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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Seventy-fifth Meeting
Montreal, 16-20 November 2015

PROJECT PROPOSAL: ZIMBABWE

This document consists of the comments and recommendation of the Secretariat on the following project proposal:

Phase-out

- HCFC phase-out management plan (stage I, third tranche) Germany

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Zimbabwe

| (I) PROJECT TITLE | AGENCY | MEETING APPROVED | CONTROL MEASURE |
|-------------------------------|----------------|------------------|-----------------|
| HCFC phase-out plan (Stage I) | Germany (lead) | 65 th | 35% by 2020 |

| (II) LATEST ARTICLE 7 DATA (Annex C Group I) | Year: 2014 | 13.32 (ODP tonnes) |
|--|------------|--------------------|
|--|------------|--------------------|

| (III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes) | | | | | | | | Year: 2014 | |
|---|---------|------|---------------|---------------|------------|---------|---------------|------------|--------------------------|
| Chemical | Aerosol | Foam | Fire fighting | Refrigeration | | Solvent | Process agent | Lab use | Total sector consumption |
| | | | | Manufacturing | Serviceing | | | | |
| HCFC-123 | | | | | | | | | |
| HCFC-124 | | | | | | | | | |
| HCFC-141b | | | | | 0.04 | | | | 0.04 |
| HCFC-141b in Imported Pre-blended Polyol | | 6.01 | | | | | | | 6.01 |
| HCFC-142b | | | | | | | | | |
| HCFC-22 | | | | | 13.28 | | | | 13.28 |

| (IV) CONSUMPTION DATA (ODP tonnes) | | | |
|---|-------|--|-------|
| 2009 - 2010 baseline: | 17.80 | Starting point for sustained aggregate reductions: | 23.91 |
| CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes) | | | |
| Already approved: | 12.34 | Remaining: | 11.57 |

| (V) BUSINESS PLAN | | 2015 | 2017 | 2020 | Total |
|-------------------|----------------------------|---------|---------|--------|---------|
| Germany | ODS phase-out (ODP tonnes) | 1.3 | 2.0 | 0.7 | 4.0 |
| | Funding (US \$) | 125,398 | 188,097 | 62,699 | 376,194 |

| (VI) PROJECT DATA | | | 2011 | 2012 | 2013 | 2015 | 2017 | 2019 | 2020 | Total |
|---|---------|---------------|-------|---------|---------|---------|---------|------|--------|-----------|
| Montreal Protocol consumption limits | | | n/a | n/a | 17.8 | 16.0 | 16.0 | 16.0 | 11.6 | n/a |
| Maximum allowable consumption (ODP tonnes) | | | n/a | n/a | 17.8 | 16.0 | 16.0 | 16.0 | 11.6 | n/a |
| Agreed funding (US\$) | Germany | Project costs | 7,474 | 419,417 | 275,927 | 112,000 | 168,000 | | 56,000 | 1,038,818 |
| | | Support costs | 972 | 50,096 | 33,008 | 13,398 | 20,097 | | 6,699 | 124,270 |
| Funds approved by ExCom (US\$) | | Project costs | 7,474 | 419,417 | 275,927 | 0.0 | 0.0 | 0.0 | 0.0 | 702,818 |
| | | Support costs | 972 | 50,096 | 33,008 | 0.0 | 0.0 | 0.0 | 0.0 | 84,076 |
| Total funds requested for approval at this meeting (US\$) | | Project costs | 0 | 0 | 0 | 112,000 | 0 | 0 | 0 | 112,000 |
| | | Support costs | 0 | 0 | 0 | 13,398 | 0 | 0 | 0 | 13,398 |

| | |
|--------------------------------------|------------------|
| Secretariat's recommendation: | Blanket approval |
|--------------------------------------|------------------|

PROJECT DESCRIPTION

1. On behalf of the Government of Zimbabwe, the Government of Germany as the designated implementing agency, has submitted to the 75th meeting a request for funding for the third tranche of stage I of the HCFC phase-out management plan (HPMP), at the amount of US \$112,000, plus agency support costs of US \$13,398. The submission includes a progress report on the implementation of the second tranche and the tranche implementation plan for 2015 to 2017.

Report on HCFC consumption

HCFC consumption

2. The Government of Zimbabwe reported a consumption of 13.32 ODP tonnes of HCFC in 2014. The 2010-2014 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Zimbabwe (2010-2014 Article 7 data)

| HCFC | 2010 | 2011 | 2012 | 2013 | 2014 | Baseline |
|----------------------|--------------|---------------|---------------|---------------|---------------|--------------|
| Metric tonnes | | | | | | |
| HCFC-22 | 316.4 | 350.69 | 294.54 | 286.46 | 241.40 | 306.4 |
| HCFC-141b | 10.0 | 4.86 | 0.00 | 0.00 | 0.41 | 8.5 |
| Total (mt) | 326.4 | 355.55 | 294.54 | 286.46 | 241.81 | 314.9 |
| ODP tonnes | | | | | | |
| HCFC-22 | 17.40 | 19.29 | 16.20 | 15.76 | 13.28 | 16.9 |
| HCFC-141b | 1.10 | 0.53 | 0.00 | 0.00 | 0.05 | 0.9 |
| Total (ODP) | 18.50 | 19.82 | 16.20 | 15.76 | 13.32 | 17.8 |

*Average consumption between 2007 and 2009

3. Consumption of HCFC-22 peaked in 2011 due to the favourable economic growth prevailing at the time. Since then, HCFC consumption has progressively decreased to 13.28 ODP tonnes in 2014, which is below the maximum allowable consumption of 16.0 ODP tonnes in 2015.

Country programme (CP) implementation report

4. The Government of Zimbabwe reported HCFC sector consumption data under the 2014 CP implementation report which is consistent with the data reported under Article 7.

Progress report on the implementation of the second tranche of the HPMP

Legal framework

5. The Government of Zimbabwe has an import and export licensing system in place for HCFCs and all refrigerant importers are registered with the National Ozone Unit (NOU), which is responsible for approving import permits for ODS.

6. At the 65th meeting, the Government of Zimbabwe committed to ban imports of HCFC-141b both pure and/or contained in imported pre-blended polyols by no later than 1 January 2015 once the foam enterprises were converted to a non-HCFC alternative technology and the service practice of using HCFC-141b for flushing refrigeration circuits has ceased. However, due to delays in finalizing the conversion of the foam enterprises, the ban has been deferred to 1 January 2016. A ban on HCFC-22-based equipment will be considered in future years as such a ban at the present time would have an adverse impact on local consumers and industry.

Manufacturing sector

7. The first tranche of the HPMP included funding for the conversion of five foam enterprises (Capri Refrigeration, Ref-air Refrigeration, Commercial Refrigeration Enterprises, Delfy Enterprises, and Freezing Modern Way Refrigeration), which manufacture rigid insulation foam for domestic and commercial refrigeration equipment and sandwich panels used in cold rooms using HCFC-141b contained in imported pre-blended polyols.

8. During implementation of the project, as a result of a reduction in foam production at Commercial Refrigeration Enterprise the company was converted to water-blow technology instead of pentane technology as the pentane-based equipment was too expensive to operate. Accordingly, engineering, designing and electrical modifications were introduced to the baseline equipment, at a lower cost. The enterprise will manufacture foam using water-blown technique until such time when the production levels picked up and it could return to pentane-based production (at no additional costs to the Fund). The cost of the equipment for Capri Refrigeration and Ref-air Refrigeration was slightly higher than expected and, therefore, it was decided to cover those costs from the savings from the conversion of Commercial Refrigeration Enterprise, as shown in Table 2. Technical assistance was provided to Delfy Enterprises and Freezing Modern Way Refrigeration as the foam is produced manually.

Table 2. Cost for conversion of the three main manufacturing enterprises under stage I of the HPMP

| Enterprise | Approved (US \$) | Actual (US \$) | Difference (US \$) |
|---|-------------------------|-----------------------|---------------------------|
| Capri Refrigeration | 195,274 | 209,250 | 13,976 |
| Ref-air Refrigeration | 173,515 | 195,750 | 22,235 |
| Commercial Refrigeration | 70,027 | 18,851 | -51,176 |
| Technical assistance installation and commissioning costs for all 5 companies | 40,000 | 54,985 | 14,985 |
| Total | 478,816 | 478,836 | 20 |

9. The conversion of the five foam enterprises was completed on July 2015, resulting in the phase-out of 55.50 mt (6.11 ODP tonnes) of HCFC-141b contained in imported pre-blended polyols.

Refrigeration-servicing sector

10. The activities implemented under the first tranche are as follows:

- (a) Six training workshops for 65 customs officers in controlling imports of ODS blends and ODS-based equipment. The National Ozone officer (NOO), accompanied by a customs trainer, conducted visits to entry ports to assess the preparedness of customs officers in dealing with illegal ODS imports and provided on-the-job training;
- (b) Six training workshops for 138 refrigeration service technicians, including handling hydrocarbon (HC) refrigerants in storage, transportation, brazing, working environment, risk assessments and correct charges;
- (c) Development of training materials, code of practice and certification scheme for technicians;
- (d) Purchase and distribution of 20 recovery machines to local industry, and procurement of 45 sets of tools for technicians (e.g., gauges, pliers, and vacuum pumps); and
- (e) Demonstration activities relating to air conditioning (AC) conversions to R-290.

Project implementation and monitoring unit (PMU)

11. The monitoring and reporting requirement tasks are shared between the NOU and the Government of Germany.

Level of fund disbursement

12. As of August 2015, of the US \$702,818 so far approved, US \$671,014 (95 per cent) had been disbursed. The balance of US \$31,804 will be disbursed in 2015 (Table 3).

Table 3. Financial report of stage I of the HPMP for Zimbabwe (US \$)

| Agency | First tranche | | Second tranche | | Total approved | |
|------------------------------|---------------|-----------|----------------|-----------|----------------|-----------|
| | Approved | Disbursed | Approved | Disbursed | Approved | Disbursed |
| Germany | 426,891 | 424,037 | 275,927 | 246,977 | 702,818 | 671,014 |
| Disbursement rate (%) | 99 | | 89 | | 95 | |

Implementation plan for the third tranche of the HPMP

13. The third funding tranche of the HPMP will be implemented between December 2015 and December 2017, and the following activities will be undertaken:

- (a) Two training workshops for 30 customs officers in controlling imports of ODS blends and ODS-based equipment (US \$8,500);
- (b) Fifteen training workshops for 300 technicians on best practices and safe use of HCs (US \$49,000);
- (c) Finalization and enforcement of national standard for the certification of refrigeration and air-conditioning (RAC) technicians (US \$10,000);
- (d) Incentive scheme for conversion to non-ODS alternatives (US \$34,000);
- (e) Delivery of the remaining set of tools for technicians (balance from previous tranches); and
- (f) Project monitoring and reporting on implementation of the HPMP activities.

SECRETARIAT'S COMMENTS AND RECOMMENDATION**COMMENTS**Progress report on the implementation of the second tranche of the HPMP*Legal framework*

14. The Government of Zimbabwe has already issued HCFC import quotas for 2015 in accordance with the Montreal Protocol control targets. The ban on imports of HCFC-141b both pure and contained in imported pre-blended polyols has been deferred to 1 January 2016 as the conversion of the foam enterprises was completed only in July 2015, instead of 2014 as originally proposed.

Manufacturing sector

15. With regard to the redistribution of the funding level among the foam enterprises, the Secretariat noted that the five enterprises consumed all the HCFC-141b contained in imported pre-blended polyols.

Noting that the three main foam enterprises were to be converted at the same time and to the same alternative technology, at the time of the approval of the project it was agreed to rationalize the costs of safety audit, technology transfer, training, trials and commissioning. Additionally, both Capri Refrigeration and Commercial Refrigeration agreed to provide US \$25,000 each; and Ref-air Refrigeration US \$5,000 as counterpart funding. With the redistribution of funding, the three enterprises were able to convert to a low-global-warming potential (GWP) technology and phase-out 53.00 mt (5.83 ODP tonnes) of HCFC-141b contained in imported pre-blended polyols. The two small enterprises with no equipment in the baseline phased out their total consumption of 2.5 mt (0.27 ODP tonnes) through technical assistance and training. With the reallocation of the funds approved, in line with the flexibility clause of its Agreement with the Executive Committee, the Government of Zimbabwe assistance from the Government of Germany was able to convert the five enterprises.

16. The Executive Committee agrees that the country may have the flexibility to reallocate the approved funds, or part of the funds, according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances.

Refrigeration-servicing sector

17. The Government of Zimbabwe has implemented most of the activities planned under the second tranche and gave due consideration to the long-term sustainability of the training programme for customs officers and refrigeration technicians. The beneficiary training institution organizes at least one training session a year for technicians at their own expense to promote ownership of the training activities. Accordingly, the training programme planned under the third tranche will be partly funded by participants. According to the Government of Germany, this training has gained importance with the development of the certification scheme for technicians.

18. With respect to the issue related to the retrofits to HC, the Government of Zimbabwe undertook a number of demonstration activities to promote the safe conversion of air-conditioning systems to HC-290-based and clarified that all conversions are done through the understanding that liability lies solely with the technician who is expected to comply with HC safe handling practices and the code of practice developed by the refrigeration association. The responsibility in case of an accident is clearly specified in the certificates issued to technicians who successfully pass the certification exam. Furthermore, it was confirmed by the Government of Germany that the Government of Zimbabwe is fully aware of decisions 72/17¹ and 73/34² on retrofit of refrigeration systems with flammable refrigerants.

Conclusion

19. HPMP implementation is progressing and the country is in compliance with the Montreal Protocol and its Agreement with the Executive Committee. The country's import licensing and quota system is operational; the 2014 HCFC consumption was already 17 per cent below the maximum allowable consumption in 2015. The conversion of the five foam enterprises has been completed resulting in a phase-out of 55.50 mt (6.11 ODP tonnes) of HCFC-141b contained in imported pre-blended polyols, and therefore, the ban on imports of HCFC-141b both pure and contained in imported pre-blended polyols will be effective on 1 January 2016. The Government of Zimbabwe has developed innovative approaches for ensuring the sustainability of the training programme as the beneficiary training institutes have to conduct at least one training each year at their own expense. Customs officers and refrigeration

¹ To include in the approval of HPMPs, tranches, projects or activities that proposed the retrofit of HCFC-based refrigeration and air-conditioning equipment to flammable or toxic refrigerants that the Executive Committee notes that, if the country engages in retrofitting HCFC-based refrigeration and air-conditioning equipment to flammable or toxic refrigerants and associated servicing, it does so on the understanding that they assume all associated responsibilities and risks.

² If a country were to decide, after taking into account decision 72/17, to proceed with retrofits that used flammable substances in equipment originally designed for non-flammable substances, it should be done only in accordance with the relevant standards and protocols.

technicians have been trained, while refrigerant identifiers have been purchased and distributed to the customs officers. The level of fund disbursement is over 95 per cent. The activities implemented under the previous tranches, and those planned under the third tranche, will further strengthen the servicing sector and ensure the long-term sustainability of the activities in stage I of the HPMP.

RECOMMENDATION

20. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of:
 - (i) The progress report on the implementation of the second tranche of stage I of the HCFC phase-out management plan (HPMP) in Zimbabwe; and
 - (ii) The ban on imports of HCFC-141b both pure and contained in imported pre-blended polyols which was postponed from 1 January 2015 to 1 January 2016 as the five foam enterprises completed their conversion to non-HCFC-141b technology in July 2015.

21. The Fund Secretariat further recommends blanket approval of the third tranche of stage I of the HPMP for Zimbabwe, and the corresponding 2015-2017 tranche implementation plan, at the funding level shown in the table below, on the understanding that if Zimbabwe were to decide to proceed with retrofits and associated servicing to flammable and toxic refrigerants in refrigeration and air-conditioning equipment originally designed for non-flammable substances, it would do so assuming all associated responsibilities and risks and only in accordance with the relevant standards and protocols:

| | Project title | Project funding (US \$) | Support cost (US \$) | Implementing agency |
|-----|--|------------------------------------|---------------------------------|--------------------------------|
| (a) | HCFC phase-out management plan (stage I, third tranche) | 112,000 | 13,398 | Germany |