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OCCASION

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Pakistan successfully heading towards meeting reduction Targets as set in the Montreal Protocol for the Phasing out of ODSs in Manufacturing as well as Servicing Sector.

Pakistan is fully committed towards global efforts for the conservation of environment and has successfully met all the reduction targets through the phasing out of Ozone Depleting Substance as set by Montreal Protocol with the Aim to reinforce the initiatives being taken for the preservation of Ozone layer. Pakistan ratified the Montreal Protocol, Vienna Convention and the London amendment in 1992. Pakistan also ratified the subsequent amendments including Copenhagen amendment in 1995, Montreal amendment in 2005 and Beijing amendment in 2005.

Pakistan is Article-5 country as national average consumption of ODS chemicals is within 300 grams per capita. Pakistan neither produces nor exports any of these chemicals to other countries. However, these chemicals are imported from different countries of the world and are being used in the manufacturing as well as in servicing sectors.

From time to time number of chemicals was included in the list of controlled ODSs and was segregated by Annexes and groups. The baseline, freeze and reduction target for developing countries for various controlled substances is provided in the table below:

Annex /group	Chemicals	Base level Avg. of	Freeze	1st reduction		2nd reduction		3rd reduction		4th reduction	
				%age	Time Frame	%age	Time Frame	%age	Time Frame	%age	Time Frame
A-I	CFCs	1995-97	1-Jul-99	50%	1-Jan-05	85%	1-Jan-07	100%	1-Jan-10		
A-II	Halons	1995-97	1-Jan-02	50%	1-Jan-05	100%	1-Jan-10				
B-I	Halogenated CFC's	1998-2000		20%	1-Jan-03	85%	1-Jan-07	100%	1-Jan-10		
B-II	CTC	1998-2000		85%	1-Jan-05	100%	1-Jan-10				
B-III	Methyl Chloroform	1998-2000	1-Jan-03	30%	1-Jan-05	70%	1-Jan-10	100%	1-Jan-15		
C-I	HCFCs	2009-10	1-Jan-13	10%	1-Jan-15	35%	1-Jan-20	67.5%	1-Jan-25	97.5%	1-Jan-30
C-II	HBFCs			100%	1-Jan-96						
C-III	Bromo Chloro Methane			100%	1-Jan-02						
E-I	Methyl Bromide	1995-98	1-Jan-02	20%	1-Jan-05	100%	1-Jan-05				

The 5th reduction target is for phasing out of HCFCs in servicing sector.

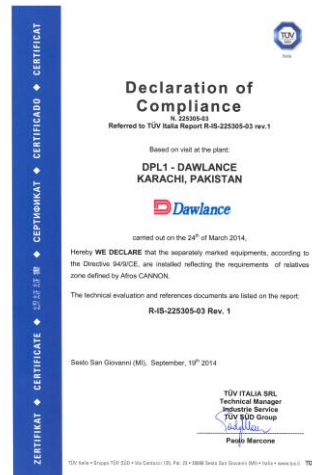
The projects related to CFCs were implemented by World Bank during early 2000 whereas others controlled substances included under Annex A-II, B-II, B-III, C-II, C-III and E-I were implemented by United Nations Industrial Organization (UNIDO) from their Head quarter in Vienna. Controlled substances under HCFCs are being phased out under the accelerated HCFC phase out program. This program was prepared by IN Consult, a national consulting company in two stages. The first stage of the program was implemented by UNIDO as lead implementing agency and UNEP as co-implementing agency. The first stage included phasing out of HCFC141b in manufacturing sector in five companies and a small amount of HCFC-22 in servicing sector. In stage-I, the 5 projects in residential and commercial refrigeration sector included Dawlance, Karachi, United Refrigeration Industries Limited, Hyderabad, Haier Pakistan, Lahore, Varioline Intercool, Lahore and Shadman Electronics, Karachi. These projects were implemented during 2012-2015 at a cost of approximately 4.84 million US\$. Through the implementation of these projects 652 metric ton of HCFC-141b was phased out. These projects were

funded through the Multilateral Fund for the implementation of Montreal Protocol as grant. The National Project Director, Ozone Cell and Joint Secretary (IC), Ministry of Climate Change was responsible for the monitoring of these projects. Each project included the following:

- Procurement of main equipment and allied accessories
 - Cyclopentane tank, piping and accessories
 - Pre-mixing facilities
 - High pressure foaming machine and allied equipment
 - Backup power
 - Antistatic flooring
 - Nitrogen generator and Nitrogen supply system
 - Fire fighting and safety equipment
- Procurement of local materials including piping, hoses etc.
- Overseas training
- Completion of preliminaries
- Modification of dry parts
- Installation, testing commissioning and trial run
- Third party safety certification

The procurement of equipment was done by UNIDO applying their international competitive bidding procedures. The main equipment was supplied by Cannon, Italy. The local supply was done by Matrix, Lahore. The safety certification was done by TUV. The Selected pictures of the conversion technology to Cyclopentane and safety certification for the plants is provided below:

Dawlance plant, Karachi



United Refrigeration Industries Limited plant, Hyderabad




ZERTIFIKAT ♦ CERTIFICATE ♦ 25727 38 ♦ CERTIFICADO ♦ CERTIFICAT



Declaration of Compliance

N. 225305-05
Referred to TÜV Italia Report R-IB-225305-05 rev.2

Based on visit at the plant:
A2B - DAWLANCE
HYDERABAD, PAKISTAN



carried out on the 22nd of March 2014.

Herby **WE DECLARE** that the separately marked equipments, according to the Directive 94/9/CE, are installed reflecting the requirements of relatives zone defined by ATEX CANNON.

The technical evaluation and references documents are listed on the report:
R-IB-225305-05 Rev. 2

Seito San Giovanni (MS), October, 29th 2014




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Haier Pakistan plant, Lahore




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Declaration of Compliance

N. 225305-02
Referred to TÜV Italia Report R-IB-225305-02 rev.2

Based on visit at the plant:
HAIER
LAHORE, PAKISTAN




carried out on the 26th of March 2014.

Herby **WE DECLARE** that the separately marked equipments, according to the Directive 94/9/CE, are installed reflecting the requirements of relatives zone defined by ATEX CANNON.

The technical evaluation and references documents are listed on the report:
R-IB-225305-02 Rev. 2

Seito San Giovanni (MS), July, 09th 2014



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Varioline Intercool plant, Lahore



The timely implementation of these projects has helped Pakistan to achieve its 2015 obligation. In order to accomplish the other targets for the phasing out of HCFC, Pakistan has prepared a stage-II document for submission to 76th ExCom of the Montreal Protocol. This program is intended for 2016-2040. Through this program, the remaining HCFC including HCFC-141b, HCFC142b and HCFC-22 shall be phased out in the manufacturing as well as in servicing sector. Based on the established base line for Pakistan, the left over HCFCs to be phased out in stage-II is 2,332 MT which translate to 168.3 ODPT. The numbers of industries considered for conversion to alternate technology in various sub-sectors in manufacturing including amount of HCFC to be phased out, proposed alternate technology and emission reduction in CO₂ eq.MT/Y is provided in the table below:

Application	HCFC	Amount MT	No. of Industries	Alternate Technology	Emission Reduction
PU Sandwich Panels	141b	175.1	4	Cyclopentane	122,220
Flexible Foam	141b	114.8	4	CO ₂ Water based	81,738
Thermoware PU Foam	141b	283.7	8	CO ₂ Water based	201,994
Commercial Refrigeration	141b	19.5	1	Cyclopentane	13,611
Pipe PU Insulation	141b	14.1	1	Cyclopentane	9,842
Extruded Polystyrene	142b/R22	119.3	1	CO ₂ , DME, u-HFC	251,294
Domestic AC manufacturing	R22	584.3	6	HC-290	1,037,168
Commercial AC manufacturing	R22	131.7	3	*	
Total of above		1442.5	28		1,717,867
Spray Foam	141b	107.6	15 machine	Supercritical CO ₂	76,576
Total		1,550.1			1,794,443

*The alternate technology shall be decided later

Most of these industries are mainly in Karachi and Lahore.

The above projects in manufacturing shall be implemented by UNIDO. It is proposed that these projects should be implemented through three tranches funded through the Multilateral Fund for the implementation of Montreal Protocol. However, 782 MT of HCFC 22 is consumed in servicing sector shall be phased out through the following non-investment components by UNEP.

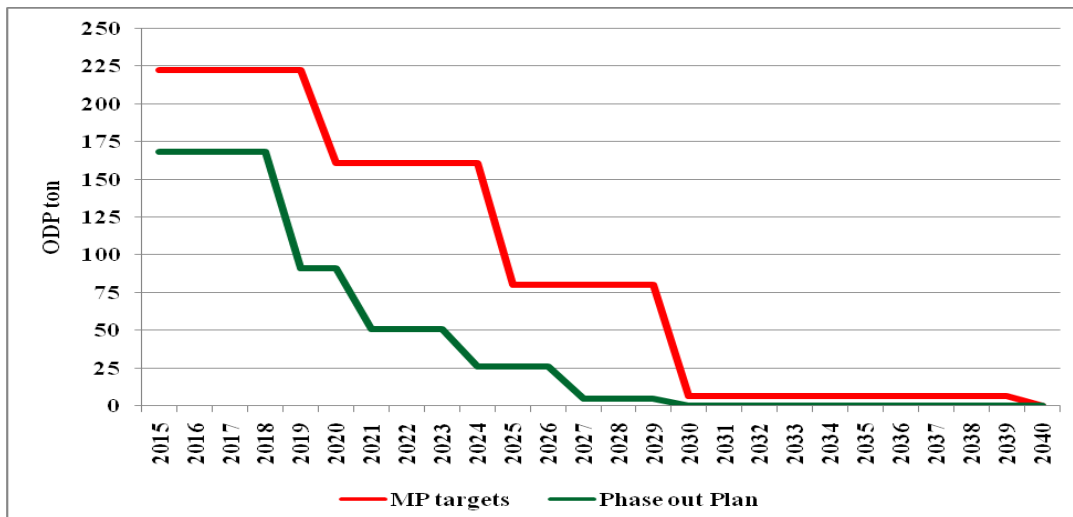
- Policy and Enforcement Capacity-building
- National Project for Training Service Technicians
- National Recovery and Recycling Project
- Awareness

UNIDO shall still be responsible for the procurement of equipment for the National Recovery and Recycling Project.

HPMP Stage-II is planned to be implemented through a grant fund of approx. US\$ 21.5 million through following:

- Tranche-1 US\$ 9.6 million 141b conversion in PU sandwich panels (4 projects), flexible foam (4 projects), Thermoware (8 projects), 142b/ R22 in extruded polystyrene (1 project), R-22 to R290 in 1 domestic AC manufacturing project, 50% cost of training equipment and some part of money for non-investment component by UNEP is covered under this tranche.
- Tranche-2 US\$ 7.7 million 141b conversion in commercial refrigeration (1 project), Pipe PU insulation (1 project), spray foam (number of SMEs), R-22 to R290 in 3 domestic AC manufacturing project, remaining 50% cost of training equipment and some part of money for non-investment component by UNEP is covered under this tranche.
- Tranche-3 US\$ 3.8 million R-22 to R290 conversion in 2 domestic AC manufacturing project, R-22 to R-407C in Commercial AC manufacturing (3 projects) and some part of money for non-investment component by UNEP is covered under this tranche.
- Tranche-4 US\$ 0.40 million Remaining part of money for non-investment component by UNEP is covered under this tranche.

The target as set by the multilateral fund is provided in the table below in red color whereas the overarching plan for the phasing out of HCFC in Pakistan is provided in green color.



HCFC Phase-out Management Plan Pakistan Stage-II was presented by UNIDO consultant Mr. Iqbal P. Sheikh on the Ozone day September 16, 2015 in collaboration with Ministry of Climate Change, Govt. of Pakistan.

It is presumed that the phase out plan shall be discussed by the stakeholders including respective ministries, UNIDO, UNEP, manufacturers and importers of HCFCs within this year. Once the program is agreed by the stakeholders, the document shall be submitted to the 76th Ex-Com by UNIDO as leading implementing agency.