presentan en negritas los cambios introducidos al proyecto de acuerdo original.

### Antecedentes

39. En su 54ª Reunión celebrada en abril de 2008, el Comité Ejecutivo decidió:

> "a) Aprobar en principio 3,17 millones $EUA para el cierre de la producción de CFC en la India antes del 1 de agosto de 2008, con 17 meses de antelación al calendario de eliminación existente, en la inteligencia de que la producción adicional de CFC entre el 1 de enero y el 31 de julio de 2008, dedicada principalmente a aplicaciones en inhaladores de dosis medidas, no superaría las 690 toneladas métricas;
>
> b) Pedir a la Secretaría del Fondo y el Banco Mundial que preparen y presenten un proyecto de acuerdo para acelerar el proyecto de cierre de la producción de CFC a la 55ª Reunión del Comité Ejecutivo. El proyecto de acuerdo debería incluir el compromiso del gobierno de asegurar que las reservas remanentes de CFC (1 363 toneladas métricas) a fines de 2007, excepto una cantidad de hasta 135 toneladas métricas que podrían requerirse para satisfacer las necesidades del sector de inhaladores de dosis medidas, se exportarían a más tardar el 31 de diciembre de 2009;
>
> c) Pedir a la India que confirme en el proyecto de acuerdo su demanda interna de CFC para el sector de inhaladores de dosis medidas en 2008 y 2009 a fin de establecer la cantidad exacta de CFC a ser exportada;
>
> d) Que el proyecto de acuerdo debería describir e incluir los pasos necesarios para completar las actividades necesarias para terminar las actividades de desmantelamiento requeridas y la verificación para confirmar que dicho desmantelamiento y el cierre de la producción se habían llevado a cabo.
>
> (Decisión 54/37)"

40. En la misma reunión el Comité Ejecutivo decidió también asistir a India en el cumplimiento de los objetivos de eliminación en virtud del Acuerdo para la eliminación del consumo de CFC, vinculado con la gestión integrada de la eliminación de la producción y consumo de CFC en el país, tal como se presenta a continuación:

> "(g) Respecto del acuerdo para el sector de consumo de CFC, que:
>
> i) La India produciría 690 toneladas métricas de CFC como máximo, principalmente para la fabricación de inhaladores de dosis medidas, hasta el 1 de agosto de 2008;
>
> ii) Los productores de CFC de la India no venderían más de 825 toneladas métricas como máximo de CFC para la producción de inhaladores de dosis medidas en los

años 2008 y 2009, comprendidas por 690 toneladas métricas de producción nueva y 135 toneladas métricas reprocesadas de las reservas existentes;

iii) La India exportaría 1228 toneladas métricas de CFC para el 31 de diciembre de 2009 a más tardar;

iv) La India no importaría ningún CFC de ningún tipo.

(Decisión 54/35)"

41. El Banco Mundial presentó el proyecto de acuerdo a la 55ª Reunión del Comité Ejecutivo para formalizar la decisión de la eliminación acelerada de la producción de CFC. Sin embargo, la retiró durante la Reunión habida cuenta de la necesidad dilucidar aún más la cláusula de penalización contenida en el proyecto.

## COMENTARIOS Y RECOMENDACIÓN DE LA SECRETARÍA

### COMENTARIOS

42. El proyecto de acuerdo revisado abarca todas las disposiciones recogidas en las decisiones indicadas previamente. La cláusula de penalización contenida en el párrafo 7 del proyecto revisado ha sido redactada de manera clara para que pueda abarcar los compromisos asumidos expresados en los párrafos 2 y 5. La financiación propuesta está condicionada en función de los resultados de verificación que serán efectuados por el Banco Mundial y el calendario de los dos pagos en la primeras reuniones de 2009 y de 2010 es razonable pues son las fechas en las cuales el Banco Mundial presenta el programa anual de trabajo junto con los informes de verificación.

### RECOMENDACIÓN

43. La Secretaría recomienda que el Comité Ejecutivo apruebe el proyecto de acuerdo revisado.

# Anexo I

## ACUERDO ENTRE LA INDIA Y EL COMITÉ EJECUTIVO DEL FONDO MULTILATERAL PARA LA ELIMINACIÓN ACELERADA DE LA PRODUCCIÓN DE CFC

1. El presente Acuerdo suplementa el Acuerdo Consensuado alcanzado en la 29ª Reunión ("El Acuerdo en Vigor") entre el Comité Ejecutivo y la India aplicable al sector productivo de dicho País. Este Acuerdo representa el entendimiento entre la India ("el País") y el Comité Ejecutivo al respecto de la Eliminación Acelerada de la Producción de Clorofluorocarbonos (CFC) para el 1 de agosto de 2008 a lo más tardar.

2. El País acuerda revisar su programa de eliminación de la producción de CFC quedando entendido que:

a) Hasta el 1º de agosto de, 2008, la India no producirá más de 690 toneladas métricas de CFC, dedicadas principalmente a la fabricación de inhaladores de dosis medida,
b) Los productores de CFC de la India no venderán más de 825 toneladas métricas de CFC para la producción de tales inhaladores durante el periodo de 2008 a 2009, incluidas las 690 toneladas métricas de nueva producción y las 135 toneladas métricas extraídas de las existencias actuales.
c) La India exportará 1 228 toneladas métricas de CFC antes del 31 de diciembre de 2009 a lo más tardar.
d) La India no importará nuevas cantidades vírgenes de CFC.
e) Todo subproducto de CFC de calidad sin aplicación farmacéutica que genere la producción indicada en a) se contabilizarán con respecto al límite indicado en la fila 2 de la Tabla 1 del Apéndice 1 y podrá ponerse en el mercado;
f) El presente Acuerdo no se ocupa de la producción de CFC que pudieran haber acordado las Partes con miras a cubrir el consumo esencial de la India; y
g) Al presente Acuerdo le son aplicables otras condiciones que se recojan en el Acuerdo en Vigor, además de las ya indicadas *supra*.

3. El País conviene en que, al aceptar este Acuerdo y la ejecución por parte del Comité Ejecutivo de sus obligaciones de financiación indicadas en la Tabla 2 del Apéndice 1, le queda prohibido solicitar o recibir financiación ulterior alguna del Fondo Multilateral en lo que al cumplimiento de la eliminación de la producción de CFC respecta. .

4. A condición de que el País cumpla con sus obligaciones contraídas en virtud de lo estipulado en el presente Acuerdo, el Comité Ejecutivo acuerda, en principio, facilitar al País la financiación indicada en la fila 3 de la Tabla 2 del Apéndice 1 (la "Financiación"). **El Comité Ejecutivo facilitará durante sus 57ª y 60ª Reuniones** los tramos de financiación conexos a la nueva eliminación acelerada. En lo tocante al tramo de 2009 indicado en el Acuerdo en Vigor, el desembolso de este tramo se atendrá a los términos y condiciones estipulados en el Acuerdo en Vigor.

5. El País cumplirá con los límites de producción indicados en la fila 2 de la Tabla 1 del Apéndice 1. El País conviene asimismo permitir que se lleven a cabo auditorias técnicas independientes gestionadas por el organismo de ejecución (el Banco Mundial) para confirmar la producción, el límite de retratamiento, las ventas (tanto en el mercado nacional como en el internacional) y las existencias de tales CFC de conformidad con el Acuerdo.

6. El País conviene en asumir la responsabilidad general por la gestión e implantación del presente Acuerdo y de todas y cada una de las actividades que se acometan a su amparo y en su nombre con miras al cumplimiento de las obligaciones contraídas en virtud del presente Acuerdo. El País conviene asimismo en establecer criterios o mecanismos de ejecución que aseguren la coordinación de los esfuerzos de eliminación de CFC, tanto en el sector productivo como en el de consumo, implantando para ello los criterios y las medidas reglamentarias estipuladas en el Apéndice 2.

7. Si por las razones que fuere el País incumpliera los Objetivos para la eliminación de las Substancias o no cumpliera estrictamente con lo prescrito en el presente Acuerdo, el País conviene en que no tendrá derecho alguno a la Financiación. Dicha financiación se rehabilitará. a la entera discreción del Comité Ejecutivo, de conformidad con un Programa de Desembolso de Finanzas a determinar por el Comité Ejecutivo tras haber demostrado el País que ha cumplido con todas sus obligaciones debidas antes de poder recibir el siguiente plazo de Financiación estipulado en el marco del Programa de Desembolso de Finanzas. Además, India entiende que el Comité Ejecutivo puede llegar a reducir la financiación de los tramos subsiguientes en 1 000 $EUA por tonelada PAO de reducciones incumplidas ***en función de los compromisos expresados en los párrafos 2 y 5 de este Acuerdo.***

8. Los componentes de la Financiación contemplada en el presente Acuerdo no se modificarán por ninguna decisión futura que pudiera tomar el Comité Ejecutivo y que pudiera afectar a la Financiación de cualquier otro proyecto atinente al sector productivo o de cualquiera otra actividad conexa que tuviera o pudiera tener lugar en el País.

9. ***El País cumplirá con toda solicitud razonable del Comité Ejecutivo y del Banco Mundial destinada a facilitar la implantación del presente Acuerdo***. En concreto, facilitará el acceso del Banco Mundial a la información necesaria para verificar el cumplimiento del presente Acuerdo.

10. Todo lo convenido y estipulado en el presente Acuerdo se acometerá solamente al amparo de lo prescrito en el mismo y del contexto del Protocolo de Montreal. Todos los términos y expresiones empleados en el presente Acuerdo tienen el significado asignado en dicho Protocolo, salvo cuando en el presente se indique lo contrario.

## Apéndice 1

## Objetivos y financiación

### Tabla 1. Objetivos de producción

| Descripción | Año | | |
|---|---|---|---|
| | **2008** | **2009** | **2010** |
| 1. Objetivos en el marco del Acuerdo en Vigor (toneladas PAO ) | 2 259 | 1 130 | 0 |
| 2. Producción permisible en el marco del presente Acuerdo (toneladas PAO) | 690 | 0 | 0 |

### Tabla 2. Financiación

| Descripción | Año | | |
|---|---|---|---|
| | **2008** | **2009** | 2010 |
| 1. Financiación en virtud del Acuerdo en Vigor (miles de $EUA) | 6 000 | 6 000 | 0 |
| 2. Costos de apoyo en virtud del Acuerdo en Vigor (miles de $EUA) | 450 | 450 | 0 |
| 3. Financiación total concertada para el presente Acuerdo (miles de $EUA) | - | 2 113 | 1 057 |
| 4. Costos de apoyo de la financiación concertada para el presente Acuerdo (miles de $EUA) | - | 0 | 238 |
| 5. Monto total de financiación a desembolsar para el País y la Ejecución del Acuerdo | 6 450 | 8 563 | 1 295 |

## Apéndice 2 Criterios y medidas reglamentarias

1. De conformidad con el Plan de Acción presentado por el País en la 54ª Reunión del Comité Ejecutivo, el País conviene en acometer las medidas siguientes:

a) Prohibir la producción de clorofluorocarbonos (CFC) antes del 1 de agosto de 2008, a lo más tardar, salvo la producción para el consumo esencial que pudieran acordar las Partes en un futuro;

b) Asegurar el cumplimiento congruente de los límites del programa de consumo del Reglamento sobre el Ozono y los límites de consumo especificados en la fila 3 del Apéndice 2–A del Acuerdo entre la India y el Comité Ejecutivo para la eliminación nacional del consumo de CFC en la India centrándose en el sector de los servicios a los equipos de refrigeración;

c) La India no importará más nuevos volúmenes de CFC o vírgenes; y

d) Reforzará el sistema de supervisión de las importaciones y existencias de CFC, si los hubiere.

**MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER**

**PROJECT COVER SHEET**

| | | | | |
|---|---|---|---|---|
| **COUNTRY:** | INDIA | | **IMPLEMENTING AGENCY:** | UNDP |
| | | | **COOPERATING AGENCY:** | UNEP |
| | | | **BILATERAL AGENCY:** | Italy |
| **PROJECT TITLE:** | National Strategy for Transition to non-CFC MDIs and Plan for phase-out of CFCs in the manufacture of pharmaceutical Metered Dose Inhalers (MDIs) in India | | | |
| **PROJECT IN CURRENT BUSINESS PLAN:** | | | Yes | |
| **SECTOR:** | | | Aerosols | |
| **SUB-SECTOR:** | | | Pharmaceutical MDIs | |
| **ODS USE IN SECTOR:** | Baseline (Average of 2003 & 2004): | | 693.97 | ODP tonnes |
| **ODS USE IN SUB-SECTOR:** | (Average of last 3 years): | | 704.03 | ODP tonnes |
| **PROJECT IMPACT:** | | | 704.03 | ODP tonnes |
| **PROJECT DURATION:** | | | 60 | months |
| **PROJECT COSTS:** | **Investment Components** | | | |
| | Incremental Capital Costs: | US$ | 13,756,545 | (UNDP) |
| | Contingencies (10%): | US$ | 1,375,655 | (UNDP) |
| | Product Development Cost | US$ | 40,155,835 | (UNDP) |
| | Incremental Operating Costs: | US$ | 5,243,899 | (UNDP) |
| | ***Sub-total:*** | ***US$*** | ***60,531,934*** | |
| | **Non-Investment Components** | | | |
| | Technical Assistance: | US$ | 350,000 | (UNDP) |
| | Policy/regulatory Support: | US$ | 70,000 | (UNDP) |
| | Awareness Actions: | US$ | 350,000 | (UNEP) |
| | Monitoring and Management: | US$ | 400,000 | (UNDP) |
| | ***Sub-total:*** | ***US$*** | ***1,170,000*** | |
| | **Total Costs:** | **US$** | **61,701,934** | |
| **LOCAL OWNERSHIP (Net overall):** | | | 98.4% | (Funding request adjusted) |
| **EXPORT COMPONENT (To non-Article-5 countries):** | | | 4.9% | (Funding request adjusted) |
| **ESTIMATED COUNTERPART FUNDING:** | | US$ | 34,942,615 | (@57% from recipients) |
| **REQUESTED GRANT:** | | US$ | **26,759,319** | |
| **COST EFFECTIVENESS:** | | US$/kg/y | 38.00 | |
| **AGENCY SUPPORT COSTS:** | | US$ | 1,847,955 | (UNDP) |
| | | US$ | 45,500 | (UNEP) |
| | | US$ | 230,088 | (Italy, executed by UNDP) |
| **TOTAL COST TO MULTILATERAL FUND:** | | **US$** | **28,882,862** | |
| **STATUS OF COUNTERPART FUNDING:** | | | Letters from beneficiary enterprises obtained | |
| **PROJECT MONITORING MILESTONES:** | | | Included | |
| **NATIONAL COORDINATING BODY:** | | | Ozone Cell, Ministry of Environment & Forests | |

**PROJECT SUMMARY**

This project articulates India's national strategy for transition to non-CFC MDIs and will result in the elimination of CFC consumption in the manufacture of pharmaceutical Metered Dose Inhalers (MDIs) in India by 2012. The project involves development of suitable alternative products including HFA-based metered dose inhalers at five enterprises who currently manufacture CFC-based MDIs in this sub-sector. Under this project, the enterprises will develop alternative formulations and implement conversions for several of their CFC-based MDI products. The substantial counterpart funding envisaged from the enterprises supplementing the requested funding, will cover formulation development and conversion of remaining products and result in complete conversion of all CFC-based MDIs in India to non-CFC alternatives.

This project is presented as an aggregate of technology conversion costs covering incremental capital and operating costs, technical assistance costs and contingencies, covering equipment and technology for manufacturing HFA-based MDIs, product development and technology transfer, project supervision and implementation and also eligible costs for provision of policy/regulatory support, institutional and technical assistance, awareness actions and monitoring & management

**IMPACT OF THE PROJECT ON THE COUNTRY'S MONTREAL PROTOCOL OBLIGATIONS**

The approval of this project will help India in meeting its Montreal Protocol obligations, such as phased reductions in ODS consumption as per the agreed schedules and eliminate the use of ODS in the pharmaceutical MDI sector in India by 2012.

**Prepared By:** UNDP with inputs from UNEP **Reviewed By:** Under review **Version:** 02 August 2008

*56th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol*

# NATIONAL STRATEGY FOR TRANSITION TO NON-CFC MDIS AND PLAN FOR PHASE-OUT OF CFCS IN THE MANUFACTURE OF PHARMACEUTICAL METERED DOSE INHALERS (MDIS) IN INDIA

**Prepared By**


**OZONE CELL, MINISTRY OF ENVIRONMENT AND FORESTS**
**GOVERNMENT OF INDIA**


**IN BILATERAL COOPERATION WITH**
**GOVERNMENT OF ITALY**

**With the assistance of**

**UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)**
**Lead Implementing Agency**

**UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)**
**Cooperating Agency**

## EXECUTIVE SUMMARY

The conversion of the majority of CFC consuming sectors in Article 5 countries under the Montreal Protocol has been completed or is in an advanced stage of implementation, however, to date only few projects to convert the production of CFC-based pharmaceutical Metered Dose Inhalers have been funded by the Multilateral Fund. The Montreal Protocol control schedule requires a complete phase out of CFCs by 2010; however, if the CFC consumption in manufacturing of MDIs is not addressed fully, it may present a significant risk of non-compliance in Article-5 MDI manufacturing countries. Since the manufacture of these drugs is essential for ensuring effective therapeutic treatment to asthma and COPD patients in these countries, there is a justifiable need for CFCs in this sector until the manufacturing can be adapted to use alternative technologies. Decisions 49/33, 50/19 and 50/20 of the Executive Committee of the Multilateral Fund, recognized this risk in countries manufacturing MDIs including India, and urged for the preparation of conversion projects in this sector, to address this issue as soon as possible.

In response to Decisions 50/19 and 50/20, India, with assistance from UNDP, has prepared a National Strategy for Transition to non-CFC MDIs that provides an overall framework to address, in a coordinated way, the sustainable phase-out of CFC use in the manufacture of MDIs in India, ensuring that its obligations under the Montreal Protocol are complied with, potential economic losses to the indigenous MDI manufacturing industry are minimized and most importantly, asthma and COPD patients are not deprived of essential and cost-effective inhaled therapy. The plan for phase-out of CFC-based pharmaceutical MDIs in India is an integral component of the National Strategy for Transition to non-CFC MDIs and prepared with assistance from UNDP as Lead Agency, UNEP as Cooperating Agency and Government of Italy as the Bilateral Cooperating Agency (with a contribution of US$ 2 million). The provisions of Executive Committee Decisions 51/34 and 54/5 have been duly considered in the preparation of this proposal.

The primary objective of this project is to sustainably phase out the consumption of CFCs used in the manufacture of pharmaceutical Metered Dose Inhalers (MDIs) in India by 2012. This involves the development of suitable alternative products, including HFA-based MDI formulations and the conversion to HFA-based MDI manufacturing technology at five eligible enterprises in India. There are over twenty MDI formulations produced in India and over forty products/strengths commercialized. This project will result in the conversion or replacement of all the current CFC-based formulations/products, taking into account the specific characteristics, status of progress in the formulation process and registered eligible products of each one of the enterprises involved. The enterprises will take responsibility of addressing the conversion of non-eligible formulations through their own resources and through the capacity built in this project. In order to achieve these conversions, each enterprise will require the development of a number of new MDI formulations and installation of suitable manufacturing equipment to allow them to produce HFA-based MDIs.

The cost of the proposed strategy and plan is presented as an aggregate of industrial conversions encompassing product development, technical assistance, incremental capital costs and incremental operating costs involved in conversion to HFA-based formulations and also support for awareness, policy and regulations, institutional and technical support and monitoring & management. All eligible drugs will be converted, keeping in mind their relevance to and specific needs of patients and ease of conversion. The funding requested covers cost of production equipment and installation, product development and transfer to the enterprises including stability testing and laboratory analysis, along with overall project supervision and implementation. The beneficiary enterprises will finance the cost of product registration and overheads.

Although the transition process from CFC-based MDIs to HFA-based MDIs in India is now partially underway, it involves an interim period during which production of both CFC-based MDIs and HFA-based MDIs need to occur simultaneously to ensure continuity in availability of proven products in the market in the interests of asthma and COPD patients. This therefore means that HFA-based MDI manufacturing equipment needs to be installed and operationalized prior to shutting down CFC-based MDI manufacturing lines.

Given the CFC consumption limits established for India currently and for the future, it is imperative to accelerate phase-out of CFCs in pharmaceutical MDIs, while ensuring availability of non-CFC MDIs as soon as possible. Considering the current situation of production of pharmaceutical grade CFCs at the global level, it is necessary to make provisions for making pharmaceutical grade CFCs available to meet the requirement of MDIs during the transition period. In this regard, the enterprises in collaboration with the Government, will determine the amount of pharmaceutical grade CFCs that would be required ensure availability of proven drugs to patients, while the HFA-based MDIs are being developed, tested and registered, leading to full-fledged commercial production.

The funding of this project by MLF to cover the eligible incremental costs is considered to be a critical component of the success of this project. In addition, flexibility in deploying approved funding by the Government is also considered an important factor, enabling Government and the beneficiary enterprises to conclude phase out of CFCs in pharmaceutical MDIs in a timely manner while protecting patients' interests and needs.

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| | |
|---|---|
| **CDSCO** | Central Drugs Standard Control Organization |
| **CFC** | Chloro Fluoro Carbons |
| **CP** | Country Programme |
| **CTC** | Carbon Tetra Chloride |
| **ExCom** | Executive Committee of the Multilateral Fund |
| **DPI** | Dry Powder Inhaler |
| **GWP** | Global Warming Potential |
| **GTZ** | Gesellschaft für Technische Zusammenarbeit, Germany |
| **HCFCs** | Hydrochlorofluorocarbons |
| **HFA** | Hydro Fluoro Alkanes |
| **IA** | Implementing Agency |
| **MDI** | Metered Dose Inhaler |
| **MLF** | Multilateral Fund for the Implementation of the Montreal Protocol |
| **MOEF** | Ministry of Environment and Forests, Government of India |
| **MP** | Montreal Protocol |
| **MT** | Metric Tonnes |
| **ODP** | Ozone Depleting Potential |
| **ODS** | Ozone Depleting Substances |
| **SMEs** | Small and Medium-sized Enterprises |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environment Programme |

# 1. INTRODUCTION

## 1.1 BACKGROUND OF CFC CONSUMPTION, PRODUCTION AND PHASE-OUT

India became a party to the Vienna Convention on 19 June 1991 and acceded to the Montreal Protocol on Substances that Deplete the Ozone Layer on 17 September 1992. Table-1 shows the dates of ratification by India of the Protocol and its amendments. Since the annual calculated consumption of controlled substances in India, listed in Annex-A of the Montreal Protocol, was less than 0.3 kg per capita, India was classified as a party operating under Paragraph-1, Article-5 of the Montreal Protocol and thus qualified for technical and financial assistance, including transfer of technology, through the financial mechanism of the Montreal Protocol.

Table-1: India - Dates of Ratification of Montreal Protocol and Amendments

| Agreement/Amendment | Date of Ratification |
|---|---|
| Vienna Convention | 19 June 1991 |
| Montreal Protocol | 17 September 1992 |
| London Amendment | 17 September 1992 |
| Copenhagen Amendment | 03 March 2003 |
| Montreal Amendment | 03 March 2003 |
| Beijing Amendment | 03 March 2003 |

India's Country Programme for phase-out of ozone depleting substances under the Montreal Protocol was finalized in August 1993 with the assistance of United Nations Development Programme (UNDP), The Energy and Resources Institute (TERI) and representatives of various ministries, industries and scientific institutions. The Country Programme was submitted to and approved at the 11th Meeting of the Executive Committee of the Multilateral Fund for Implementation of the Montreal Protocol, in November 1993.

India's first Country Programme Update was carried out during 2003-2006 and was submitted to and approved at the 49th Meeting of the Executive Committee in July 2006. Among the key tasks identified for the future of the Montreal Protocol programme in India, were completion of all ongoing CFC and CTC phase-out activities in various sectors by 2010, combating illegal trade in CFCs and fine-tuning ODS regulations for sustained compliance and long term management of HCFCs.

Since the approval of the original Country Programme for Phase-out of Ozone Depleting Substances in 1993, India has made significant progress in controlling the production and consumption of ODS. From a consumption level of 10,370 metric tonnes of ODS in 1991, the unconstrained demand was forecasted at about 96,000 metric tonnes by 2005.

The actual consumption of ODS by end-2006 was less than 2,000 metric tonnes annually. These reductions were achieved through technical and financial assistance from the Multilateral Fund, support from implementing agencies in implementation of approved projects and activities and due to proactive policy and regulatory actions by Government of India.

Table-2 below summarizes approved ODS phase-out activities, both completed and ongoing, in various sectors:

Table-2: Summary of ODS Phase-out Activities in All Sectors (as of end-2006)

| Sector | Number of Projects | Funding (US$) | Phase-out (ODP tonnes) |
|---|---|---|---|
| Aerosols Sector | 27 | 3,227,739 | 689 |
| Foams Sector | 159 | 34,785,641 | 4,373 |
| Firefighting Sector (Halons) | 18 | 2,458,701 | 2,162 |
| Refrigeration & Air Conditioning Sector | 49 | 32,254,823 | 3,203 |
| Solvents Sector | 41 | 61,358,042 | 12,966 |
| Production Sector (including Halons) | 2 | 84,600,000 | 22,988 |
| **Total** | **296** | **218,684,946** | **46,381** |

Of the above-mentioned activities, over 80% of the activities in terms of ODS phase-out are now completed. All of the individually approved projects have been completed. The implementation of performance-based sector and national-level phase-out plans in the Foams, Refrigeration & Air Conditioning, Solvents and Production sectors is mostly completed, with the respective agreed annual phase-out targets met or exceeded so far.

Three main national/sector-level ODS phase-out activities, governed by multi-year performance-based agreements between Government of India and the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, are currently under implementation:

***NCCOPP (National CFC Consumption Phase-out Plan)***

This project combines the CFC phase-out activities in the Foams, Refrigeration (Manufacturing) and Refrigeration (Servicing) Sectors, into a single agreement beginning March 2004. The agreed annual consumption and phase-out targets under the NCCOPP are as below:

Table-3: Agreed Annual CFC Consumption & Phase-out Targets under NCCOPP from 2004-2010

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|
| ODS Consumption limit (ODP tonnes) | 3,489 | 1,814 | 960 | 464 | 317 | 172 | |
| ODS Phase-out (ODP tonnes) | 1,675 | 854 | 496 | 147 | 145 | 172 | 0 |

From 2007, the phase-out activities under the Foam Sector and Refrigeration (Manufacturing) Sectors are completed, and the focus of the NCCOPP is predominantly on building sustainable infrastructures to progressively reduce demand for CFCs in the Refrigeration (Servicing) Sector and transition to zero-ODP alternatives. The key challenges identified are as below:

- Availability of adequate CFCs for legitimate servicing needs beyond 2010, through stockpiling, recovery/recycling and reclamation
- Accelerating retrofitting/replacement of CFC-based equipment to reduce dependence on CFCs for servicing
- Adequate capacity building and awareness at the field-level service establishments and technicians to minimize CFC emissions and losses

Intensive monitoring of the investment, technical assistance, training and capacity building components would be needed to ensure that India complies with the agreed phase-out targets.

***CTC Phase-out Plan***

The project addresses the production and consumption of non-feedstock CTC. The agreed annual production and consumption targets are as below:

Table-4: Agreed Production and Consumption Targets under CTC Phase-out Plan

| Consumption/Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Maximum Consumption (ODP MT) | 1,726 | 1,147 | 708 | 268 | 48 | 0 |
| Maximum Production (ODP MT) | 1,726 | 1,147 | 708 | 268 | 48 | 0 |

The implementation of this project is underway. The key challenges identified are as below:

- Adequate assistance to small scale CTC users in the textile and metal cleaning industry, including cost-effective availability of substitutes
- Ensuring timely phase-out of CTC in the large users in the process agent and solvents sectors

Intensive monitoring of the investment, technical assistance, training and capacity building components would be needed to ensure that India complies with the agreed phase-out targets. Appropriate institutional arrangements are in place to address the additional obligations such as performance verification and reporting.

***Production Sector Gradual Phase-out Plan***

This agreement is in place since 1999. The agreed annual limits on CFC production are shown in Table-5 below:

Table-5: Agreed Maximum Allowable CFC Production Levels from 1999-2010

| Year | Production (metric tonnes) | Year | Production (metric tonnes) |
|---|---|---|---|
| **1999** | 22,588 | **2005** | 11,294 |
| **2000** | 20,706 | **2006** | 7,342 |
| **2001** | 18,824 | **2007** | 3,389 |
| **2002** | 16,941 | **2008** | 2,259 |
| **2003** | 15,058 | **2009** | 1,130 |
| **2004** | 13,176 | **2010** | 0 |

Mechanisms for monitoring, reporting and verification as per the agreed protocols are already established and would continue to be implemented. So far India has complied with all provisions of the agreement governing this project.

At the 54$^{th}$ Meeting of the Executive Committee in April 2008, India agreed to cease its production of CFCs from 01 August 2008, over a year in advance of the earlier agreed closure date. In accordance with Decision 54/35, India can produce a maximum of 690 metric tonnes of CFCs until 01 August 2008, primarily for use in manufacturing of CFC-based MDIs. An additional quantity of 135 metric tonnes of CFCs can be used from existing stocks after reprocessing, for manufacturing CFC-based MDIs. The Indian producers also would need to export 1,228 metric tonnes of CFCs prior to 31 December 2009.

## 1.2 CFC CONSUMPTION TRENDS IN MDI MANUFACTURING

There are currently five manufacturers of MDIs in India (more details on these manufacturers are provided ensuing chapters). The production of MDIs has grown significantly in India in recent years, increasing from about 29 million units in 2003 to about 55 million units in 2007.

The pharmaceutical grade CFCs needed for manufacturing CFC-based MDIs are sourced from both domestic CFC producers and through imports. Table-6 below shows the source of CFC consumption in MDI manufacturing in India from 2003 onwards:

Table-6: CFC Consumption in MDI manufacturing in India

| CFC Consumption/Year | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|
| Consumption (ODP tonnes) | 578.91 | 742.81 | 740.41 | 763.62 | 608.07 |
| Sourced indigenously (ODP tonnes) | 578.91 | 742.81 | 683.41 | 591.12 | 505.47 |
| Sourced through imports (ODP tonnes) | 0.00 | 0.00 | 57.00 | 172.50 | 102.60 |

While examining the consumption trends for CFCs in India in general and in the MDI manufacturing in particular, the following factors need to be carefully considered:

(a) It would be useful to note that during the preparation of the National CFC Consumption Phase-out Plan (NCCOPP), *the consumption of CFCs in the MDI manufacturing sub-sector was not reported and therefore not taken into account*.

(b) The consumption in the Refrigeration and Air Conditioning Servicing Sector, as reported in the CP progress data reporting was 1,105 ODP tonnes in 2006. While this was below the agreed consumption limit of 1,147 ODP tonnes for 2006 and while it is being addressed through ongoing activities under the NCCOPP, it is evident that the CFC consumption in MDI manufacturing for 2006 (700.02 ODP tonnes) as reported in the CP progress data reporting, constitutes a significant part of the overall national consumption and presents a challenge for future compliance.

(c) Against the backdrop of ExCom Decision 54/35, which stipulates a limit on availability of CFCs for consumption in India, i.e., a maximum of 825 ODP tonnes would be available for consumption during 2008 and 2009, there would be an inevitable "competition" between the needs for CFCs in MDI manufacturing and the needs of the Refrigeration and Air Conditioning Servicing Sector. This situation introduces a peculiar and delicate challenge for designing appropriate policies and regulations to carefully balance the legitimate needs of SMEs in the Refrigeration and Air Conditioning Servicing Sector and the justifiable health needs of vulnerable asthma and COPD patients. Economical access to proven and effective drugs needs to be maintained in a developing country such as India and would remain the cornerstone of future regulatory and policy interventions.

(d) While the consumption of CFCs in MDI manufacturing shows a decline from 2006 to 2007, it still constitutes a significant portion of the agreed allowable total consumption and significantly in excess of the agreed consumption limits in 2008 and 2009. This situation poses a significant risk of non-compliance post-2007 and calls for urgent interventions to ensure timely and smooth transition to non-CFC MDI manufacturing.

# 2. SITUATION ANALYSIS

## 2.1 COUNTRY BACKGROUND

### 2.1.1 Geography and Demographics

Located in South Asia, India is the seventh-largest country by geographical area and the second most populous country in the world. India has a coastline of over 7,000 km, bounded by the Indian Ocean on the south, the Arabian Sea on the west, and the Bay of Bengal on the east. India borders Pakistan to the west; People's Republic of China, Nepal and Bhutan to the north-east; and Bangladesh and Myanmar to the east.

India has a population of about 1.1 billion (2006), comprising approximately one-sixth of the world's population. India occupies 2.4% of the world's land area, but supports over 16% of the world's population and 21% of the world's global burden of disease. Almost 40% of Indians are younger than 15 years of age. About 70% of the people live in more than 550,000 villages, and the remainder in more than 200 towns and cities. The standard of living in India is projected to rise sharply in the next half-century; it currently battles high levels of poverty, persistent malnutrition, and environmental degradation.

The weather conditions in India are strongly influenced by the Himalayas in the north and the Thar Desert in the northwest. Meteorologists divide the year into four main seasons for most of the country: monsoon, summer, winter and a mild autumn.

India is categorized as a tropical country with high propensity to infectious diseases. These include food or waterborne diseases such as bacterial diarrhea, hepatitis A and E, typhoid, vector borne diseases such as dengue and malaria, water contact diseases such as leptospirosis and animal contact disease such as rabies. The geographical spread of the country frequently affected by floods and storms and low levels of per capita income with significant poverty particularly in rural areas, essentially drive the need for extensive and affordable healthcare solutions. WHO in their Country Cooperation Strategy Brief has indicated that India is experiencing high growth in tuberculosis and chest related diseases.

### 2.1.2 Asthma and COPD in India

Asthma and Chronic Obstructive Pulmonary Disease (COPD) are considered a serious health problem worldwide owing to their magnitude in terms of morbidity, mortality and disability especially in ill-managed patients. Their impact on patients and their relatives as well as consequent social costs, underline the need for comprehensive and coordinated responses.

COPD is a significant health problem in India. Among the non-communicable diseases, bronchial asthma is considered to be one of the leading causes of hospital admissions in India. The economic and social cost of this disease is sizeable due to the disabling effect associated with frequent episodes of decompensation.

Given the size of the country and its population and given the geographic and socio-political diversity in India, collection of reliable national statistics on diagnosis and management of diseases is an enormously challenging and expensive proposition. However, some indicative statistics can be presented.

From a 1996 survey, COPD was prevalent in 7.7% of the population in India. The estimated number of adult patients of age 30 or more was 12.36 million. More recent studies estimate about 15 million persons affected by asthma in India.

Data from a few population-based studies in adults has recently become available. In a study conducted as part of the European Community Respiratory Health Survey in 2000, asthma prevalence in adults aged 20-44 years in India was reported to be 3.5% using 'clinician diagnoses' and 17% using a broader definition (which included a prior physician diagnosis and/or a positive bronchioprovocation test).

Studies on mortality and morbidity from Acute Respiratory Infections (ARI) in India indicate that ARI is the most significant cause of child mortality.

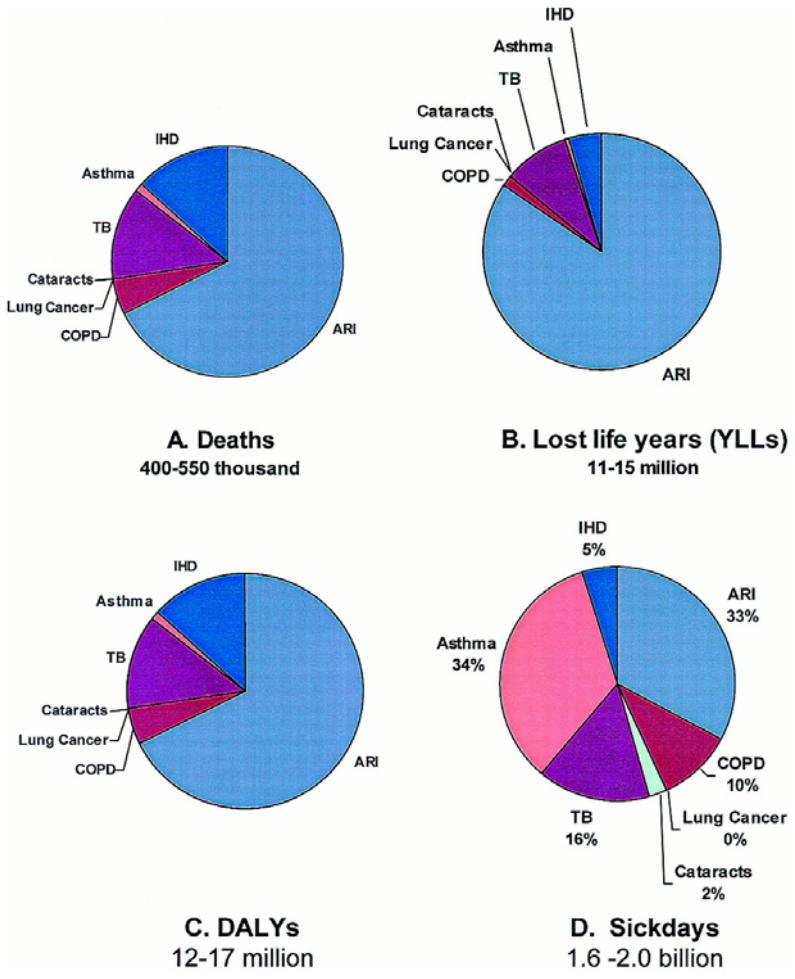



Figure-1: Annual Health Burden from Indoor Air Pollution in India
*(Source: School of Public Health, University of California – Berkeley, 2000)*

Figure-1 above indicates the incidence and contribution of respiratory disorders including Asthma, COPD, tuberculosis, ARI, etc. to the national health burden from Indoor Air Pollution in India.

### 2.1.3 Treatment

The most preferred route for therapeutic administration of drugs into lungs for respiratory disorders, on which there is international consensus by health authorities, is inhalation. Inhalation therapy with aerosols allows achieving high concentration of drugs such as corticosteroids, beta adrenergics and anticholinergics in airways, while diminishing their adverse side effects when used through other routes of administration. The treatment generally requires a regular administration of one or more drugs through metered dose inhalers (MDIs) or in some cases dry powder inhalers and less frequently through nebulizers. Inhalation treatment is administered by metered-dose inhalers that represent almost 70% of prescribed inhalers. The remaining 30% are dry powder inhalers and small quantity of nebulizers.

The most widely used propellants for metered dose pharmaceutical aerosols in India are CFCs. CFCs are non-toxic, non-reactive and non-flammable, with no odor, no flavor and excellent solvent action. Since CFCs will need to be phased out from 2010, alternative propellants, mainly HFAs, have been introduced in the past decade or more to replace CFCs and have already cleared clinical testing for several formulations.

The main categories of drugs used for treatment of Asthma and COPD are as below:

Category A: Short-acting beta-antagonist bronchodilators such as Salbutamol, Terbutaline and Fenoterol

Category B: Steroids such as Beclomethasone, Budesonide and Fluticasone

Category C: Non-steroid anti-inflammatory agents such as Disodium Cromoglycate and Nedochromil

Category D: Anti-cholinergic bronchodilators such as Ipratropium and Oxytropium

Category E: Long-acting beta-antagonist bronchodilators such as Salmeterol and Formoterol

Category F: Combination of products with two or more active ingredients.

MDI usage in India has seen a significant increase in the last decade. Initially, MDIs were prescribed by medical practitioners as a “last resort” solution possibly due to lack of awareness and limited availability of the product. With time and due to promotion efforts undertaken by the pharmaceutical industry and asthma associations, the adoption of MDIs as a treatment option for respiratory disorders has increased. As per industry estimates, asthma and COPD are prevalent in about 100 million people in India (about 10% of the population of the country). In addition, patients suffering from other diseases of the throat and other respiratory ailments, also use MDIs. Thus, cost effective availability of MDIs and/or similar solutions is critical for a country like India.

The MDI usage in India is predominantly in urban areas. However, the Ministry of Health and Family Welfare launched a National Rural Health Mission (2005-2012) which involves expansion of public expenditure on rural health care delivery for improved access to healthcare for rural populations particularly women, children and economically disadvantaged persons. Through the NHRM, medical drugs and devices are provided at subsidized costs or no costs to such patients, thus resulting in an increase in the number of patients gaining access to remedies such as MDIs particularly in the rural areas. This has contributed to the significant increase in MDI production over the past few years.

## 2.2 INSTITUTIONAL FRAMEWORK

### 2.2.1 Institutional Arrangements for the Montreal Protocol

Government of India has designated the Ministry of Environment & Forests as the national coordinating body for the Montreal Protocol in India. The functions and responsibilities of the Ministry of Environment & Forests as the designated national authority and nodal ministry include notification of regulations pertaining to the Montreal Protocol, issues related to international cooperation, maintaining and managing data on production, imports, exports and consumption of ODS, monitoring of implementation of Montreal Protocol activities, interacting with other line ministries on technical and financial matters pertaining to implementation of activities, liaising with scientific, technical and other public institutions for technical matters, representing India at various multilateral meetings and discussions, etc.

The Ministry of Environment & Forests has since 1991, established a special directorate (Ozone Cell) within the Ministry, which is the focal point for managing and coordinating the implementation of the Montreal Protocol activities in India.

The Ministry of Environment & Forests has also created an Empowered Steering Committee (ESC) with the approval of the Cabinet, which is an apex body mandated for formulation and review of policy actions for Montreal Protocol implementation. The ESC is assisted by three standing committees, for advice on Technology and Finance, Small-scale Industries and Monitoring/Evaluation.


Figure-2: Institutional Arrangements for the Montreal Protocol in India

The Ozone Cell established a Project Management Unit (PMU) for implementation of the CFC Production Sector Phase-out Project in February 2002. The functions of the PMU include implementation and review of ODS phase out plans, assisting Ozone Cell in monitoring and implementation of ODS phase out activities, monitoring the production quota and export licensing systems, coordination of training, seminars and awareness activities for various stakeholders, etc. The governing body of the PMU consists of Additional Secretary (MOEF) as President, Joint Secretary (MOEF) as Vice-President, representatives from Department of Chemicals and Fertilizers, Ministry of Commerce and Industry, Confederation of Indian Industry (CII), Director-General Foreign Trade with Director–Ozone Cell and Joint Director-Ozone Cell as members.

Figure-2 above depicts the organizational and institutional structure of management of the Montreal Protocol in India.

### 2.2.2 Institutional Arrangements related to pharmaceutical MDIs

The Ministry of Health and Family Welfare is the nodal ministry designated by Government of India for all matters pertaining to health and family welfare, some of which are notification of regulations pertaining to health, monitoring and controlling drugs, policy matters pertaining to public health and prevention of food adulteration, formulating national health policies, designing and managing national health programmes, medical education and training, international cooperation, etc. The Ministry has administrative control over 29 autonomous/statutory bodies and three public sector undertakings. Figure-3 below shows the organizational arrangement.

The Directorate General of Health Services (DGHS) is an office which serves as a repository of technical knowledge attached to the Department of Health, Ministry of Health and Family Welfare. The DGHS renders technical advice on all medical and public health matters and in the implementation of various health programmes. In order to implement policies and programmes of the Ministry in an effective manner, DGHS is supported by three subordinate offices at various locations in the country.

The Central Drugs Standard Control Organization (CDSCO) functions under the DGHS and is responsible for the approval of licenses for specified category of drugs under the Drug and Cosmetics Act 1940 (updated until 2005). The CDSCO has the mandate to set standards for drugs, cosmetics, diagnostics and devices, approve new drugs and devices, review, approve and conduct clinical trials, regulate the standards of imported drugs, screen drug formulations, monitor adverse drug reactions, control quality of imported drugs, coordinate activities of state-level organizations and provide expert advice with a view to bring about uniformity in the enforcement of the Act. The CDSCO also provides guidance on technical matters, conducts training programmes for regulatory and enforcement officials and analysts and publishes the Indian Pharmacopeia.

The CDSCO is administered by the Drugs Controller General of India and is supported by four zonal offices, three sub-zonal offices and seven offices at ports of entry. In addition, CDSCO also operates six laboratories for quality control and testing of drugs.

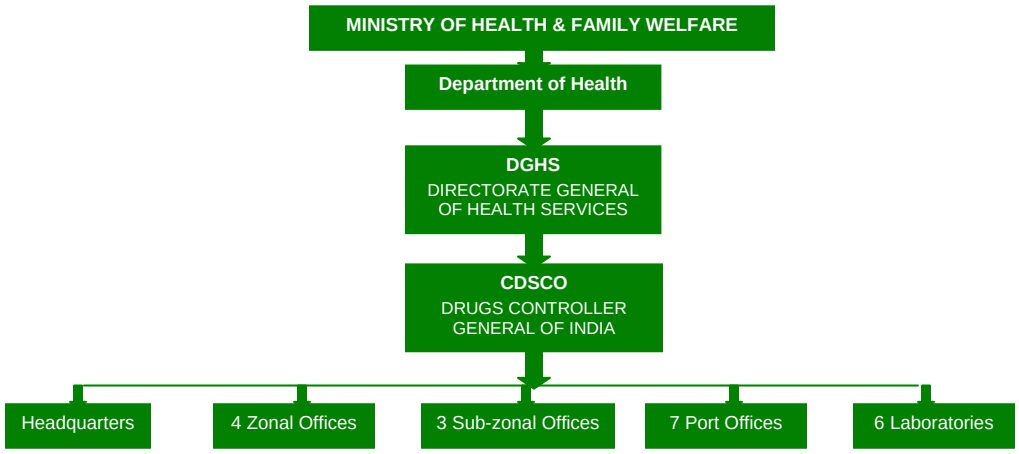



Figure-3: Institutional Arrangements for Drugs in India

### 2.2.3 Policies and Regulations

***Policies and Regulations pertaining to Montreal Protocol***

India's Country Programme for phasing out ODS, established the following guiding principles reflecting national priorities for formulating appropriate policy and regulatory instruments:

- To strengthen national institutions for monitoring and managing the ODS phase-out, and formulation and implementation of appropriate policies.

- To assist indigenous industries for conversion to non-ODS technologies through the Montreal Protocol financial mechanism, while ensuring that the SMEs and other unorganized tiny enterprises are fully compensated for conversions, including retraining

- To minimize economic dislocation either through closure of manufacturing units, loss of productive capacity, or through major capital expenditure that could become obsolete in future.

- To maximize indigenous production by encouraging technology transfer for and local production of non-ODS substitutes

- To give preference to one-time replacements

- To minimize obsolescence costs by promoting recycling, retrofitting and drop-in substitutes to prolong economic life of existing equipment, until new replacement technologies become mature, cost-effective and available

- To institute decentralized management of ODS phase-out activities and arrangements to facilitate feedback for smooth implementation.

- To facilitate development of new standards and certification systems for products and processes including those for safety

- To integrate the ODS phase-out activities closely with the growth in the various industrial sectors, economic reforms, etc.

- To evaluate alternatives to ODS and the available substitute technologies on a continuing basis, so as to lead to wider adaptation and dissemination.

- To periodically reassess and revise the Country Programme to reflect technological developments, progress in implementation of ODS phase-out activities and evolving trends in the growth of the various industrial sectors.

Recognizing the importance of establishing an effective regulatory framework for the successful implementation of the Montreal Protocol Programme and consistent with the guiding principles for developing policies, MOEF initiated actions to create one of the most comprehensive and forward-looking regulatory frameworks in the world, to support the various ODS phase out measures in India.

In exercise of the powers conferred by sections 6, 8 and 29 of the Environment Protection Act of 1986, Government of India notified the Ozone Depleting Substances (Regulation and Control) Rules 2000, which formally came in to effect from January 2000. The provisions of this comprehensive legislation are summarized as below:

*General*

- Every entity that produces, uses, imports, sells, stocks, reclaims or destroys ODS has to maintain records and file reports as specified.
- Every entity, which has received technical and/or financial assistance from any international agency or financial assistance from Government of India including duty exemptions, is required to maintain records and file reports as specified.
- Mandatory registration for reclamation and destruction of ODS. All registrations will be valid for specified periods, after which, they are required to be renewed.

*ODS Production*

- Mandatory registration with MOEF
- Restriction on production levels as per "base level" and specified time-bound reductions.
- Prohibition on creating new capacity or expansion of capacity

*ODS Consumption*

- Ban on new capacity or expansion of capacity for production of ODS-based equipment.
- Mandatory registration with designated authorities
- Declaration requirement in prescribed format at the time of procurement of ODS
- Restrictions on production of ODS-based products in various sectors from 2003

*ODS Trade*

- Mandatory registration for exporters & importers with designated authorities
- Import of ODS and ODS containing equipment only against license
- Export restricted to countries who are signatory to the Montreal Protocol against quota
- Trade in controlled substances with countries not party to the Montreal Protocol is prohibited.
- The export of Annex-A and Annex-B substances to Non-Article-5 Parties is prohibited.
- The import and export of all Annex-A and Annex-B substances are subject to licensing.
- Import of Equipment containing ODS was subjected to licensing

*Fiscal Incentives*

- Full exemption from Customs and Excise tariffs on capital goods required to implement ODS phase out projects. Duty exemptions also extended to capital goods required for establishing new capacity with non-ODS technology.
- Indian financial institutions were advised not to finance/refinance new ODS producing/consuming enterprises. The Tariff Advisory Committee (a statutory body under the Insurance Act, 1938) advised to grant suitable discounts on fire insurance premiums if alternative agents are used to replace Halons.

***Policies and Regulations pertaining to pharmaceutical MDIs***

The National Health Policy of 2002 (NHP) prioritizes key policy actions focusing on:

- Eradication measures for diseases such as polio, leprosy, black fever and filariasis, mortality reduction of 50% due to vector/water-borne diseases and achieve zero growth in HIV aids
- Establish an integrated network for health surveillance, national health accounts and health statistics
- Establish a comprehensive network of primary healthcare facilities linked to health education and encompassing a referral system
- Expand public health services and affordable and equitable access to drugs and devices through promotion of indigenous generic drugs and vaccines
- Establish uniform standards for deployment of healthcare personnel and extend continuing education and retraining facilities for healthcare personnel
- Intensify dissemination and awareness programmes for health-related information
- Promote medical research on therapeutic drugs and vaccines for tropical diseases
- Establish regulatory mechanism to ensure quality and standards in private sector healthcare
- Promote and increase involvement of civil society in disease control and healthcare
- Efficient regulation and enforcement of quality standards for drugs

At present the following laws and the regulations made thereunder, govern the manufacture, sale, import, export and clinical research of drugs and cosmetics in India.

- The Drugs and Cosmetics Act, 1940
- The Pharmacy Act, 1948
- The Drugs and Magic Remedies (Objectionable Advertisement) Act, 1954
- The Narcotic Drugs and Psychotropic Substances Act, 1985
- The Medicinal and Toilet Preparations (Excise Duties) Act, 1956
- The Drugs (Prices Control) Order 1995 (under the Essential Commodities Act)

In addition, there are some other laws which have a bearing on pharmaceutical manufacture, distribution and sale in India. The important ones are:

- The Industries (Development and Regulation) Act, 1951
- The Trade and Merchandise Marks Act, 1958
- The Indian Patent and Design Act, 1970
- The Factories Act

The primary law in India concerning pharmaceutical MDIs is the Drugs and Cosmetics Act 1940 (amended up to 2005). Some of the key features of the rules and regulations notified under this Act and pertaining to pharmaceutical MDIs are as below:

*General*

- The competent licensing authority is the Drugs Controller General of India (DCGI)
- Special committees comprising of subject experts and DCGI representatives will be set up for evaluation of the concerned devices and the committees are empowered to formulate their own benchmarks and procedures for such evaluation and for standards to which such devices should conform.

*Imports*

- Import is subject to licensing and no import shall take place prior to issuance of license

*Manufacturing*

- Manufacturing is subject to licensing and no manufacturing can take place prior to issuance of the license
- Applicants shall provide complete information on the details of the product and manufacturing to the licensing authority
- For new products or products without benchmark certification, Expert Committees will be set up for evaluation and assessment. The Committee(s) will submit their report and recommendation to the licensing authority
- In the event of approval, the state-level authorities will carry out a joint inspection and verification, after which the license may be issued

*Registration for Manufacturing and Import*

- A registration certificate in respect of the product and premises in which it is manufactured is required and the application for this certificate needs to be made to the competent authority by the manufacturer or importer along with required information and fees
- Registration is required separately for each medical device which has a different material, ingredient and/or a method of use
- Registration can be subject to such conditions as may be applied by the competent authority
- Registration is normally valid for five years and is renewable, unless canceled earlier.

*Sale*

- Sale of such medical devices requires a license and no sale shall be carried out prior to issuance of a license

## 2.3 MDI MANUFACTURING IN INDIA

### 2.3.1 CFC-based and HFA-based MDI manufacturing

There are currently five manufacturers of pharmaceutical MDIs in India. Table-7 below shows the MDI production levels in India from 2003 to 2007:

Table-7: MDI Manufacturing in India (2003-2007)

| Manufacturer | Total Production (in million units) | | | | |
|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 |
| **CFC-based MDIs** | | | | | |
| Cadila Healthcare Ltd. | Blanked for reasons of confidentiality | | | | |
| CIPLA Ltd. | | | | | |
| GlaxoSmithKline Pharmaceuticals Ltd. | | | | | |
| Midas-Care Pharmaceuticals Ltd. | | | | | |
| Sun Pharmaceutical Industries Ltd. | | | | | |
| **Sub-total (CFC-based MDIs)** | 28.83 | 35.69 | 31.77 | 39.16 | 31.19 |
| **HFA-based MDIs** | | | | | |
| CIPLA Ltd. | Blanked for reasons of confidentiality | | | | |
| Midas-Care Pharmaceuticals Ltd. | | | | | |
| Sun Pharmaceutical Industries Ltd. | | | | | |
| **Sub-total (HFA-based MDIs)** | 0.47 | 1.23 | 4.06 | 11.19 | 24.32 |
| **Grand Total** | 29.30 | 36.92 | 35.84 | 50.35 | 55.51 |

Figure-4 below depicts the production volumes of CFC and HFC-based MDIs in India during 2003 to 2007:

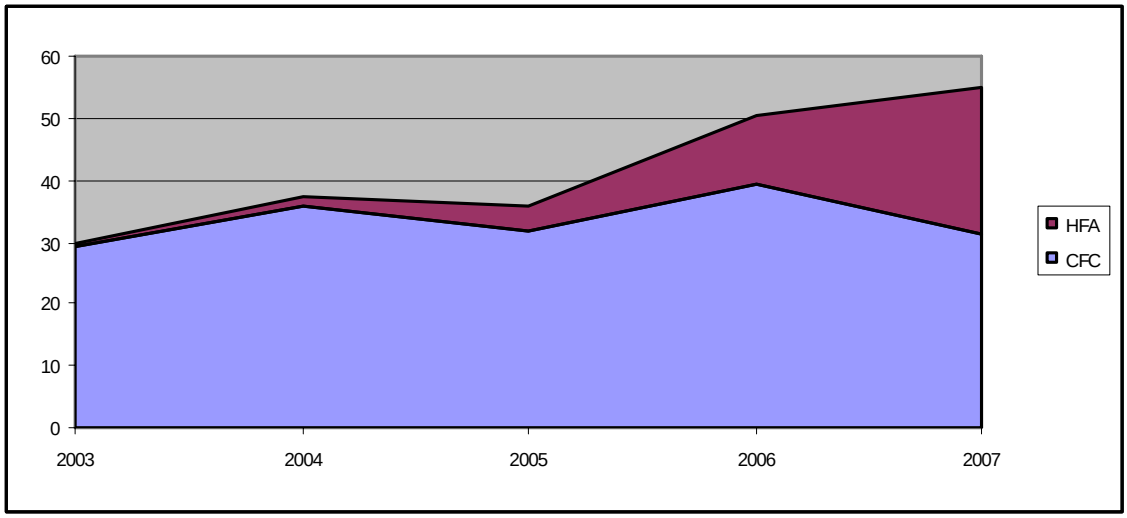



Figure-4: CFC-based and HFC-based MDI production in India (2003-2007)

As seen in the table and graphic above, there is a clear growth in demand for MDIs in India in the past few years. The growth is likely due to more widespread use of MDIs in the asthma and COPD patient population which is consistent with global trends. While the share of HFA products is growing in number of units produced, only two of the seven manufacturers have developed HFA formulations for a limited number of drugs. This implies that there is still a major work in formulation, development and registration of new HFA products for the coming years. Given the limitation on availability of CFCs in the near future, the majority of the companies are in the need to have these products commercially available as soon as possible.

In response to the control measures established by the Montreal Protocol, MDI manufacturers in India have already initiated a process to identify alternatives to CFC-based MDIs. Some of them have been able to formulate some products based on HFA after significant investments on research and development. However, challenges to offer HFA-based MDIs exist, due to a combination of reasons which include higher costs of production, low availability of materials, higher cost of equipment, lost of production capacity and restrictions on the retail price of the products under the Drug Price Control Order, which makes it difficult for manufacturers to recover the additional costs. There are still many products being produced with CFCs and there will be need for CFCs in the next few years.

It takes between 9 months and two years to develop a new formulation that includes planning, formulation development, scale-up and stability testing. Based on the regulatory framework, the time needed for registering a new product can vary from 6 months to a year. Thus the overall timeframe for introducing new products in the market takes between 15 months and three years.

Considering the above background, it is possible to appreciate the constraints in context of demand growth, time, resources, regulatory framework and pricing maneuverability faced by MDI manufacturers in India in transitioning from CFC-based MDIs to non-CFC or HFC-based products.

### 2.3.2 Domestic Sales and Exports of CFC-based MDIs

A portion of the total CFC-based MDIs produced in India is exported to both non-Article-5 and Article-5 countries. Table-8 below shows the quantities of CFC-based MDIs for the domestic market and exports in recent years:

Table-8: Domestic Sales and Exports of CFC-based MDIs

| Parameter | Total (in million units) | | | | |
|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 |
| Total Domestic Sales | 14.90 | 15.72 | 16.21 | 18.27 | 10.33 |
| Exports to non-Article-5 countries | 0.42 | 0.05 | 0.42 | 0.47 | 1.53 |
| Exports to Article-5 countries | 13.52 | 19.93 | 15.16 | 20.43 | 19.30 |
| Total Exports | 13.94 | 19.98 | 15.57 | 20.90 | 20.82 |
| Total Production | 28.83 | 35.69 | 31.77 | 39.16 | 31.19 |
| Exports to non-Article-5 countries (% of total) | 1.5% | 0.1% | 1.3% | 1.2% | 4.9% |

It is seen from the above that before 2007 exports of CFC-based MDIs to non-Article-5 countries were around 1% of the total production. Only in 2007 exports increased to a level that constituted 4.9% of the total production of CFC-based MDIs. Only one of the enterprises (CIPLA) is exporting to Non-Article 5 countries.

### 2.3.3 Breakdown of CFC Consumption in MDI manufacturing by enterprise

The CFCs required for the MDIs manufactured in India are sourced from domestic CFC producers as well as imported from other countries. Table-9 below shows the consumption of CFCs in MDI manufacturing in India in recent years for each manufacturer:

Table-9: Breakdown of CFC Consumption in MDI manufacturing by enterprise (2003-2007)

| Manufacturer | CFC Consumption (ODP tonnes) | | | | |
|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 |
| Cadila Healthcare Ltd. | Blanked for reasons of confidentiality | | | | |
| CIPLA Ltd. | | | | | |
| GlaxoSmithKline Pharmaceuticals Ltd. | | | | | |
| Midas-Care Pharmaceuticals Ltd. | | | | | |
| Sun Pharmaceutical Industries Ltd. | | | | | |
| **Total** | **578.91** | **742.81** | **740.41** | **763.62** | **608.07** |

Figure-5 below depicts the relative CFC consumption of the five MDI manufacturers (2007):

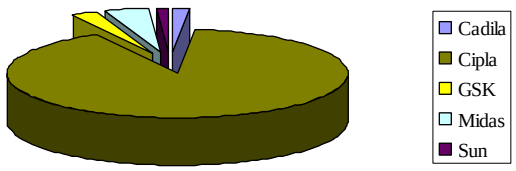



Figure-5: Relative CFC Consumption of the MDI manufacturers (2007)

### 2.3.4 Industry Structure

India caters to the needs of inhalation therapy for patients suffering from asthma, COPD and other respiratory ailments, through an established local MDI manufacturing capacity, which provides affordable MDI products to these patients. All MDIs consumed in India are locally manufactured.

The MDI manufacturing industry in India has experienced a growth of about 15-20% annually in the past decade. In 2007, over 50 million units of MDIs were sold in India, which has a population of about 1.1 billion and a patient base of about 15-20 million. Yet, the per capita use of MDIs in India is quite low, as compared to for instance UK, where over 60 million units of MDIs were sold for a population of 60 million and a patient base of about 6 million. This implies that that production of MDIs in India will continue to grow to provide affordable access to MDIs to the large number of asthma and COPD patients.

There were historically a total of seven MDI manufacturers in India. Of these, AstraZeneca Pharma India Ltd. has 100% non-Article-5 ownership and sub-contracts its products to one of the other manufacturers. Natco Pharma Ltd., an indigenously owned enterprise, has ceased production of MDIs as of 2007. Thus, currently five manufacturers of MDIs are operational in India. Table-10 below shows the MDI production breakdown by enterprise in India in 2007:

Table-10: MDI production breakdown by enterprise (2007)

| Manufacturer | Total MDI production in 2007 (million units) | Share of total production |
|---|---|---|
| Cadila Healthcare Ltd. | Blanked for reasons of confidentiality | |
| CIPLA Ltd. | | |
| GlaxoSmithKline Pharmaceuticals Ltd. | | |
| Midas-Care Pharmaceuticals Ltd. | | |
| Sun Pharmaceutical Industries Ltd. | | |
| **Total** | 55.51 | 100.0 % |

Figure-6 below depicts the total production of MDIs and respective manufacturer shares pictorially:

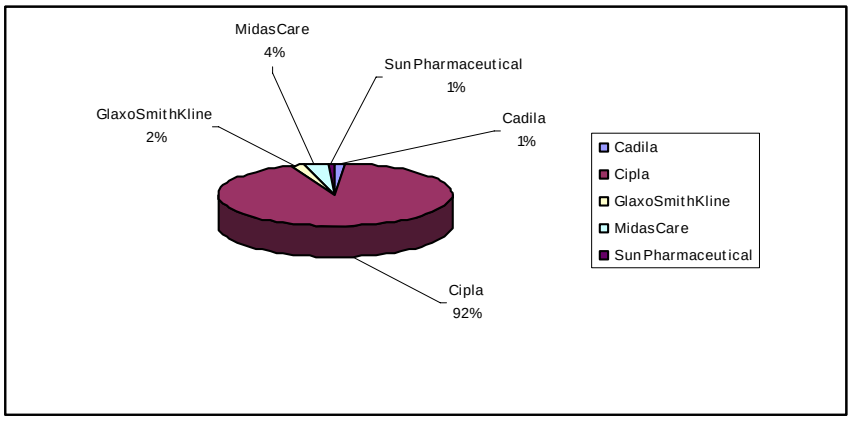



Figure-6: MDI Production breakdown by enterprise in 2007

Table-11 below shows the baseline information and products manufactured by these enterprises:

Table-11: Baseline Data for MDI manufacturers in India

| PARAMETER | ENTERPRISE DATA | | | | |
|---|---|---|---|---|---|
| | **Cadila Healthcare Ltd.** | **CIPLA Ltd.** | **GlaxoSmithKline Pharmaceuticals Ltd.** | **Midas-Care Pharmaceuticals P. Ltd.** | **Sun Pharmaceutical Industries Ltd.** |
| Indigenous Ownership (%) | 100 | 100 | 49.33 | 100 | 100 |
| Date of Establishment | 1952 | 1935 | 1924 | 1986 | 1983 |
| Number of MDI plants | 1 | 3 | 1 | 1 | 1 |
| Number of production lines for CFC-based MDIs | 1 | 7 | 1 | 2 | 1 |
| Date of establishment of CFC-based MDI capacity | 2002 | 1995 -2002 - 2003 | 1989 | 1993-1994 | 1999-2000 |
| Lines Output | 25 – 28 can/min | 455 can/min CFC + 160 can/min HFA | 32 can/min | 24 – 26 can/min | 20 – 23 can/min |
| Annual capacity of CFC-based MDI production (based on single shift and 240 working days/year) | 2.5 – 2.8 million | 42 million CFC + 6 million HFA | 3.3 million | 3.38 million* | 1.9 – 2.1 million |
| Products manufactured (strengths) | 1 Salbutamol (1)<br>2 Budenoside (2)<br>3 Formoterol Fumarate (1)<br>4 Ipratropium Bromide (1)<br>5 Budenoside + Formoterol Fumarate (3)<br>6 Salbutamol+ Ipratropium Bromide (1)<br>7 Salmeterol + Fluticasone Propionate (3)<br>8 Tiotropium Bromide (1)<br>9 Tiotropium Bromide + Formoterol Fumarate (1)<br>10.Formoterol Fumarate + Fluticasone Proppionate(2) | 1 Isoprenaline Sulphate (1)<br>2 Beclomethasone Nasal (1)<br>3 Sodium Cromoglicate (2)<br>4 Ipratropium Bromide (2)<br>5 Ipatropium + Salbutamol (1)<br>6 Tiotropium Bromide (1)<br>7 Tiotropium Bromide + Formoterol (1)<br>8 Levoalbuterol (1)<br>9 Levalbuterol + Ipatropium (1)<br>10 Belcomethasome + Formoterol (2)<br>11 Salbutamol (1)<br>12 Beclomethasone (4)<br>13 Salbutamol + Beclomethasone (1)<br>14 Budesonide(2)<br>15 Fluticasone Propionate (4)<br>16 Salmeterol Xinafoate (1)<br>17 Formoterol (1)<br>18 Fluticasone + Salmetrol (3)<br>19 Budesonide + Formoterol(3)<br>20 Troventol (1) Ciclesonid. HFA (2)<br>21 Ciclesonide + Formoterol HFA (2) | 1 Salbutamol (1)<br>2 Beclomethasone (2) | 1 Salbutamol (2)<br>2 Ipratropium Bromide (2)<br>3 Salbutamol + Beclomethasone(1)<br>4 Formeterol Fumurate (1)<br>5 Formoterol + Budesonide (3)<br>6 Beclometasone (4)<br>7 Budesonide (3)<br>8 Salmeterol + Fluticasone (3)<br>9 Ipratropium + Salbutamol (1)<br>10 Salmeterol (1)<br>11 Sodium Cromoglicate (2)<br>12 Terbutaline (1)<br>13 Tiotropium Bromide (1)<br>14 Tiotropium Bromide + Formoterol (1)<br>15 Levosalbutamol(1)<br>16 Levosalbutamol + Beclometasone (1)<br>17 Levosalbutamol + Ipatropium Bromide (1)<br>18 Ciclesonide (2)<br>19 Ciclesonide + Formeterol Fumurate (1)<br>20 Tiotropium + Formoterol + Budesonide (2)<br>21 Tiotropium + | 1 Salmeterol + Fluticasone Propionate (3)<br>2 Fluticasone Propionate (3)<br>3 Budesonide (2)<br>4 Salbutamol (1)<br>5 Formoterol + Budenoside (3)<br>6 Tiotropium Bromide (1)<br>7 Tiotropium Bromide + Formoterol (1)<br>9 Ciclesonide HFA (2) |

| PARAMETER | ENTERPRISE DATA | | | | |
|---|---|---|---|---|---|
| | **Cadila Healthcare Ltd.** | **CIPLA Ltd.** | **GlaxoSmithKline Pharmaceuticals Ltd.** | **Midas-Care Pharmaceuticals P. Ltd.** | **Sun Pharmaceutical Industries Ltd.** |
| | | 22 Budesonide Formoterol HFA (1)<br>23 Tiotropium + Formoterol + Ciclesonid. HFA (1) | | Formoterol + Ciclesonide (2)<br>22 Fluticasone (3)<br>23 Fluticasone + Formoterol (3) | |
| **Total CFC-based products (total strengths)** | **10 (16)** | **23 (40)** | **2 (3)** | **23 (42)** | **8 (16)** |
| Non-Article-5 Exports (2007) | 0% | 5.6% | 0% | 0% | 0% |

* Six working days/week

# 3. STRATEGY FOR TRANSITION TO NON-CFC MDIS

## 3.1 INTRODUCTION

### 3.1.1 Objectives

The main objectives of India's strategy for transition to non-CFC MDIs are:

- To gradually reduce CFC consumption in the manufacture of pharmaceutical MDIs and achieve their complete elimination by 2012.

- To gradually assimilate non-CFC MDI technology into India, so that the required quantities of these products are cost-effectively and sustainably available

### 3.1.2 Principles

India's strategy to transition from CFC-based MDIs to non-CFC MDIs will be guided by the following key principles, as enunciated in the Country Programme for phasing out of ODS and the National Health Policy:

- The commitment and willingness of Government of India to eliminate substances that adversely affect the environment and ozone layer

- To prevent industrial dislocation and obsolescence, by supporting the indigenous industry to achieve transition through adequate technical and financial assistance

- Equity in health services and cost-effective and continuous availability of MDIs. Therefore, access to MDIs will be protected during the transition period by a gradual substitution that will involve simultaneous availability of CFC and non-CFC MDIs for a period of time under the control and supervision of the CDSCO.

- The transition strategy will be designed and implemented with the participation of a wide range of stakeholders including experts from the clinical sphere, pharmaceutical industry, and health education specialists, who will contribute to the viability and efficient implementation of this project at all the corresponding levels.

- Strengthening of national stakeholder institutions through adequate technical assistance, capacity-building and training

- To formulate and implement policies and regulations that would support the transition

- The acceptability of the CFC-free products and the reduction of the duration of gradual replacement will be encouraged by conducting clinical tests designed to train healthcare professionals and patients in the use of these new products, complemented by targeted awareness actions thus favoring their acceptability during the transition process.

## 3.2 STRATEGY COMPONENTS

Government of India recognizes that the strategy for transition to non-CFC MDIs in India is a critical step in ensuring compliance with its Montreal Protocol obligations and is therefore committed to take expedited actions to phase-out CFCs in MDI manufacturing in India. Government of India also recognizes the need to align such strategy with the preparedness of its healthcare sector to accept CFC-free alternatives and also the need to ensure adequate and cost-effective availability of MDIs to patients. Based on this the proposed strategy will need to include the following components:

- Technology conversions at MDI manufacturers
- Technical assistance
- Policy and regulatory actions
- Targeted awareness and capacity-building actions among stakeholders
- Efficient management of the transition and implementation of appropriate monitoring and verification protocols

### 3.2.1 Technology Conversions

This component would cover technology conversions at the five MDI manufacturers in India.

***Selection of Technology***

In considering options for developing appropriate alternatives to CFC-based MDIs in India, two factors need to be taken into account:

- Ease of use by the patient and applicability to the local context
- Ease of technology conversion
- The requirement to ensure that suitable therapies for all patient groups such as pediatric patients, adolescents and senior patients
- Maturity, effectiveness and commercial availability of the technology

Two main technology options, which qualify based on the above considerations, have been developed as alternatives to CFC-based MDIs. These are:

- HFA technology: This retains the drug delivery mechanism
- Dry Powder Inhalers (DPI): This involves a different delivery mechanism as well as administration of the drug in a different physical form (a powder as compared to an aerosol suspension)

In order to determine which of the above two options is more suited to the Indian context, the relative merits of the two technology options are evaluated.

*DPIs*

Two of the five MDI manufacturers in India (Cadila and CIPLA), have the facilities to produce single-dose DPIs covering ten drugs. The rationale for developing single-dose DPIs locally was to cover the needs of a specific group of elderly patients who have difficulties in coordination and dexterity to apply MDI products, but not with the intention to replace CFC MDIs as therapeutic treatment for asthma and COPD for all patients. These DPIs did not find acceptability among doctors and patients.
Various problems as reported by the Indian Chest Society and National College of Chest Physicians include:

- Throat irritation and coughing due to higher particle size than in MDIs.

- The tropical climatic conditions in India make it difficult to use the product effectively. At humidity levels of 70% to 80% the capsule absorbs moisture and this prevents the effective separation of the capsule by the device and the delivery of the drug.
- Difficulties in application of the drug include patients swallowing the capsule instead of introducing it in the device. Some of the side effects associated with swallowing the capsule are fatigue, headache, hypertension and growth retardation in children.

It has been very well-documented at the global level that DPIs do not represent a satisfactory therapeutic alternative to pressurized MDIs for all patients or for all drugs. DPI formulations either contain the active drug alone or have a carrier powder (e.g. lactose) mixed with the drug. The drug particles must be of sufficiently small diameter to for deposition on the airways. Young children (typically below 5 years old), patients with severe asthma and elderly COPD patients may not always be able to achieve adequate breathing flow to ensure optimal medication delivery from DPIs. A DPI-only based strategy would leave a significant portion of the patient population at high risk.

*HFA-based MDIs*

The HFA versions of CFC-based MDIs present an identical delivery mechanism. Therefore no adaptation is required on the part of the patient to use the drug. However, some challenges still exist:

- HFA-based MDIs require acceptance of slightly different physical characteristics with regard to taste.
- The technology of formulation of HFA-based MDIs differs significantly from that of CFC-based MDIs.

Selection of DPIs as an alternative technology will also necessitate providing for costs of access to suitable DPI technology and investments in new manufacturing and packaging infrastructures. Considering the development costs and costs of molds and tooling, the costs per therapeutic dose of DPIs will be significantly higher than those with HFA-based MDIs. Thus, DPI technology is not favorable as a cost-effective alternative.

In consultation with relevant stakeholders and considering the relative merits of the two technology options, it has been decided that HFA technology would be best suited for Indian conditions, considering ease of use for patients, availability of technology and technology providers and wider applicability in a humid climate.

***Access to technology***

Intellectual property issues are not foreseen, as India does not have to comply with WIPO requirements until 2016, which is beyond the timeframe of this project. Also by that time the patents for the drug molecules involved in this project will have expired. Furthermore, each of the five enterprises currently manufacturing CFC-based MDIs has in-house product development capability that has a record of developing products for the Indian market.

***Product Development***

Some of the existing CFC-based MDI drugs will need to be reformulated for HFA technology. Others (e.g. Salbutamol plus Ipratropium bromide), which do not have HFA alternative formulations approved will need to be developed. The reformulation and development is expected to be carried out by the enterprises themselves and would be subject to statutory approval. The entire process is expected to take between 9 and 15 months.

***Conversions***

All five MDI manufacturers utilize CFC pressure filling. They use both CFC-11 and CFC-12 in the manufacture of MDIs. CFC-11 is used for preparation of a "suspension slurry" of the active ingredient to facilitate filling the precise quantity into the open MDI container, after which the MDI container is closed with an aerosol metering valve, and thereafter CFC-12 that acts as the aerosol "propellant" is injected into the aerosol container under pressure through the metering valve. Replacement equipment to allow HFA-based MDI production can be installed alongside existing equipment.

The conversions would involve introduction of the necessary equipment for production lines, suitable for manufacturing the HFA-based MDIs.

More details of enterprise-level technology conversions are provided in Annex-1 and Annex-7.

### 3.2.2 Technical Assistance

In order to properly coordinate the technical implementation of the strategy, services of external technical expert(s) will be utilized. The tasks would include technical monitoring and supervision of enterprise-level conversions, technical advice on procurement, trouble-shooting issues between enterprises and suppliers, etc. More details are provided in Annex-2.

### 3.2.3 Policies and Regulations

In order to effectively support the transition to non-CFC MDIs, Government of India proposes to consider the following policy and regulatory interventions:

***Control of supply of CFC-based MDIs***

- Regulating CFC-based MDI manufacturing beyond 2009
- Regulating new formulations or products with CFC-based MDIs.
- Regulating import of new CFC-based MDIs. The timing of this measure needs to be aligned with the timing of phase-out of CFCs in MDI manufacturing by Ministry of Health and Family Welfare.

***Promotion of CFC-free alternatives***

- Fiscal incentives for adopting non-CFC alternatives
- Fast track procedures for approval of non-CFC MDIs

More details on this component are provided in Annex-3.

### 3.2.4 Awareness and Capacity Building Actions

Awareness and capacity-building actions are considered important and complementary to other initiatives to facilitate quicker adoption of HFA-based MDIs. Two critical factors would influence quicker market adoption of HFC-based MDIs:

- Prescription of HFC-based MDIs by doctors
- Wide availability of HFC-based MDIs in pharmacies

The following activities are proposed:

- Stakeholder sensitization workshops at national, regional and local levels
- Development of awareness materials for healthcare professionals, pharmacies, medical facilities treating respiratory diseases and organizations involved in disseminating knowledge on these diseases and treatments
- Public awareness through media publicity
- Color coding/labeling of CFC-based and HFA-based MDIs
- Information dissemination through dedicated website

More information on this component is provided in Annex-4.

### 3.2.5 Monitoring and Management

Following key activities would be carried out under this component:

a) Coordination of the strategy implementation with the various policy and awareness actions
b) Verification and certification of CFC phase-out
c) Status/progress reporting
d) Monitoring and evaluation of outputs

More details are provided in Annex-5.

***Availability and management of Pharma-grade CFCs during the transition period***

The consumption of CFCs in MDI manufacturing shows a decline from 2006 to 2007. However, as mentioned in Section 1.2 it still constitutes a significant portion of the agreed allowable total consumption and potentially in excess of the agreed consumption limits in 2008 and 2009. This situation poses a significant risk of non-compliance post-2007 and calls for urgent interventions to ensure timely and smooth transition to non-CFC MDIs and also effective management of CFCs during the transition period.

ExCom Decision 54/35 stipulates a limit on availability of CFCs for consumption in India, i.e., a maximum of 825 ODP tonnes would be available for consumption during 2008 and 2009.

Given these CFC consumption limits, while it is critical to accelerate phase-out of CFCs in pharmaceutical MDIs, it is also critical to ensure availability of adequate pharmaceutical-grade CFCs during the transition period.

In this regard, the following actions are proposed:

- Establishing the requirements of pharmaceutical-grade CFCs needed during the transition period, to ensure reliable availability of proven drugs to patients. This task will be a collaborative effort between the enterprises and government as part of the transition strategy. According to the information collected during the project preparation the quantity required between 2009 and 2012 may be above the 825 ODP tonnes available as per Decision 54/35, but it will need to be accurately defined. For the required quantities above the 825 ODP tonnes available, appropriate steps will need to be defined.

- India may need to apply for Essential Use Nomination for the amount of pharmaceutical-grade CFCs needed, which cannot be covered by the current limitations of availability. The exact amounts required would be calculated as part of the process described above.

### 3.3 MONITORING MILESTONES

| | 2008 | | | | 2009 | | | | 2010 | | | | 2011 | | | | 2012 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| **Annual CFC phase-out in MDIs (600 tonnes)** | **50** | | | | **100** | | | | **150** | | | | **150** | | | | **150** | | | |
| Submission of proposal to MLF | | | | | | | | | | | | | | | | | | | | |
| Approval by MLF | | | | | | | | | | | | | | | | | | | | |
| Project document signature by Government | | | | | | | | | | | | | | | | | | | | |
| Implementation appraisal | | | | | | | | | | | | | | | | | | | | |
| Equipment specifications and approval | | | | | | | | | | | | | | | | | | | | |
| Equipment procurement and delivery | | | | | | | | | | | | | | | | | | | | |
| Formulation development | | | | | | | | | | | | | | | | | | | | |
| Stability testing and laboratory analysis | | | | | | | | | | | | | | | | | | | | |
| Product registration | | | | | | | | | | | | | | | | | | | | |
| Policy and regulatory actions | | | | | | | | | | | | | | | | | | | | |
| Awareness actions | | | | | | | | | | | | | | | | | | | | |
| Technical assistance | | | | | | | | | | | | | | | | | | | | |
| Equipment installation and commissioning | | | | | | | | | | | | | | | | | | | | |
| Trial production | | | | | | | | | | | | | | | | | | | | |
| Commercial production of non-CFC MDIs | | | | | | | | | | | | | | | | | | | | |

### 3.4 IMPLEMENTATION

The overall management and coordination of the plan will be the responsibility of Ozone Cell, Ministry of Environment and Forests, with the assistance of UNDP as the lead implementing agency, UNEP as the cooperating implementing agency and Government of Italy as the bilateral cooperating agency.

### 3.5 FINANCING

The total cost of the plan is **US$ 61,701,934**. The requested MLF grant is **US$ 26,759,319**. The balance cost amounting to **US$ 34,942,615** will be co-financed by beneficiary enterprises.

### 3.6 RESULTS

The plan will result in a sustainable transition from CFC-based to HFA-based MDIs and in a phase-out of CFCs in the manufacture of MDIs in India by 2012.

**ANNEX-1**

**PROJECT COMPONENT-I: TECHNOLOGY CONVERSIONS**

# ENTERPRISE LEVEL SUMMARIES

**ATTACHMENT-1**

## SUMMARY: CADILA HEALTHCARE LTD.

### 1. BASIC DATA AT A GLANCE

Local Ownership: 100%
Exports to Non-Article 5 Countries: 0.00
Establishment of Production Line: 2002
Co-financing Commitment: 30%

### 2. CFC CONSUMPTION

| Parameter | CFC-based MDI Manufacturing |
|---|---|
| | Baseline Year: 2003 |
| CFC Consumed (in ODP Tonnes) | 2.94 |

### 3. PROJECT COST SUMMARY

The table below shows the summary of the elements of the project and the proposed co-financing, at Cadila Healthcare Ltd (all amounts in US dollars)

| Cost Head | Eligible Costs | Proposed Co-Financing | Proposed Project Funding |
|---|---|---|---|
| Incremental Development Costs | 840,345 | 30% | 588,242 |
| Incremental Capital Costs | 1,218,000 | 30% | 852,600 |
| Incremental Operating Costs | 124,842 | 30% | 87,389 |
| **TOTAL** | **2,183,187** | **30%** | **1,528,231** |

### 4. PROJECT COSTS

#### 4.1 Product Development Costs

In reviewing the extensive listing of Cadila's products, not all of those listed are eligible for consideration. The following will not be eligible or appropriate for consideration.

a) Products which Cadila have decided they do not intend to make available as an HFA MDI and will be discontinued with the phase out of CFC

b) Products launched significantly after the 2003 baseline year. Having reviewed data, some products were under development and in the latter stages of registration in 2003, although are not recorded as formally launched until 2004. These products do represent eligible formulations/ products as significant volumes were manufactured prior to the baseline.

Further, consideration has been given to how products in multiple strengths are typically developed. Where three or four strengths of a product are commercialized, it is typical to develop only the highest and lowest strength in detail and to only undertake minimal confirmatory activities on the intermediate strengths.

Applying these criteria, only 10 formulations out of the 16 existing formulations are included in the calculation of development costs: Salbutamol. Budesonide 100, Budesonide 200, Formoterol Fumarate, Ipatropium Bromide, Budesonide+Formoterol 100, Budesonide+Formoterol 400, Salbutamol + Ipatropium, Formoterol + Fluticasone 125, Formoterol + Fluticasone 250.

Total Cadila Incremental Development Cost is estimated as US 840,345.

### 4.2 Incremental Capital Costs

Detailed description of the baseline equipment and proposed equipment for conversion can be found in Annex 7. The summary is tabulated below (all amounts in US dollars):

| Item | Cost |
|---|---|
| 1 Single Macromat filling line and associated pressure filling and preparation vessel | 1,198.000 |
| Modifications to existing area | 20,000 |
| **Total** | **1,218,000** |

### 4.3 Incremental Operating costs

Incremental operating costs are calculated based on 2007 production of CFC-based MDIs. The production in 2007 was 713,387 units. No allowance for future growth in production has been factored. Incremental operating costs are calculated for one year duration.

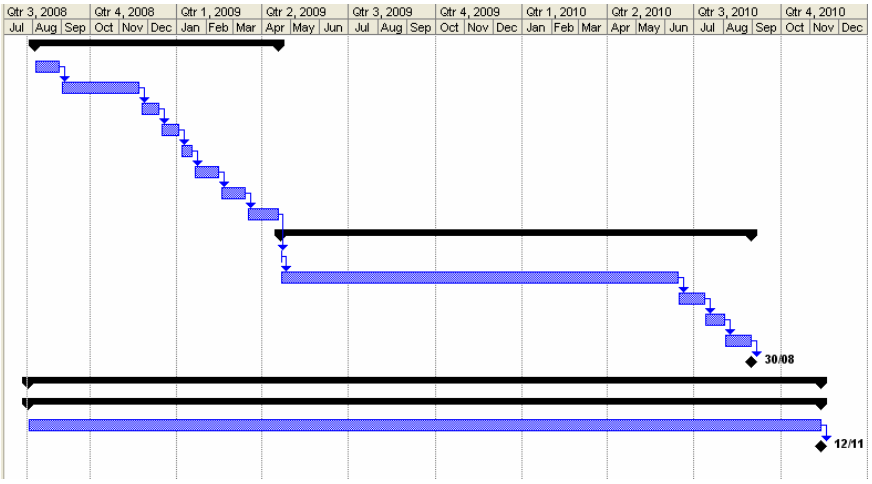
Cadila could not provide a detailed analysis for differences in costs between equivalent CFC and HFA-based MDIs, as they only have CFC-based MDI manufacturing experience. In reviewing the cost quotations provided to Cadila, it is evident that costs and overheads are similar to other enterprises within the sector. It is reasonable therefore to assume that resulting cost differences will also be similar.

Therefore, based on a weighted average calculation, the incremental cost difference between an equivalent CFC and HFA MDI is approximately Indian Rupees 7.37. This is equivalent to US$ 0.175/unit of CFC-based MDI.

Based on the above, the incremental operating costs at Cadila are **US$ 124,842**

## 5. PROJECT SCHEDULE

| | Task Name | Duration |
|---|---|---|
| 1 | **Project Administration** | **185 days** |
| 2 | Submission of the project to MLF | 4 wks |
| 3 | Approval by MLF | 3 mons |
| 4 | Project document submitted to beneficiarie | 3 wks |
| 5 | Project document signature | 0.75 mons |
| 6 | Implementation Appraisal | 0.5 mons |
| 7 | Selection of team | 1 mon |
| 8 | Detailed program plaaning | 1 mon |
| 9 | Generation of equipment TOR's | 25 days |
| 10 | **Equipment sub Project (Small)** | ########## |
| 11 | Place order for equipment | 1 day? |
| 12 | delivery of equipment | 15 mons |
| 13 | Installation of equipment | 4 wks |
| 14 | I/Q and O/Q | 3 wks |
| 15 | PQ | 4 wks |
| 16 | Equipment available | 0 days |
| 17 | **Formulation Development sub project** | **600 days** |
| 18 | **Pilot equipment exists** | **600 days** |
| 19 | Products developed and launced | 30 mons |
| 20 | Transition Complete | 0 days |




Based on the above, the lead time for conversion at Cadila Healthcare Ltd will be about 24 to 26 months from the date of approval of the project. It will be essential to ensure that appropriate quantities of CFCs are made available, in line with the managed requirements during transition.

**ATTACHMENT-2**

## SUMMARY: CIPLA LTD.

### 1. BASIC DATA AT A GLANCE

Local Ownership: 100%
Exports to Non-Article 5 Countries: 5.60% (2007)
Establishment of Production Line: 1995 (2), 2002 (2), 2003 (3)
Co-financing Commitment: Minimum 30% (presently calculated 59.90%)

### 2. CFC CONSUMPTION

| Parameter | CFC-based MDI Manufacturing<br>Baseline Year: 2003 |
|---|---|
| CFC Consumed (in ODP Tonnes) | 526.60 |

### 3. PROJECT COST SUMMARY

The table below shows the summary of the elements of the project and the proposed co-financing, at CIPLA Ltd (all amounts in US dollars)

| Cost Head | Eligible Costs | Proposed Co-Financing | Proposed Project Funding |
|---|---|---|---|
| Incremental Development Costs | 37,890,000 | 70% | 11,367,000 |
| Incremental Capital Costs | 11,175,600 | 35.5% | 7,208,262 |
| Incremental Operating Costs | 4,411,716 | 35.5% | 2,845,557 |
| **TOTAL** | **53,477,316** | **59.9%** | **21,420,819** |

### 4. PROJECT COSTS

#### 4.1 Product Development Costs

CIPLA have already developed many of their CFC-based MDI products and relaunched them in HFA format. In addition some of the newer MDIs which have been developed by CIPLA have only been launched in an HFA presentation.

In reviewing the extensive listing of CIPLA's products not all of those listed are eligible for consideration. The following will not be eligible or appropriate for consideration.

a) Isoprenaline Sulphate is an older product being phased out in many countries as it is linked to abuse related issues.

b) Beclomethasone Nasal spray is a nasal delivery system which is adequately replaced with an aqueous spray system which CIPLA already manufactures.

c) Products launched significantly after the 2003/2004: Having reviewed data some products were developed and in the latter stages of registration in 2003, although are not recorded as formally launched until 2004.

Further, consideration has been given to how products in multiple strengths are typically developed. Where three or four strengths of a product are commercialized, it is typical to develop only the highest and lowest strength in detail and to only undertake minimal confirmatory activities on the intermediate strengths.

Applying the criteria above, the following products will be developed:

- Salbutamol (1 strength)
- Salbutamol + Beclomethasone (1 strength)
- Sodium Cromoglycate (1 strength)
- Beclomethasone (3 strengths)
- Budesonide (2 strengths)
- Ipratropium (2 strengths)
- Fluticasone (2 strengths)
- Salmeterol (1 strength)
- Formoterol (1 strength)
- Ipratropium + Salbutamol (1 strength)
- Salmeterol + Fluticasone (2 strengths)
- Sodium Cromoglycate (1 strength)
- Budesonide + Formoterol (1 strength)
- Troventol (1 strength)
- Tiotropium (1 strength)
- Tiotropium +Formoterol (1 strength)

Of these, CIPLA on their own initiative have already formulated 15 and currently 3 (some of which are the more problematic) still have to be formulated. The formulations above represent a minimum of 22 individual formulations (high and low strength for multiple strength products), which will need to be developed.

As a result of the extensive development activities already undertaken by CIPLA, they have developed a very good understanding of the costs associated with the development of an HFA MDI. The development cost estimates take in to consideration the following:

- Some products are far more problematic to reformulate than others

- In order to continue to provide the products internationally, CIPLA's development protocols need to be very demanding, so that the data will be acceptable to all potential reviewing health authorities. CIPLA have a global presence and it is necessary to develop all HFA products in a manner fully compliant with the demands of all regulatory bodies around the world. This avoids the need for unnecessary duplication of the development activities for each territory. The impact of this however is a far more intensive and comprehensive development programme than may be required for solely domestic registration.

Total Cipla Incremental Development Cost is estimated as **US$ 37,890,000.**

### 4.2 Incremental Capital Costs

Detailed description of the baseline equipment and details of conversion and equipment are provided in Annex-7. The summary is tabulated below (all amounts in US dollars):

| Item | Cost |
|---|---|
| Replacement Line A | 4,420,000 |
| 1,000 Litre mixing vessel | 840,600 |
| Modifications | 25,000 |
| Replacement Line B including 500 l vessel | 2,080,000 |
| Replacement Line C including 500 l vessel | 2,080,000 |
| Bulk storage and distribution modifications | 1,730,000 |
| **Total** | **11,175,600** |

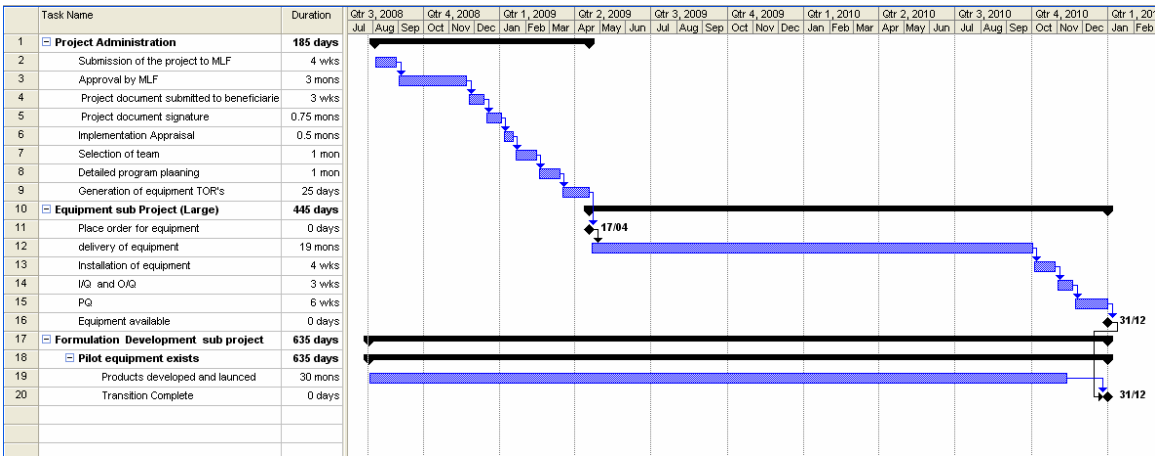
### 4.3 Incremental Operating costs

Incremental operating costs are calculated based on 2007 production of CFC-based MDIs. The production in 2007 was 27.35 million units. No allowance for future growth in production has been factored. Incremental operating costs are calculated for one year duration.

The incremental operational cost analysis shows that at US$ 0.1613 per unit, the incremental operating costs for one year duration for a production volume of 27.35 million units are calculated at **US$ 4,411,716.**

## 5. PROJECT SCHEDULE

CIPLA have some equipment suitable for commencing development of HFA MDI formulations, however complete transition to HFA MDIs and hence the elimination of use of CFCs, is dependant on the successful installation of new equipment required as described (in Annex-7) in this proposal. The schedule below takes into account the current equipment procurement lead time in to consideration.




Based on the above, the lead time for conversion at CIPLA Ltd will be about 25 to 27 months from the date of approval of the project. It will be essential to ensure that appropriate quantities of CFCs are made available, in line with the managed requirements during transition.

**ATTACHMENT-3**

## SUMMARY: GLAXOSMITHKLINE PHARMACEUTICALS LTD.

### 1. BASIC DATA AT A GLANCE

Local Ownership: 49.33%
Exports to Non-Article 5 Countries: 0%
Establishment of Production Line: 1989
Co-financing Commitment: Minimum 30% (presently calculated 81%)

### 2. CFC CONSUMPTION

| Parameter | CFC-based MDI Manufacturing |
|---|---|
| | Baseline Year: 2003 |
| CFC Consumed (in ODP Tonnes) | 24.60 |

### 3. PROJECT COST SUMMARY

The table below shows the summary of the elements of the project and the proposed co-financing, at GlaxoSmithKline Pharmaceuticals Ltd (all amounts in US dollars)

| Cost Head | Eligible Costs | Proposed Co-Financing | Proposed Project Funding |
|---|---|---|---|
| Incremental Development Costs | 0 | 100% | 0 |
| Incremental Capital Costs | 1,178,600 | 81% | 223,934 |
| Incremental Operating Costs | 330,680 | 81% | 62,829 |
| **TOTAL** | **1,509,280** | **81%** | **286,763** |

### 4. PROJECT COSTS

#### 4.1 Product Development Costs

GSK have developed and launched many HFA products internationally. Development of the products required for GSK is completed and would be transferred internally. Therefore this cost will be absorbed within the GSK structure.

The products below were all marketed significantly before 2003.

- Ventorlin Inhaler (Salbutamol)
- Becoride Inhaler (BDP)
- Becoride Forte Inhaler (BDP)

### 4.2 Incremental Capital Costs

Detailed description of the baseline equipment and proposed equipment for conversion can be found in Annex 7. The summary is tabulated below (all amounts in US dollars):

| Item | Cost |
|---|---|
| 1 Single Macromat filling line and associated pressure filling and preparation vessel | 1,148,600 |
| Modifications to existing area | 30,000 |
| **Total** | **1,178,600** |

### 4.3 Incremental Operating costs

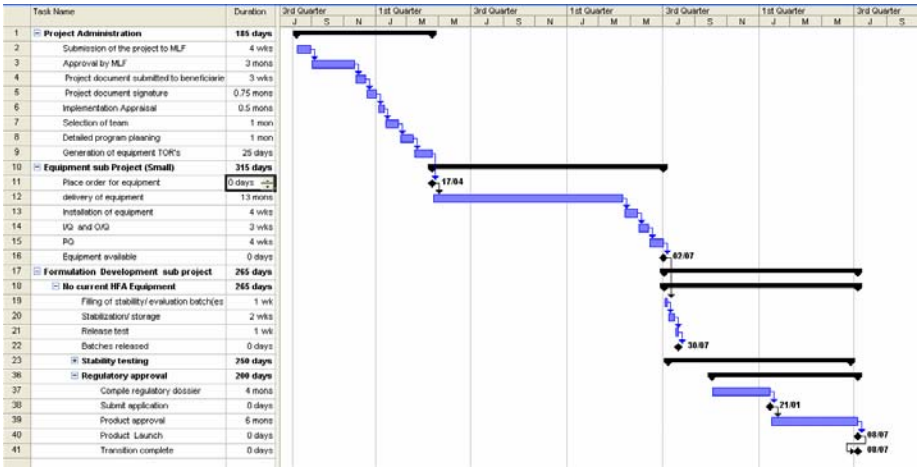
Incremental operating costs are calculated based on 2007 production of CFC-based MDIs. The production in 2007 was 944,801 million units (Ventorlin). No allowance for future growth in production has been factored. Incremental operating costs are calculated for one year duration.

GSK in India will potentially begin manufacture of HFA products as marketed by the international parent company. These are suspension formulations containing no surfactant. As a result they employ packaging components (metering valves and fluoropolymer-coated cans). These are considerably more expensive than the components currently used for the CFC MDI. Based on current costing the additional cost will be about US$ 0.35/unit CFC MDI.

Thus, at US$ 0.35 per unit, the incremental operating costs for one year duration for a production volume of 944,801 units are calculated at **US$ 330,680.**

## 5. PROJECT SCHEDULE

GSK currently have no equipment suitable to commence development of HFA MDI formulations, therefore complete transition to HFA MDIs and hence the elimination of use of CFCs is dependent on the successful installation and qualification of the equipment referenced in Annex-7 in this proposal. The schedule below takes into account the current equipment procurement lead time in to consideration:




Based on he above, the lead time for conversion at GSK will be about 30 to 32 months from the date of approval of the project. It will be essential to ensure that appropriate quantities of CFCs are made available, in line with the managed requirements during transition.

**ATTACHMENT-4**

## SUMMARY: MIDAS-CARE PHARMACEUTICALS P. LTD.

### 1. BASIC DATA AT A GLANCE

Local Ownership: 100%
Exports to Non-Article 5 Countries: 0.00
Establishment of Production Line: 1993-1994
Co-financing Commitment: 30%

### 2. CFC CONSUMPTION

| Parameter | CFC-based MDI Manufacturing |
|---|---|
| | Baseline Year: 2003 |
| CFC Consumed (in ODP Tonnes) | 18.78 |

### 3. PROJECT COST SUMMARY

The table below shows the summary of the elements of the project and the proposed co-financing, at Midas-Care Pharmaceuticals P. Ltd (all amounts in US dollars)

| Cost Head | Eligible Costs | Proposed Co-Financing | Proposed Project Funding |
|---|---|---|---|
| Incremental Development Costs | 765,000 | 30% | 535,500 |
| Incremental Capital Costs | 780,000 | 30% | 546,000 |
| Incremental Operating Costs | 308,850 | 30% | 216,195 |
| **TOTAL** | **1,853,850** | **30%** | **1,297,695** |

### 4. PROJECT COSTS

#### 4.1 Product Development Costs

In reviewing the extensive listing of products of Midas-Care Pharmaceuticals P. Ltd, not all of those listed are eligible for consideration. The following will not be eligible or appropriate for consideration.

a) Products which Midas-Care have decided they do not intend to make available as an HFA MDI and will be discontinued with the phase out of CFC

b) Products launched significantly after the 2003 baseline year. Having reviewed data, some products were under development and in the latter stages of registration in 2003, although are not recorded as formally launched until 2004. These products do represent eligible formulations/ products as significant volumes were manufactured prior to the baseline.

Further, consideration has been given to how products in multiple strengths are typically developed. Where three or four strengths of a product are commercialized, it is typical to develop only the highest and lowest strength in detail and to only undertake minimal confirmatory activities on the intermediate strengths.

Applying the criteria above, out of the 42 formulations produced by Midas-Care, only 17 formulations are included in the calculation of costs:

a) Salbutamol (1 strength)
b) Ipratropium Bromide (1 strength )
c) Salbutamol +Beclomethasone Dipropionate (1 strength)
d) Formeterol Fumarate (1 strength)
e) Budesonide + Formoterol Fumurate (2 strengths)
f) Beclomethasone Dipropionate (2 strengths)
g) Budesonide (2 strengths)
h) Fluticasone Propionate + Salmeterol (2 strengths)
i) Salbutamol + Ipratropium Bromide (1 strength)
j) Sodium Cromoglycate (1 strength)
k) Tiotropium Bromide (1 strength)
l) Fluticasone Propionate (2 strengths)

Total Midas Care Incremental Development Cost is estimated as **US$ 765,000**

### 4.2 Incremental Capital Costs

The costs below only cover one CFC MDI line. Detailed description of the baseline equipment and proposed equipment for conversion can be found in Annex 7. The summary is tabulated below (all amounts in US dollars):

| Item | Cost |
|---|---|
| 1.5 line manual filling installation | 380,000 |
| Pressure filling and preparation vessel | 360,000 |
| Custom fabricated table | 20,000 |
| Modifications to existing area | 20,000 |
| **Total** | **1,218,000** |

### 4.3 Incremental Operating costs

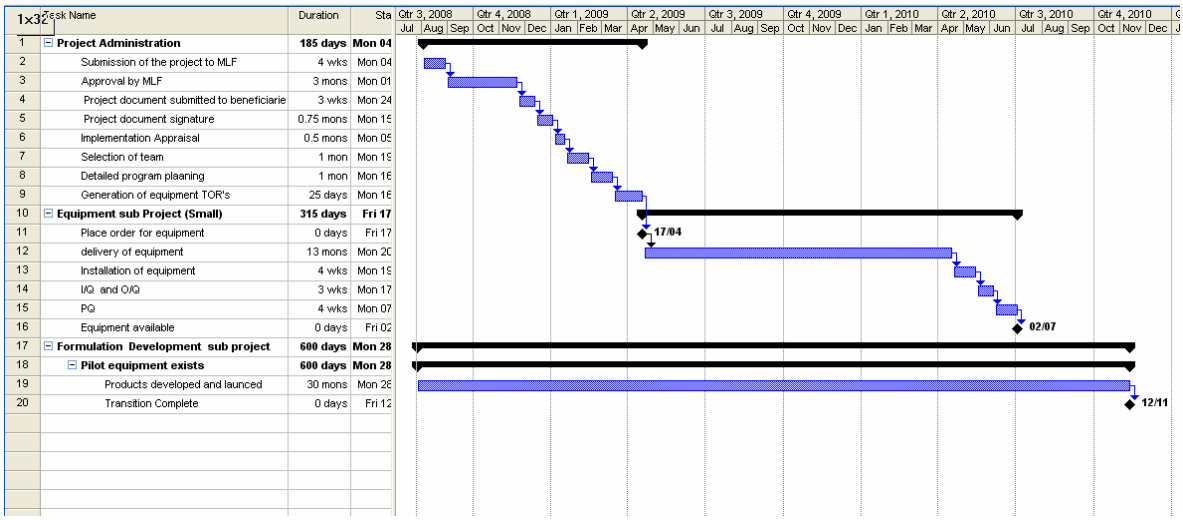
Incremental operating costs are calculated based on 2007 production of CFC-based MDIs. The production in 2007 was 713,387 units. No allowance for future growth in production has been factored. Incremental operating costs are calculated for one year duration.

Midas-Care provided a detailed cost analysis of the anticipated differences between equivalent CFC and HFA MDIs. The detailed analysis can be found in Annex-7. The result of this analysis the incremental cost difference between an equivalent CFC and HFA MDI is approximately Indian Rupees 7.37. This is equivalent to US$ 0.175/unit of CFC-based MDI.

Based on the above, the incremental operating costs at Midas-Care for 1,764,857 units work out to **US$ 308,850.**

## 5. PROJECT SCHEDULE

Midas-Care have some equipment suitable for commencing development of HFA MDI formulations, however complete transition to HFA MDIs and hence the elimination of use of CFCs, is dependant on the successful installation of new equipment required as described (in Annex-7) in this proposal. The schedule below takes into account the current equipment procurement lead time in to consideration:




a

Based on the above, the lead time for conversion at Midas-Care will be about 22 to 25 months from the date of approval of the project. It will be essential to ensure that appropriate quantities of CFCs are made available, in line with the managed requirements during transition.

**ATTACHMENT-5**

## SUMMARY: SUN PHARMACEUTICAL INDUSTRIES LTD.

### 1. BASIC DATA AT A GLANCE

Local Ownership: 100%
Exports to Non-Article 5 Countries: 0.00
Establishment of Production Line: 1999-2000
Co-financing Commitment: 30%

### 2. CFC CONSUMPTION

| Parameter | CFC-based MDI Manufacturing |
|---|---|
| | Baseline Year: 2003 |
| CFC Consumed (in ODP Tonnes) | 5.99 |

### 3. PROJECT COST SUMMARY

The table below shows the summary of the elements of the project and the proposed co-financing, at Sun Pharmaceutical Industries Ltd. (all amounts in US dollars)

| Cost Head | Eligible Costs | Proposed Co-Financing | Proposed Project Funding |
|---|---|---|---|
| Incremental Development Costs | 660,490 | 30% | 462,343 |
| Incremental Capital Costs | 780,000 | 30% | 546,000 |
| Incremental Operating Costs | 67,811 | 30% | 47,468 |
| **TOTAL** | **1,508,301** | **30%** | **1,055,811** |

### 4. PROJECT COSTS

#### 4.1 Product Development Costs

In reviewing the extensive listing of Sun Pharma's products, not all of those listed are eligible for consideration. The following will not be eligible or appropriate for consideration.

a) Products which Sun Pharma have decided they do not intend to make available as an HFA MDI and will be discontinued with the phase out of CFCs

b) Products launched significantly after the 2003 baseline year. Having reviewed data, some products were under development and in the latter stages of registration in 2003, although are not recorded as formally launched until 2004. These products do represent eligible formulations/ products as significant volumes were manufactured prior to the baseline.

Further, consideration has been given to how products in multiple strengths are typically developed. Where three or four strengths of a product are commercialized, it is typical to develop only the highest and lowest strength in detail and to only undertake minimal confirmatory activities on the intermediate strengths. Applying these criteria, only 10 formulations are included in the calculation of development costs, shown in the table below:

- Salbutamol (1 strength)
- Fluticasone (2 strengths)
- Salmeterol and Fluticasone Propionate (2 strengths)
- Budenoside (2 strengths)
- Formoterol and Budenoside (2 strengths)
- Triptropium (1 strength)

Total Sun Pharma incremental development cost is estimated as **US$ 660,490**

### 4.2 Incremental Capital Costs

Detailed description of the baseline equipment and proposed equipment for conversion can be found in Annex 7. The summary is tabulated below (all amounts in US dollars):

| Item | Cost |
|---|---|
| 1.5 line manual filling installation | 380,000 |
| Pressure filling and preparation vessel | 360,000 |
| Custom fabricated Table | 20,000 |
| Modifications to existing area | 20,000 |
| **TOTAL** | **780,000** |

### 4.3 Incremental Operating costs

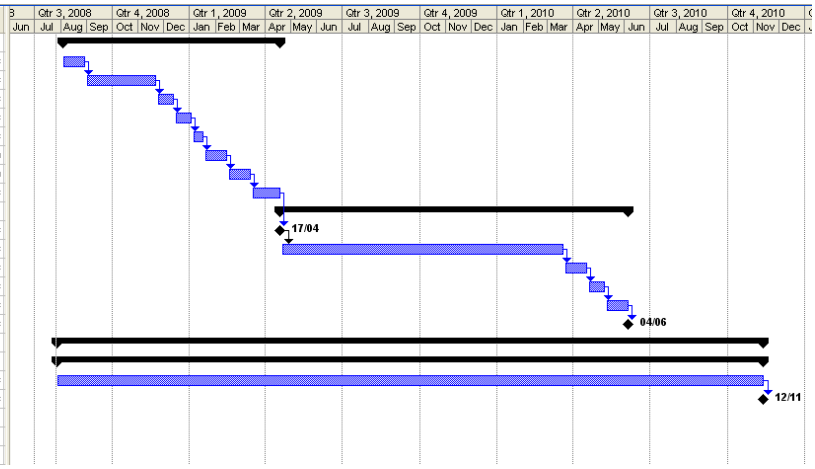
Incremental operating costs are calculated based on 2007 production of CFC-based MDIs. The production in 2007 was 387,492 units. No allowance for future growth in production has been factored. Incremental operating costs are calculated for one year duration.

Sun Pharma could not provide a detailed analysis for differences in costs between equivalent CFC and HFA-based MDIs, as they have only limited exposure HFA-based MDIs. In reviewing the cost quotations provided to Sun Pharma, it is evident that costs and overheads are similar to other enterprises within the sector. It is reasonable therefore to assume that resulting cost differences will also be similar. Therefore, based on a weighted average calculation, the incremental cost difference between an equivalent CFC and HFA MDI is approximately Indian Rupees 7.37. This is equivalent to US$ 0.175/unit of CFC-based MDI. Based on the above, the incremental operating costs at Sun Pharma are **US$ 67,811.**

## 5. PROJECT SCHEDULE

Sun Pharma currently has no equipment suitable to commence development of HFA MDI formulations, therefore complete transition to HFA MDIs and hence the elimination of use of CFCs is dependent on the successful installation and qualification of the equipment referenced in Annex-7 in this proposal. The schedule below takes into account the current equipment procurement lead time in to consideration:

| | Task Name | Duration |
|---|---|---|
| 1 | **Project Administration** | **185 days** |
| 2 | Submission of the project to MLF | 4 wks |
| 3 | Approval by MLF | 3 mons |
| 4 | Project document submitted to beneficiarie | 3 wks |
| 5 | Project document signature | 0.75 mons |
| 6 | Implementation Appraisal | 0.5 mons |
| 7 | Selection of team | 1 mon |
| 8 | Detailed program planing | 1 mon |
| 9 | Generation of equipment TOR's | 25 days |
| 10 | **Equipment sub Project (Small)** | **295 days** |
| 11 | Place order for equipment | 0 days |
| 12 | delivery of equipment | 12 mons |
| 13 | Installation of equipment | 4 wks |
| 14 | I/Q and O/Q | 3 wks |
| 15 | PQ | 4 wks |
| 16 | Equipment available | 0 days |
| 17 | **Formulation Development sub project** | **600 days** |
| 18 | **Pilot equipment exists** | **600 days** |
| 19 | Products developed and launced | 30 mons |
| 20 | Transition Complete | 0 days |




Based on the above, the lead time for conversion at Sun Pharma will be about 24 to 26 months from the date of approval of the project. It will be essential to ensure that appropriate quantities of CFCs are made available, in line with the managed requirements during transition.

## ANNEX-2

## PROJECT COMPONENT –II: TECHNICAL ASSISTANCE

**ANNEX-2**

## PROJECT COMPONENT-II: TECHNICAL ASSISTANCE

| | |
|---|---|
| **Title:** | Technical assistance for implementation of the national strategy for transition to non-CFC MDIs |
| **Implementing Agency:** | UNDP |
| **National Coordinating Agency:** | Ozone Cell, Ministry of Environment and Forests |
| **Requested Funding:** | US$ 350,000 |
| **Implementation Timeframe:** | January 2009 to December 2012 |
| **Impact:** | Smooth transition to non-CFC MDIs |

**Proposed Activities**

Technical assistance is proposed to be provided through international experts and, when available, national experts to ensure a smooth transition to the new replacement technology. The experts would need to be process specialists and their functions will include overall technical supervision of conversion projects and technical coordination between equipment/chemical suppliers, beneficiary enterprises and the implementing agency. Their specific responsibilities include:

- Technical assistance for preparing specifications of equipment to be procured in the sub-project
- Technical equipment bid evaluation from suppliers during the competitive bidding process
- Technical guidance to the beneficiary enterprises during start-up with the new equipment and process
- Resolving technical issues with the phase-in of the new equipment and processes
- Technical evaluation of the results of production and product quality trials jointly with the recipient enterprise
- Technical project commissioning including final technical inspection of equipment and process for establishing completion and compliance with project objectives such as the destruction of the baseline CFC-based equipment where applicable, verification of depletion of CFC stocks, and verifying that the non-CFC production process is in operation
- Technical evaluation of enterprise reimbursement claims on equipment, raw materials, local works and other items and certification of the same
- Technical clearance of project completion, so that the project assets can be handed over and the project closed.
- Technical assistance for completion and other reporting requirements.

**Budget**

| Input | Cost (US$) |
|---|---|
| ***International Expert(s)***<br>Avg. 15 workdays/enterprise X 5 enterprises/year = 300 workdays over 4 years<br>Total 300 workdays @ US$ 600/workday | 180,000 |
| ***National Expert(s)***<br>Avg. 15 workdays/enterprise X 5 enterprises = 300 workdays over 4 years<br>Total 300 workdays @ US$ 200/workday | 60,000 |
| Expenses (travel, office and miscellaneous reimbursed expenses) over 4 years | 110,000 |
| **Total:** | **350,000** |

## ANNEX-3

## PROJECT COMPONENT –III: SUPPORT FOR POLICY AND REGULATIONS

**ANNEX-3**

## PROJECT COMPONENT-III: SUPPORT FOR POLICY & REGULATIONS

| | |
|---|---|
| **Title:** | Support for policy and regulations |
| **Implementing Agency:** | UNDP |
| **National Coordinating Agency:** | Ozone Cell, Ministry of Environment and Forests |
| **Requested Funding:** | US$ 70,000 |
| **Implementation Timeframe:** | July 2009 to December 2011 |
| **Impact:** | Revisions to existing regulations for supporting the strategy for sustainable transition to non-CFC MDIs are notified |

**Proposed Activities**

In order to effectively support the transition to non-CFC MDIs, Government of India proposes to consider the following policy and regulatory interventions:

***Control of supply of CFC-based MDIs***

- Partial licensing of CFC-based MDI manufacturing beyond 2009
- Ban on licensing of any new formulations or products with CFC-based MDIs.
- Ban on import of new CFC-based MDIs. The timing of this measure needs to be aligned with the timing of phase-out of CFCs in MDI manufacturing.

***Promotion of CFC-free alternatives***

- Fiscal incentives for adopting non-CFC alternatives
- Fast track procedures for approval of non-CFC MDIs

Appropriate amendments to the Ozone Depleting Substances (Regulation and Control) Rules 2000 may also need to be carried out, to align them with the requirements of the national strategy for transition to non-CFC MDIs.

The key stakeholders would be the Ozone Cell, Ministry of Environment & Forests, regulatory authorities from the Ministry of Health & Family Welfare, Ministry of Law, healthcare association and pharmaceutical industry.

The process/steps of implementing these measures would be as below:

- Desk review of existing regulations
- Interaction with stakeholders
- Draft regulations
- Review and consultation meetings of stakeholders
- Finalization and notification

It is expected that the entire process of revising regulations would take approximately 30 months.

**Budget**

| Input | Cost (US$) |
|---|---|
| Legal advisor (about 120 workdays over 30 months @ US$ 200/workday | 24,000 |
| Stakeholder consultation meetings (5 meetings X US$ 5,000 per meeting) | 25,000 |
| National seminar on Policy and Regulations (1 seminar X US$ 15,000) | 15,000 |
| Documentation, finalization and notification | 6,000 |
| **Total:** | **70,000** |

## ANNEX-4

## PROJECT COMPONENT –IV: SUPPORT FOR AWARENESS AND CAPACITY BUILDING

**ANNEX-4**

## PROJECT COMPONENT-IV: SUPPORT FOR AWARENESS AND CAPACITY-BUILDING

| | |
|---|---|
| **Title:** | Support for awareness and capacity building |
| **Implementing Agency:** | UNEP |
| **National Coordinating Agency:** | Ozone Cell, Ministry of Environment and Forests |
| **Requested Funding:** | US$ 350,000 |
| **Implementation Timeframe:** | July 2009 to July 2012 |
| **Impact:** | Expedited adoption of non-CFC MDIs for treatment of asthma, COPD and other respiratory ailments |

**Need Assessment**

Awareness and capacity-building actions are considered important and complementary to other initiatives to facilitate quicker adoption of HFA-based MDIs as a reliable treatment for asthma, COPD and other respiratory ailments. Two critical factors would influence quicker market adoption of HFC-based MDIs:

- Prescription of HFC-based MDIs by doctors
- Wide availability of HFC-based MDIs in pharmacies

It is therefore considered necessary to sensitize and engage with stakeholders on the imminent transition to non-CFC MDIs in India, provide adequate information dissemination and training and ensure that non-CFC MDIs are regularly prescribed and widely available.

**Stakeholders**

***Government:*** Ministry of Environment & Forests, Ministry of Health & Family Welfare and related regulatory authorities such as CDSCO and DCGI and including the Pharmacy Council of India, which regulates Pharmacy education in India.

***Research Institutions:*** Indian Council of Medical Research, one of the oldest medical research bodies in the world, functions as an apex research and advisory body to Government for control and management of diseases.

***Educational Institutions:*** The Vallabhbhai Patel Chest Institute in Delhi is a unique and preeminent medical institution dedicated to study and treatment of chest diseases, funded entirely by the Ministry of health and Family Welfare.

***Medical Associations:*** The Indian Medical Association (IMA) is the only representative voluntary association of medical practitioners of modern medicine and has a membership of about 100,000 doctors with over 1,200 branches spread nationwide

***Industry Associations:*** The Indian Pharmaceutical Association is the premier association of pharmacists in India, engaged in continuing education and training, good practices, and updating knowledge on technology, research and regulations.

The Indian Drug Manufacturers Association (IDMA) is the premier representative association of the pharmaceutical manufacturers in India.

***Other Organizations:*** Such as the Indian Chest Society and National College of Chest Physicians are dedicated to disseminating knowledge and conducting training programs on management of Asthma and COPD.

**Proposed Activities**

The proposed activities for promoting awareness of the imminent transition to non-CFC MDIs would comprise of the following:

- Information dissemination and awareness through seminars and workshops
- Development and distribution of promotional materials
- Promoting public awareness

The activities would require an active engagement of all stakeholders described above for maximum effectiveness and outreach.

**Budget**

| Input | Cost (US$) |
|---|---|
| Regional workshops for medical practitioners (5 X US$10,000) | 50,000 |
| Regional workshops for pharmacists (5 X 10,000) | 50,000 |
| Training and information materials on non-CFC MDIs and transition | 50,000 |
| Public awareness materials including advertisements | 150,000 |
| Sub-contract for design and development of awareness materials | 50,000 |
| **Total:** | **350,000** |

## ANNEX-5

## PROJECT COMPONENT –V: SUPPORT FOR MANAGEMENT AND MONITORING

**ANNEX-5**

## PROJECT COMPONENT-V: SUPPORT FOR MANAGEMENT AND MONITORING

| | |
|---|---|
| **Title:** | Support for management and monitoring |
| **Implementing Agency:** | UNDP |
| **National Coordinating Agency:** | Ozone Cell, Ministry of Environment and Forests |
| **Requested Funding:** | US$ 400,000 |
| **Implementation Timeframe:** | January 2009 to December 2012 |
| **Impact:** | Timely project implementation, monitoring and reporting |

### Need Assessment

The implementation of the national strategy for transition to non-CFC MDIs will need to be closely aligned and coordinated with the various policy, regulatory, awareness and capacity-building actions the Government of India is taking and will need to take in future, in order to ensure that the implementation of the strategy is consistent with the Country Programme principles and with the National Health Policy. Further, in view of the time-bound targets needed to be achieved the implementation of the Plan will need to be closely and efficiently managed and will introduce additional coordinating, reporting and monitoring activities.

### Proposed Activities

The implementation of the strategy will be managed by a dedicated management team, comprising of a coordinator to be designated by the Ozone Cell and supported by representatives and experts from the implementing/executing agencies and the necessary support infrastructure. The management component of the strategy will include the following activities, for the duration of the Plan:

- Establishment and operation of the management unit
- Coordination of the implementation of various components of the strategy, with the required Government policy and regulatory actions
- Progress/status reporting including management of databases
- Coordination of enterprise-level implementation and phase-out activities
- Establishment and operation of a decentralized mechanism for monitoring and evaluation of Plan outputs, in association with the relevant regulatory bodies
- Verification and certification of CFC phase-out at the enterprise level

### Budget

| Input | Cost (US$) |
|---|---|
| Personnel costs including two support staff (4 years) | 200,000 |
| Infrastructure costs | 20,000 |
| Operational costs | 100,000 |
| Independent verification and reporting (US$ 15,000/year for 4 years) | 80,000 |
| **Total:** | **400,000** |

## ANNEX-6

## LETTERS OF COMMITMENT FROM BENEFICIARY ENTERPRISES

Zydus
dedicated to life

Cadila
Healthcare Limited

Sarkhej-Bavla N. H. No. 8A,
Moraiya. Tal. : Sanand,
Dist. : Ahmedabad 382 210. India.
Phone : +91-2717-250331/32/36/37
Fax : +91-2717-250319
www.zyduscadila.com

# LETTER OF COMMITMENT

I, Shirsh G. Belapure – President Manufacturing , on behalf of *Cadila Healthcare Limited, Ahmedabad, India* do hereby declare and affirm as below:

THAT we have read and reviewed the project proposal prepared by UNDP, for conversion of our CFC-based MDI manufacturing facilities to non-CFC-based technology at *Cadila Healthcare Limited Ahmedabad, India*;

THAT we have been briefed on and understood the various rules and criteria of the Multilateral Fund for the Implementation of the Montreal Protocol, governing costs, technology, eligibility, funding and counterpart financing;

THAT we are in agreement with the proposed technology conversions, the estimated costs, the proposed funding levels and implementation schedules;

THAT we undertake to implement the conversion to non-CFC-based MDI products and to phase-out the use of CFCs in manufacturing MDIs in accordance with the transition schedule as proposed and also undertake not to revert to use of CFCs in future in any of our MDI manufacturing facilities;

THAT we understand that the proposal will be submitted to the next meeting of the Executive Committee of the Multilateral Fund for its consideration, that the proposal may be subject to funding negotiations between the Executive Committee and Government of India and the net funding that would be actually provided could be lesser than that indicated in the proposal;

THAT we agree to abide by the rules and regulations that may be promulgated by Government of India in context of this project and in context of MDIs in India;

THAT we would abide by the UNDP and Government of India rules and regulations pertaining to finance/accounting, procurement, project management, monitoring and reporting during the implementation stage of the project.

Place: Ahmedabad
Date: 29/07/2008

For and on behalf of *Cadila Healthcare Limited*

Shirsh G. Belapure – President Manufacturing
Authorized Signatory

Cipla

Cipla Ltd.
C-1 Pooja Apts, 17 Hariyali Estate,
Vikhroli (West), Mumbai 400 083.
Tel. : (91-22) 25786604, 25786605,
25784195, 25783843
Fax : (91-22) 25795025

## LETTER OF COMMITMENT

I, **R.M. Nikam, Director Supply Chain**, on behalf of **Cipla Ltd, Mumbai (India)**, do hereby declare and affirm as below:

THAT we have been briefed on and understood the various rules and criteria of the Multilateral Fund for the Implementation of the Montreal Protocol, governing costs, technology, eligibility, funding and counterpart financing;

THAT we are in agreement with the proposed technology conversions, the estimated costs, the proposed funding levels and implementation schedules;

THAT we undertake to implement the conversion to non-CFC-based MDI products and to phase–out the use of CFCs in manufacturing MDIs.

THAT we hereby, commit to phase-out the usage of CFC in MDIs by December, 2012. However, till then, the quantities which have been projected year-wise as contained in our project report will be used.

NOTWITHSTANDING what is stated in above paragraphs, we will do our best to phase-out CFC at the earliest possible.

THAT we understand that the proposal will be submitted to the next meeting of the Executive Committee of the Multilateral Fund for its consideration, that the proposal may be subject to funding negotiations between the Executive Committee and Government of India and the net funding that would be actually provided could be lesser than that indicated in the proposal;

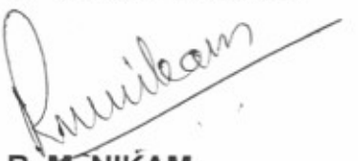
THAT we agree to abide by the rules and regulations that may be promulgated by Government of India in context of this project and in context of MDIs in India;

THAT we would abide by the UNDP and Government of India rules and regulations pertaining to finance/accounting, procurement, project management, monitoring and reporting during the implementation stage of the project.

Place: Mumbai

Date: 12.08.2008

For and on behalf of **CIPLA LIMITED**



**R M NIKAM**
**DIRECTOR – SUPPLY CHAIN**

GlaxoSmithKline

GlaxoSmithKline
Pharmaceuticals Limited
A - 10, M.I.D.C.
Ambad-Pathardi Block,
Nashik-422 010. INDIA.

Tel. : 0253-2300346 / 2300404
Fax : 0253 - 2381274

# LETTER OF COMMITMENT

I, ***Bhanwar Singh Yadav, Vice President, Nashik factory***, on behalf of ***M/s GlaxoSmithkline Pharmaceuticals Ltd.,*** do hereby declare and affirm as below:

THAT we have read and reviewed the project proposal prepared by UNDP, for conversion of our CFC-based MDI manufacturing facilities to non-CFC-based technology at ***GlaxoSmithkline Pharmaceuticals Ltd. ;***

THAT we have been briefed on and understood the various rules and criteria of the Multilateral Fund for the Implementation of the Montreal Protocol, governing costs, technology, eligibility, funding and counterpart financing;

THAT we are in agreement with the proposed technology conversions, the estimated costs, the proposed funding levels and implementation schedules;

THAT we undertake to implement the conversion to non-CFC-based MDI products wherever applicable and to phase-out the use of CFCs in manufacturing MDIs in accordance with the transition schedule as proposed and also undertake not to revert to use of CFCs in future in any of our MDI manufacturing facilities;

THAT we understand that the proposal will be submitted to the next meeting of the Executive Committee of the Multilateral Fund for its consideration, that the proposal may be subject to funding negotiations between the Executive Committee and Government of India and the net funding that would be actually provided could be lesser than that indicated in the proposal;

THAT we agree to abide by the rules and regulations that may be promulgated by Government of India in context of this project and in context of MDIs in India;

THAT we would abide by the UNDP and Government of India rules and regulations pertaining to finance/accounting, procurement, project management, monitoring and reporting during the implementation stage of the project.

Place: Nashik
Date: 7th August 2008

For and on behalf of GlaxoSmithkline Pharmaceuticals Ltd.

Bhanwar Singh Yadav
Vice President, Nashik factory
Authorized Signatory

Regd. Office
Dr. Annie Besant Road,
Worli, Mumbai - 400 030. INDIA.

भारत सरकार
पर्यावरण एवं वन मंत्रालय
ओज़ोन सेल
Government of India
Ministry of Environment and Forests
Ozone Cell

सत्यमेव जयते

**DR. A. DURAISAMY**
**Director, Ozone Cell**

D. O. No. 38/1/2008-OC

Dated : 1st October, 2008

Dear Mr. Chirmulay,

This is to acknowledge receipt of India's proposal for the National Strategy for Transition to non-CFC MDIs and Plan for phase-out of CFCs in pharmaceutical MDIs in India. The document was reviewed by us and subject to our comments as indicated in our message dated 25th September 2008, our concurrence to the contents is confirmed. I hereby request UNDP for its assistance in submission of this proposal to the 56th meeting of the Executive Committee.

With Kind regards,

Yours sincerely,

**(A. DURAISAMY)**

Mr. Nandan Chirmulay
Regional Coordinator
Montreal Protocol/Chemicals Unit
Environment and Energy Group
UNDP-Thailand
Regional Center in Bangkok, UN Services
Building, 3rd Floor, Rajdamnern Nok Av.
Bangkok 10200 (Thailand)
Tel. : +66 2 2882718
Fax : +66 2 2883032
Email : nandan@erols.com

ज़ोन चार बी, द्वितीय मंजिल, इंडिया हैबिटाट् सैंटर,
लोदी रोड़, नई दिल्ली-110003
Core-4B, 2nd Floor, India Habitat Centre,
Lodhi Road, New Delhi - 110 003

Phone : 24642176, 24602601, 24601533
Fax : 91-11-24642175
e-mail : ozone@del3.vsnl.net.in
web : ozonecell.com

Midas-Care
We Care

MIDAS-Care
PHARMACEUTICALS PVT LTD
Papa Industrial Estate, 40 Suren Road
Andheri (East), Mumbai 400 093
Tel : 2683 5678, 2683 3409
Fax : 91 22 2683 7947
E-mail : aerosol@vsnl.com

# LETTER OF COMMITMENT

I, **Ms Sangithaa Gupta**, **Managing Director**, on behalf of **Midas-Care Pharmaceuticals Pvt. Ltd.** do hereby declare and affirm as below:

THAT we have read and reviewed the project proposal prepared by UNDP, for conversion of our CFC-based MDI manufacturing facilities to non-CFC-based technology at **Midas-Care Pharmaceuticals Pvt.Ltd. ;**

THAT we have been briefed on and understood the various rules and criteria of the Multilateral Fund for the Implementation of the Montreal Protocol, governing costs, technology, eligibility, funding and counterpart financing;

THAT we are in agreement with the proposed technology conversions, the estimated costs, the proposed funding levels and implementation schedules;

THAT we undertake to implement the conversion to non-CFC-based MDI products and to phase-out the use of CFCs in manufacturing MDIs in accordance with the transition schedule as proposed and also undertake not to revert to use of CFCs in future in any of our MDI manufacturing facilities;

THAT we understand that the proposal will be submitted to the next meeting of the Executive Committee of the Multilateral Fund for its consideration, that the proposal may be subject to funding negotiations between the Executive Committee and Government of India and the net funding that would be actually provided could be lesser than that indicated in the proposal;

THAT we agree to abide by the rules and regulations that may be promulgated by Government of India in context of this project and in context of MDIs in India;

THAT we would abide by the UNDP and Government of India rules and regulations pertaining to finance/accounting, procurement, project management, monitoring and reporting during the implementation stage of the project.

Place: Mumbai
Date: July 26, 2008

**For and on behalf of Midas-Care Pharmaceuticals Pvt Ltd.**

Sangithaa

**Ms Sangithaa Gupta, Managing Director**
**Authorized Signatory**

MIDAS CARE PHARMACEUTICALS PVT. LTD. MUMBAI

Factory : B - 16, MIDC, Waluj, Aurangabad 431 136 Tel: 91 0240 255 4739 Fax : 91 0240 255 5408 E-mail : midas_care@vsnl.com

17-B, Mahal Industrial Estate,
Mahakali Caves Road, Andheri (E),
Mumbai - 400 093. India.
Tel. : (91-22) 6645 5645
Fax : (91-22) 6645 5685

SUN PHARMACEUTICAL INDUSTRIES LTD.

# LETTER OF COMMITMENT

I, Mr. Kirti Ganorkar, Vice President (Business Development) , on behalf of Sun Pharmaceutical Industries Limited do hereby declare and affirm as below:

THAT we have read and reviewed the project proposal prepared by UNDP, for conversion of our CFC-based MDI manufacturing facilities to non-CFC-based technology at Sun Pharmaceutical Industries Limited

THAT we have been briefed on and understood the various rules and criteria of the Multilateral Fund for the Implementation of the Montreal Protocol, governing costs, technology, eligibility, funding and counterpart financing;

THAT we are in agreement with the proposed technology conversions, the estimated costs, the proposed funding levels and implementation schedules;

THAT we undertake to implement the conversion to non-CFC-based MDI products and to phase-out the use of CFCs in manufacturing MDIs in accordance with the transition schedule as proposed and also undertake not to revert to use of CFCs in future in any of our MDI manufacturing facilities;

THAT we understand that the proposal will be submitted to the next meeting of the Executive Committee of the Multilateral Fund for its consideration, that the proposal may be subject to funding negotiations between the Executive Committee and Government of India and the net funding that would be actually provided could be lesser than that indicated in the proposal;

THAT we agree to abide by the rules and regulations that may be promulgated by Government of India in context of this project and in context of MDIs in India;

THAT we would abide by the UNDP and Government of India rules and regulations pertaining to finance/accounting, procurement, project management, monitoring and reporting during the implementation stage of the project.

Place: Mumbai
Date: 29th July, 2008

For and on behalf of Sun Pharmaceutical Industries Ltd.,

**Kirti Ganorkar**
**(Vice President -Business Development)**