

Annex V
List of approved investment projects

UNEP/OzL.Pro/ExCom/20/72
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Country	Project Title	Agency	Funds Approved (US\$)			C.E.
			Project	Support	Total	(US\$/kg)
(A) INVESTMENT PROJECT						
Aerosol						
Filling plant						
Jordan	Aerosol conversion at Jordan Industrial Petrochemical Co. Ltd. (JIPCO)	IBRD	\$102,855	\$13,371	\$116,226	1.05
Cote D'Ivoire	Phasing out CFCs at Parfumerie Gandour D.A.F.	UNIDO	\$106,061	\$13,788	\$119,849	1.61
Cote D'Ivoire	Phasing out CFCs at Sicobel	UNIDO	\$59,171	\$7,692	\$66,863	2.84
Algeria	Phasing out CFCs at Laboratoire Bendi	UNIDO	\$56,790	\$7,383	\$64,173	2.96
Algeria	Phasing out CFCs at Vague de Fraicheur	UNIDO	\$164,623	\$21,401	\$186,024	3.20
Jordan	Aerosol conversion at Jordan Antiseptics & Detergents Ind. Co. Ltd. (JADICO)	IBRD	\$65,720	\$8,544	\$74,264	3.29
Jordan	Aerosol conversion at Jordan Chemical Products Co. Ltd. (JCPCO)	IBRD	\$203,328	\$26,433	\$229,761	3.33
Algeria	Phasing out CFCs at Ets Cophyd	UNIDO	\$53,024	\$6,893	\$59,917	3.53
Algeria	Phasing out CFCs at Etablissement Has Mohamed	UNIDO	\$82,018	\$10,662	\$92,680	3.64
Algeria	Phasing out CFCs at Ets Wouroud	UNIDO	\$187,772	\$24,410	\$212,182	3.99
Foam						
Flexible						
Nigeria	Conversion to CFC free technology in the manufacture of flexible polyurethane foam at Royal Foam Products	UNDP	\$34,000	\$4,420	\$38,420	0.77
Nigeria	Conversion to CFC free technology in the manufacture of flexible polyurethane foam at Teju Industries Limited	UNDP	\$75,000	\$9,750	\$84,750	1.60
China	Conversion to CFC-free technology in the manufacture of flexibe (slabstock) polyurethane foam at Chengdu Plastics No. 7	IBRD	\$301,000	\$39,130	\$340,130	2.51
Nigeria	Conversion to CFC free technology in the manufacture of flexible polyurethane foam at Sara Products Limited	UNDP	\$107,000	\$13,910	\$120,910	3.86
Lebanon	Phasing out CFC-11 at Nasri Karam and Sons	UNIDO	\$100,109	\$13,014	\$113,123	4.55
Romania	Phasing out CFC-11 at S.C. Spumotim S.A.	UNIDO	\$142,293	\$18,498	\$160,791	4.74
Turkey	Phasing out of CFC-11 at Urosan Kimiya Sanayii A.S.	UNIDO	\$643,500	\$83,655	\$727,155	4.77
Argentina	Conversion to non-CFC technology in the manufacture of flexible foam (slabstocks) at Suavestar S.A.	UNDP	\$561,000	\$72,930	\$633,930	6.09
Integral skin						
Morocco	Phase out of CFCs in the manufacture of integral skin and cold cured molded PUF products at Maghreb Elastoplast	UNDP	\$120,000	\$15,600	\$135,600	9.23

Country	Project Title	Agency	Funds Approved (US\$)			C.E. (US\$/kg)
			Project	Support	Total	
Indonesia	Conversion to CFC free technology in the manufacture of integral skin molded polyurethane foam at PT Dithon Urethane	UNDP	\$184,000	\$23,920	\$207,920	11.15
India	Phase-out of CFCs in the manufacture of cold cured molded PUF products at Krishna Fabrications Ltd.	UNDP	\$164,000	\$21,320	\$185,320	12.61
Mexico	Umbrella project for conversion to CFC-free technology in the manufacture of polyurethane shoe soles	UNDP	\$1,201,590	\$156,207	\$1,357,797	12.64
India	Phase-out of CFCs in the manufacture of cold cured molded PUF products at K.B. Poly Industries P. Ltd.	UNDP	\$149,000	\$19,370	\$168,370	14.90
Polystyrene/polyethylene						
Indonesia	Elimination of CFC-12 in the manufacture of extruded polyethylene foam sheet at PT. Toha Kencana Mas	IBRD	\$109,930	\$14,291	\$124,221	2.74
Argentina	Phasing out CFC-12 at Multiespuma Saic	UNIDO	\$282,438	\$36,717	\$319,155	4.71
India	Elimination of CFCs in the manufacture of EPE foam products at Vora Cork Industries	UNDP	\$264,500	\$34,385	\$298,885	6.68
Argentina	Phasing out CFC-12 at Mallol Saic	UNIDO	\$299,344	\$38,915	\$338,259	8.21
Rigid						
China	Elimination of CFCs in the manufacture of rigid PUF products at Handan Plastics #8	IBRD	\$265,000	\$34,450	\$299,450	2.61
Indonesia	Elimination of CFCs in the manufacture of rigid PU foam sandwich panels at P.T. Mentari Metal Pratama	UNDP	\$47,000	\$6,110	\$53,110	5.35
Mexico	Conversion to CFC-free technology in the manufacture of polyurethane foam at Carmovil	UNDP	\$80,500	\$10,465	\$90,965	5.53
Brazil	Conversion to CFC-free technology in the manufacture of polyurethane foam at Panisol	UNDP	\$315,958	\$41,075	\$357,033	5.80
Thailand	Conversion to CFC-free technology in the manufacture of rigid polyurethane foam at Siam Matee	UNDP	\$198,000	\$25,740	\$223,740	5.83
Thailand	Conversion to CFC-free technology in the manufacture of rigid polyurethane foam at Dacron Trade Co.	UNDP	\$277,800	\$36,114	\$313,914	5.84
Indonesia	Elimination of CFCs in the manufacture of rigid PU foam sandwich panels at P.T. Alpine Cool	UNDP	\$84,000	\$10,920	\$94,920	6.07
Nigeria	Elimination of CFCs in the manufacture of rigid PU foam for thermoware in Eleganza Industries Ltd.	UNDP	\$314,000	\$40,820	\$354,820	6.49
India	Elimination of CFCs in the manufacture of rigid PUF products at Best Plastronics P. Ltd.	UNDP	\$129,000	\$16,770	\$145,770	6.63
India	Elimination of CFCs in the manufacture of rigid PUF insulated thermoware at Bharat Plast	UNDP	\$71,000	\$9,230	\$80,230	6.68
India	Elimination of CFCs in the manufacture of rigid PUF insulated thermoware at Amar Enterprises	UNDP	\$120,000	\$15,600	\$135,600	7.41

Country	Project Title	Agency	Funds Approved (US\$)			C.E. (US\$/kg)
			Project	Support	Total	
India	Elimination of CFCs in the manufacture of rigid PUF products at Deccan Engineering Enterprises	UNDP	\$64,000	\$8,320	\$72,320	7.67
India	Elimination of CFCs in the manufacture of rigid PUF insulated thermoware at Bharat Cottage Industries	UNDP	\$61,000	\$7,930	\$68,930	7.78

Refrigeration

Commercial

Zimbabwe	Conversion of CFC-12 commercial refrigeration equipment production to HFC-134a and HCFC-22 refrigerant, and CFC-11 to HCFC-141b as the blowing agent for foam insulation at Ref-air Refrigeration	IBRD	\$43,382	\$5,640	\$49,022	8.18
Jordan	Phasing out CFC at Abdin Industrial Est. Co.	UNIDO	\$116,928	\$15,201	\$132,129	11.24
India	Elimination of CFCs in the manufacture of commercial refrigeration equipment at Supercold Refrigeration Systems	IBRD	\$133,770	\$17,390	\$151,160	12.16
Brazil	Phasing out of CFC-12 by HFC-134a as refrigerant and CFC-11 by cyclopentane as foam blowing agent in commercial refrigeration equipment for supermarkets at Eletrofrio S/A	UNIDO	\$610,650	\$79,385	\$690,035	12.99
Brazil	Elimination of CFC-12 in the production of refrigeration equipment (drinking water fountains and coolers) at Industria Brasileira de Bebedouros Ltda. (IBBL)	IBRD	\$82,500	\$10,725	\$93,225	13.98
India	Elimination of CFCs in the manufacture of commercial refrigeration equipment at Murali Refrigeration and Engineering Co.	IBRD	\$126,485	\$16,443	\$142,928	14.05
Egypt	Elimination of CFC-11 and 12 in the manufacture of commercial refrigeration equipment at El-Mohandes	UNDP	\$190,000	\$24,700	\$214,700	14.16
Brazil	Elimination of CFC-11 and CFC-12 in the production of commercial refrigeration equipment at Gelopar	IBRD	\$200,200	\$26,026	\$226,226	15.21
Egypt	Elimination of CFC-11 and 12 in the manufacture of commercial refrigeration equipment at Amiral	UNDP	\$160,000	\$20,800	\$180,800	16.00

Domestic

China	Conversion of manufacturing facilities from CFC11 foaming agent to cyclopentane and CFC12 refrigerant to HFC134a at Gansu Changfeng Baoan Industry Co. Ltd.	IBRD	\$634,150	\$82,440	\$716,590	
Brazil	Elimination of CFC-11/12 in the manufacture of domestic refrigerators and freezers at Multibras	UNDP	\$4,899,790	\$636,973	\$5,536,763	3.97
China	Phasing out ODS at the refrigerator plant of Aucma Electric Appliances Group Co.	UNIDO	\$2,914,904	\$378,938	\$3,293,842	4.12

Country	Project Title	Agency	Funds Approved (US\$)			C.E. (US\$/kg)
			Project	Support	Total	
China	Conversion of manufacturing facilities from CFC11 foaming agent to cyclopentane at Shanghai Shuanglu Electrical Appliance Co. Ltd.	IBRD	\$1,899,230	\$246,900	\$2,146,130	4.14
Romania	Phasing out CFC-11 and CFC-12 in the production of domestic refrigerators and replacing them by cyclopentane and HFC-134a at Ratmil, Uzina Mecanica Sadu	UNIDO	\$937,859	\$121,922	\$1,059,781	8.32
India	Conversion of domestic refrigerator manufacture to cyclopentane blowing agent and either R600a or HFC-134a refrigerant at Godrej - GE Appliances Ltd. (GGEAL)	IBRD	\$2,691,570	\$349,904	\$3,041,474	8.93
Macedonia	Phasing out of CFCs at the refrigerator plant of Frinko	UNIDO	\$1,081,724	\$140,624	\$1,222,348	10.40
Indonesia	Engineering assistance for the elimination of ODS used in the production of household refrigerators at PT. Goldstar Astra Electronics (GSA)	IBRD	\$512,730	\$66,655	\$579,385	13.43
Indonesia	Engineering assistance for the elimination of ODS used in the production of household refrigerators at PT. Lippo Melco Mfg.	IBRD	\$264,720	\$34,414	\$299,134	13.76

Solvent

CFC-113

China	Elimination of ODS (CFC 113) used in the production line at Shanghai No 8 Radio Factory	UNDP	\$378,000	\$49,140	\$427,140	19.70
China	Elimination of ODS (CFC 113) used in the production line at Shanghai Automation Instrumentation Factory	UNDP	\$325,000	\$42,250	\$367,250	20.20

TCA

Brazil	Elimination of 1,1,1 TCA used for the formulation of tapping fluids at Tapmatic	UNIDO	\$194,500	\$25,285	\$219,785	19.60
Brazil	Phase out of 1,1,1 TCA at Teperman	UNIDO	\$152,176	\$19,783	\$171,959	23.63
Brazil	Elimination of 1,1,1 TCA used as solvent at Rodabras	UNIDO	\$151,577	\$19,705	\$171,282	36.52
Brazil	Elimination of 1,1,1 -TCA used for auto parts cleaning at Brosol	UNIDO	\$178,361	\$23,187	\$201,548	37.16
Indonesia	Conversion of correction fluid manufacturing process from 1,1,1 TCA to non-ODS solvent at PT Cahaya Biru Sakti	IBRD	\$700,700	\$91,091	\$791,791	38.50

TOTAL: \$27,428,230 \$3,565,670 \$30,993,900

Country	Project Title	Agency	Funds Approved (US\$)			C.E.
			Project	Support	Total	(US\$/kg)
(B) LOW-ODS CONSUMING COUNTRY						
Refrigeration						
Commercial						
Zimbabwe	Conversion of CFC-12 commercial refrigeration equipment production to HFC-134a and HCFC-22 refrigerant, and CFC-11 to HCFC-141b as the blowing agent for foam insulation at Ajax Refrigeration	IBRD	\$61,966	\$8,056	\$70,022	17.70
Zimbabwe	Conversion of CFC-12 commercial refrigeration equipment production to HFC-134a and HCFC-22 refrigerant, and CFC-11 to HCFC-141b as the blowing agent for foam insulation at Commercial Refrigeration	IBRD	\$156,636	\$20,363	\$176,999	22.70
Domestic						
Zimbabwe	Conversion of CFC-12 refrigerator production to HFC-134a refrigerant and CFC-11 to cyclopentane as the blowing agent for foam insulation at Imperial Derby Refrigeration Ltd.	IBRD	\$310,000	\$40,300	\$350,300	14.39
Zimbabwe	Conversion of CFC-12 refrigerator production to HFC-134a refrigerant and CFC-11 to HCFC-141b as the blowing agent for foam insulation at Capri Refrigeration	IBRD	\$106,695	\$13,870	\$120,565	18.08
Solvent						
TCA						
Peru	Elimination of 1,1,1 -trichloroethane at Faber Castell	UNIDO	\$16,409	\$2,133	\$18,542	34.19
Peru	Elimination of 1,1,1 -trichloroethane at Carbolan	UNIDO	\$31,457	\$4,089	\$35,546	74.37
Peru	Elimination of 1,1,1 -trichloroethane at Papeles Industriales	UNIDO	\$47,953	\$6,234	\$54,187	88.15
TOTAL:			\$731,116	\$95,045	\$826,161	

Country	Project Title	Agency	Funds Approved (US\$)			C.E.
			Project	Support	Total	(US\$/kg)
(C) MAC AND COMPRESSOR						
Refrigeration						
Compressor						
China	Conversion of CFC-12 small open-type and semi-hermetic refrigerating compressor to HCFC-22 refrigerating compressor at Zhenjiang Refrigerating Equipment Factory (ZREF)	IBRD	\$1,974,000	\$256,620	\$2,230,620	
China	Conversion of medium-sized semi-hermetic CFC-12 refrigerating compressor production to HCFC-22 production at Tianjin Tian Shan Refrigeration Equipment Co.	IBRD	\$2,256,000	\$293,280	\$2,549,280	
China	Conversion of small semi-hermetic CFC-12 refrigerating compressor production at Shanghai General Machinery (Group) Corp. (SGMC)	IBRD	\$2,039,800	\$265,174	\$2,304,974	
China	Conversion of CFC-11 and CFC-12 centrifugal refrigerating compressor to HFC-134a centrifugal technology at Chongqing General Machinery Factory	IBRD	\$2,632,000	\$342,160	\$2,974,160	
China	Phasing out ODS at the household refrigerator compressor factory of the Guangzhou Wanbao Compressor Group	UNIDO	\$2,250,000	\$292,500	\$2,542,500	
Thailand	Conversion of compressor manufacture from CFC-12 to HFC-134a designs at Sanyo Universal Electric Co., Ltd.	IBRD	\$673,680	\$87,578	\$761,258	
Thailand	Conversion of compressor manufacture from CFC-12 to HFC-134a, Phase 2 at Kulthorn Kirby Public Company Limited	IBRD	\$808,234	\$105,070	\$913,304	
TOTAL:			\$12,633,714	\$1,642,383	\$14,276,097	

Country	Project Title	Agency	Funds Approved (US\$)			C.E.
			Project	Support	Total	(US\$/kg)
(D) CFC RECYCLING AND HALON BANKING						
Refrigeration						
Recovery/recycling						
Costa Rica	Implementation of a national programme for recovery and recycling of refrigerant	UNDP	\$246,780	\$32,081	\$278,861	9.02
Congo	Implementation of a national programme for recovery and recycling of refrigerants	UNDP	\$201,200	\$26,156	\$227,356	10.48
Bolivia	Implementation of a national programme for recovery and recycling of refrigerant	UNDP	\$146,000	\$18,980	\$164,980	10.55
Sri Lanka	Implementation of a national programme for recovery and recycling of refrigerants	UNDP	\$352,400	\$45,812	\$398,212	11.71
Vietnam	Demonstration project - CFC recycling and emissions reduction in the commercial refrigeration sector	UNDP	\$168,216	\$21,868	\$190,084	14.86
Central African Republic	Implementation of a national programme for recovery & recycling of refrigerants	UNDP	\$66,441	\$8,637	\$75,078	16.08
TOTAL:			\$1,181,037	\$153,535	\$1,334,572	

Summary of approved investment projects

Sector	Tonnes ODP	Funds Approved (US\$)		
		Project	Support	Total
(A) INVESTMENT PROJECT				
Aerosol	420.9	\$1,081,362	\$140,577	\$1,221,939
Foam	1,225.7	\$6,765,962	\$879,575	\$7,645,537
Refrigeration	3,419.9	\$17,500,592	\$2,275,077	\$19,775,669
Solvent	78.8	\$2,080,314	\$270,441	\$2,350,755
TOTAL:	5,145.3	\$27,428,230	\$3,565,670	\$30,993,900
(B) LOW-ODS CONSUMING COUNTRY				
Refrigeration	30.3	\$635,297	\$82,589	\$717,886
Solvent	1.4	\$95,819	\$12,456	\$108,275
TOTAL:	31.7	\$731,116	\$95,045	\$826,161
(C) MAC AND COMPRESSOR				
Refrigeration	881.5	\$12,633,714	\$1,642,383	\$14,276,097
TOTAL:	881.5	\$12,633,714	\$1,642,383	\$14,276,097
(D) CFC RECYCLING AND HALON BANKING				
Refrigeration	133.6	\$1,181,037	\$153,535	\$1,334,572
TOTAL:	133.6	\$1,181,037	\$153,535	\$1,334,572
GRAND TOTAL:	6,192.2	\$41,974,097	\$5,456,633	\$47,430,730

Distribution by Implementing Agency

IBRD	2,590.2	\$19,602,281	\$2,548,297	\$22,150,578
UNDP	2,107.2	\$13,256,875	\$1,723,394	\$14,980,269
UNEP		\$505,700	\$65,741	\$571,441
UNIDO	1,494.7	\$11,014,541	\$1,431,890	\$12,446,431