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FINAL EVALUATION REPORT OF MULTI-YEAR AGREEMENT PROJECTS

Executive summary

1. This report follows the recommendations of a previous desk study for the evaluation of multi-year agreements (MYA) to further inquire into a series of issues related to the effectiveness of MYA activities and for lessons learned and good practices for the implementation of the HCFC phase-out management plans (HPMP). It is based on data collected during field visits to eight non-LVC countries between January and February 2013 and it focuses mainly on refrigeration and foam sectors. Within this scope the evaluation investigated the efficiency of training of refrigeration technicians and of customs and other enforcement officers; recovery and recycling (R&R) activities; incentive programmes to convert the equipment of end users; communication and awareness activities; and conversions in manufacturing sectors. It also examined issues related to funding, regulatory and policy issues; reporting issues and causes of delays in implementation.

Findings and lessons learned

2. The refrigeration training activities have contributed not only to promote actual reduction in CFC consumption but also to build the credibility of the sector on the government actions and on environmental initiatives in general, which will certainly create a favourable ground for future endeavours and most certainly for the HPMP implementation.

3. Similarly, the training initiatives have promoted the creation of a sector network both formal through the trade associations and informal, that will be instrumental in facilitating the activities for HCFC phase-out and will contribute to the increased formalization and added professionalization of the trade and thus contributing to the country's path towards further economic development.

4. National CFC and ODS phase-out plans (NPPs) incorporate training in good servicing practices for refrigeration technicians either as a continuation of refrigerant management plans (RMPs) or as a distinctive component. Furthermore, training is often accompanied by procurement and distribution of servicing tools. With timely implemented, these joint efforts impact on the reduction of ODS emissions. This result however has not been accurately estimated for lack of an appropriate methodology.

5. Experience in several countries has demonstrated that a training qualification certificate is a powerful incentive for potential trainees. Not all the countries under review use this stimulus, however. It would therefore be beneficial for the implementation of HCFC phase-out management plans (HPMP) if the Executive Committee could urge Article 5 countries to consider developing policies for the inclusion of such certificates for refrigeration technicians.

6. A cause of concern is the undesirable market developments that may affect the normal progress of an otherwise successful ODS phase-out process, such as the massive presence of low quality CFC alternatives that not only can damage the equipment but also the attitude of the sector towards change.

7. In some countries the training of customs and related initiatives have met with the specific challenges and characteristics of the sector such as the mandatory rotation of personnel, the limitations and obsolescence of the refrigerant identifier equipment and the lack of the required infrastructure for proper enforcement of the regulations, such as the absence of accreditation level laboratory facilities. Some of these will need to be addressed during the HPMP design and implementation process.

8. Communication and awareness activities have been widely used to inform the general public as well as decision makers at all levels. In every country this resulted in an increased level of support from authorities at the central and community level and this fact alone would encourage the continued use of communication and awareness activities in future HPMP endeavours.

9. Some countries faced challenges in the implementation of previous MLF projects such as the late start and untimely implementation of project activities including policy and regulatory measures, and the slow disbursement of project funds due, in part at least, to lengthy government procedures. The MYA approach would seem to help in overcoming some of the difficulties by encompassing into one single project all the initiatives for HCFC phase-out, but that alone may not be enough to guarantee a successful and timely implementation of HCFC phase-out which would call for more focused assistance to the countries by the Multilateral Fund (MLF).

10. The existing recovery, recycling and reclamation (RR&R) equipment is now successfully used for collecting and recycling HCFC-22 and therefore reducing the demand for HCFC imports. However, implementing agencies and NOUs need to develop further the logistical connection between refrigerant collection points and recycling and reclamation centres. They should support the regulatory binding conditions for quality assurance and scope of coverage, as well as the economic model for a sustainable operation, including a system of incentives and stimulus.

11. A recurrent recommendation during the field visits pointed out the need to maintain and enhance institutional strengthening activities as a main factor for ensuring sustainability of results.

12. UNIDO provided support in development of a software for computerized systems connecting customs and NOU databases. A successful example of such an undertaking is China. The Executive Committee may request UNEP in cooperation with UNIDO to disseminate the information about this positive experience. In addition, China reported a very successful experience in participating in the Prior Informed Consent (PIC) system that helps to control ODS illegal trade.

13. In some countries the accumulated amount of recovered contaminated ODSs created problems with storage, control and treatment. Monitoring and data collection on R&R operations proved to be a difficult and resource intensive task for some countries while others coped with this task pretty well. The positive experience needs to be documented and shared with the interested parties.

14. An important result of, and a lesson learned from the phase-out process relates to its impact on people's lives. All agreements stress that the CFC phase-out should be achieved without loss of jobs and economic duress. The evaluation found evidence that not only did this not happen but also that in general the impact was a positive one. For example in India a foam company that converted from CFC-11 to HCFC141b continued to produce with this latter substance and even increased production three-fold since conversion and informed that after conversion the product had better quality and the number of customers had increased. In Mexico the training of refrigeration technicians gave a new start up to an until then declining profession. In Bangladesh the training led to the creation of professional associations that shaped the profession and facilitated contacts and information sharing within the sector. These results that may not be the primary objective of the MLF activities may deserve to be better documented.

Recommendations

15. Training of refrigeration technicians alone or together with procurement and distribution of servicing tools is deemed to have an impact on the reduction of ODS emissions. This impact however has not been accurately estimated for the absence of an accurate methodology. The Executive Committee may encourage UNEP to develop a methodology to quantitatively assess the impact of training programmes on ODP phase out.

16. It is recommended that the Implementing Agencies take into account the existence of low quality CFC alternatives in the market when preparing future Montreal Protocol activities.
17. During HPMP design and implementation process the Implementing Agencies should devise measures to improve the conditions surrounding the training of customs especially those related to the enforcement of regulations, the adequacy of the infrastructure and equipment.
18. NOUs and Implementing Agencies need to support Governments in developing regulations to assure the quality of reclaimed refrigerant as well as of a system of incentives and stimuli to promote R&R of ODS and HFC refrigerants.
19. It is recommended that the NOU from China with the help of UNEP share its successful experience with the Prior Informed Consent (PIC) at one of UNEP's regional networks.
20. Implementing Agencies and NOUs should continue to work together to improve communication and awareness activities about the phase-out of HCFC for both decision makers and general public
21. It is recommended that UNEP in collaboration with UNIDO and NOU from China disseminate information about the positive experience in development of software that helps connecting customs and NOU database in China.
22. The Executive Committee may request UNEP to establish a system of monitoring and collection of data on R&R and disseminate the information about positive experience through CAP regional offices and network meetings.
23. The Executive Committee may wish to note the final evaluation report of multi-year agreement projects as presented in document UNEP/OzL.Pro/ExCom/69/12.

Introduction

24. On July 2012 the Executive Committee approved the second phase of the evaluation of multi-year agreement (MYA) projects (decision 66/12). A first phase, the "Desk study on the evaluation of multi-year agreements"-(document UNEP/OzL.Pro/ExCom/65/9) had previously been prepared. The desk study reviewed a sample of 36 MYAs from 32 countries and came out with a series of conclusions related to the functioning of MYAs as well as with issues recommended for further consideration. The terms of reference based on the findings of the desk study stress the effectiveness of MYA activities in phasing out ODS and/or contributing to compliance. Among the activities listed there are training of refrigeration technicians and of customs and other enforcement officers; R&R activities; of incentive programmes to convert equipment of end users; communication and awareness activities; conversions in manufacturing sectors. Other issues relate to funding, regulatory and policy issues; reporting issues and causes of delays in implementation.
25. Three consultants visited separately a sample of eight non-LVC countries in various geographical regions, collected information and drafted country reports which served as material for the preparation of this synthesis report. The countries are Bangladesh, Chile, China, Colombia, Egypt, India, Mexico and Turkey and the inquiry focused mainly on refrigeration projects and on some dealing with foam. In two countries the evaluation was limited by effective or potential social unrest but in all countries the collaboration of local offices was excellent.
26. The draft reports were shared with implementing agencies and NOUs to ensure correct reporting of the factual information collected during the country visits. The final case study reports took into

account these comments. Country reports are available on-line in the evaluation library or can be requested from the Fund Secretariat.

27. The case study methodology used for this inquiry allowed for defining the main questions and selecting the methods for data collection. A matrix with issues and detailed questions was prepared. During the field visits individual and group interviews with various national stakeholders including the National Ozone Office, the customs counterpart, and various beneficiaries took place. These interviews were supplemented with the collection of secondary data from beneficiaries (brochures, access to records) and also direct observation of end-user sites and private sector workshops. Data collected at the field level was compared with information from documents. Implementing and bilateral agencies and National Ozone Units (NOUs) reviewed the drafts for factual accuracy of information

Effectiveness of MYA activities in phasing out ODS and/or contributing to compliance

Training of refrigeration technicians

28. National ODS, CFC phase-out plans or sector CFC phase-out plans include training programmes for refrigeration technicians in all the countries under review. At the time of their NPP approvals, three countries (Bangladesh, Chile and Egypt) continued implementation of their RMP activities, including the training components that had subsequently been incorporated into the NPP training activities. The total number of technicians was estimated through surveys conducted in the refrigeration servicing sectors. Four NPPs established targets for the number of servicing technicians to be trained. Typically, the implementation of training programmes requires numerous preparatory activities, including but not limited to procurement of training equipment, establishment of training facilities, development and printing of training materials as well as identification, selection and training of a minimum number of qualified trainers. All countries provided records on how many technicians were trained and how many training facilities had been established/equipped (see Annex I).

29. The percentage of trained to total estimated number of technicians in the countries varies from 5 per cent in Egypt to 97 per cent in Turkey. In Egypt, however, an additional 276 technicians were trained under the RMP and an unknown number under the drop-in retrofit programme. Three countries significantly exceeded the targets established in their NPPs (Colombia, Mexico and Turkey). In another five countries the percentage of trained to targeted number of technicians varies from 32 per cent to 83 per cent.

30. Training was provided through a variety of institutional settings, from national universities and vocational schools (China, Mexico) to specialized training institutes (Chile, Colombia) or specific structures created for this purpose. In India for example training is carried out by 15 training cells under the direction of the Regional management organization (RMO) (the equivalent of a Project Management Unit (PMU)). Each cell includes an organizer, a recruiter and a training institute with a team of four trainers, usually serving more than one state. In Chile the main provider of training is a private non-profit organization the National Professional Training Institute (INACAP) with centres throughout the country but training is also provided in some vocational schools. In China training activities for the refrigeration servicing centres were developed through 15 training centres (one at the national level and 14 at the regional level) located in universities and local associations. While it is difficult to decide which is the most sustainable configuration as very different settings seem to work well, it is however sure that sustainability will depend on the local participation and ownership.

31. While initially training activities were met with mistrust in some countries, in all eight cases the evaluation team was able to document the positive effect of the training programmes and of the provision of servicing tools on the achievement of their CFC phase-out targets. The case of Mexico is illustrative. At the onset of the Montreal Protocol-related activities a number of institutions were removing

refrigeration training activities from their curricula. This trend is currently reversed and the refrigeration career is being re-introduced and has gained popularity.

32. Training in good servicing practices and the use of appropriate servicing tools had probably an impact on the reduction of ODS emissions. Servicing shops visited in India confirmed that their consumption of refrigerant was reduced from 10 per cent to 40 per cent after the servicing personnel graduated from the training course and changed their servicing practices. The magnitude of the positive impact appears to be directly tied to the timeliness of conducting and completion of the training programme. For example while all identified refrigeration technicians were trained in Turkey, the training impact on the reduction in country ODP consumption was likely to be marginal due to serious delay in the implementation. The training of the majority of technicians was completed in 2007 while zero CFC consumption was reported in 2006 and 2007 in Turkey.

33. Reacting to decision 54/11(a)(iii), the evaluation team inquired whether charging participants or their employers a fee for technical training would be an appropriate measure. This measure was applied in some countries. In India a registration fee of 200 Rupees (US \$3.6) was charged mostly to ensure that trainees did not abandon the course. In Turkey, some training centres provide training to companies on a commercial basis. The beneficiaries had a mitigated attitude. In Egypt, the owner of a MAC servicing workshop expressed the willingness to pay a certain fee if his employee would be trained to new technology.

34. The training certificate ascertains that a trainee passed successfully the training course. The absence of a certificate increases the prospects of unsuitable personnel servicing refrigeration and air conditioning equipment. Certificates, however do not receive the same importance in the countries under review. In Turkey, the certificate is mandatory for technicians to purchase ODS refrigerant. In Mexico, trained technicians are registered in a computerized database, and consequently get better access to business opportunities. In Egypt, the holder of a certificate has no advantages since a certificate as such is not perceived as an indication of higher qualification. In Bangladesh however training has a strong support from the Government and every graduation act was attended by the local Government head and a Department of Environment official. Evidence of the importance attached to the training by the participants was that the training certificates were being used for work references in the region and for identity purposes as well, since the national certification card was introduced in 2003 only.

35. It is worth noting that new training will be required as soon as new technologies will become available. Interviewees in all the countries stated that the both infrastructure and experience gained would be useful for continuing training activities under HPMPs. The focus of training activities under HPMPs should be on air-conditioning sector, which was not the case in NPP training programmes.

36. In India the training programme is considered extremely successful. Several factors contributed to this result:

- (a) Formation of one group for coordination;
- (b) Regular coordination meeting;
- (c) Delegation of responsibilities to training partners;
- (d) Reporting on completion and monitoring; and
- (e) Timely corrective actions (for instance on training material). The CFC “training model” was shared with other countries in the region as the “Indian training methodology and experience” and is being used for the continuation of training under HPMP.

Recovery and recycling

37. The objective of the RR&R activities in NPPs was to permanently reduce the demand for imported refrigerants, and to lower the cost of early CFC-based equipment retirement by using recovered and recycled CFCs. Countries applied various strategies in deployment and using the R&R equipment. For example China deployed the bulk of recovery machines in disposal stations dealing with old cars, refrigerators and ships. A relatively small portion of recovery machines was delivered to commercial and industrial refrigeration servicing centres. All the recycling machines were delivered to MAC servicing workshops. In Mexico, the R&R project benefited greatly from energy efficiency incentive programme set up to recover older refrigeration equipment by exchanging old refrigerators with new more energy efficient appliances. (Cambia tu Viejo programme– literally “Change Your Old One, with a word play on Viejo/old which in Spanish can be interpreted as “change your old man”) Recovery machines were installed at 110 collection centres and this strategy proved in most cases to be very effective supported by a steady stream of ODS-containing equipment being brought to the R&R station.

38. In Mexico and Chile significant quantities of recovered contaminated refrigerants created problems in adequately controlling this material. In Colombia, HCFC-22 refrigerant prevailed in R&R operations and the growing concern over hazardous wastes and the apprehension about quality of recovered refrigerant stimulated the establishment of reclamation capabilities. Five reclamation centres will be operational at the end of 2013.

39. The procurement and delivery of RR&R equipment was much slower than planned in Turkey. The project was completed at the time when CFC consumption virtually stopped. The establishment of three reclamation centres had not real impact on the reduction of CFC-12 demand. Recovery machines have been used predominantly for recovery and reuse of HCFC-22 and HFC-134A refrigerants on the spot. Servicing technicians in the absence of incentives are not willing to collect and deliver the recovered refrigerant to recycling and reclamation centres because of logistical barriers.

40. On the other hand the success of the R&R programme in India is due, to a significant extent to the way the programme was promoted. A video for technicians, which was the main vehicle to encourage technicians to join the programme clearly highlighted the economic benefits the new procedures would bring to the workshop owner. This was done in a very convincing way since the actors in the video were actual technicians. The approach seems to be worthy of replication.

41. The establishment of monitoring system for the recovered and reused refrigerants proved to be problematic in Bangladesh, Egypt, India and Turkey because of resource-intensive logistics. The monitoring systems are working satisfactorily in Chile, Colombia and Mexico.

Incentive programmes to convert equipment of end users

42. Countries visited employed various models in their efforts to convert end-user refrigeration equipment using non-CFC alternatives. Several NPPs initiated and supported retrofit programmes by means of drop-in refrigerants. The servicing workshops received the necessary tools, equipment and training. Bangladesh, Egypt and Turkey reported on massive use of this inexpensive scheme to retrofit mainly unitary plug-in equipment in domestic and commercial refrigeration sectors. This approach allowed extending the life-time of equipment without paying any financial incentives.

43. In Chile, the incentive end-user conversion programme addressed small commercial enterprises. A system including selection of applicants, payment of incentives to beneficiaries on a sliding scale (30 per cent to 90 per cent of the cost of conversion) and verification was elaborated. The programme was implemented successfully in several stages resulting in the conversion of 162 refrigeration units to non-CFC alternatives and bringing in some instances significant energy savings to the satisfaction of enterprise owners.

44. In Egypt and Turkey, these programmes initially targeted a sizable portion of end-users in commercial refrigeration sector. The implementation of these ambitious programmes however proved to be very difficult because these involved excessive administrative and management resources. Eventually they had to be downgraded in terms of number and scale of beneficiaries. In Turkey, only 4.7 per cent of initially allocated funding for the programme was disbursed. The balance was transferred to the chiller replacement programme which in contrast proceeded very successfully due to the creation of a revolving fund. It greatly surpassed the target set up in the NPP in terms the number of chillers replaced. In Egypt, the bulk of the programme funding was channelled to corporate end-users and mainly to Egyptian National Railways for retrofitting of about one third of its entire fleet of air-conditioned carriages, 116 in total. This project is of national importance for Egypt.

Communication and awareness-raising activities

45. The successful implementation of NPP planned activities in each country visited required outreach and raising awareness about ODS regulations, new technology and good servicing practices within the industry community. The involvement of various governmental and public entities needed the establishment of channels of communication and management, including steady monitoring. Each NPP budget had funds for awareness raising activities.

46. One can divide the awareness-raising activities implemented in the sample of countries in two categories: (a) activities aimed at building public support for legislation and policies on protection of the ozone layer. These included articles in the newspapers, radio and TV shows, books and calendars for children and (b) undertakings focused on facilitating the CFC phase-out process such as encouraging manufacturing companies to participate in conversion projects; promoting the participation of technicians in training activities; disseminating new policies and regulations to stakeholders and technology information among small and medium sized enterprises (SMEs) and servicing workshops. While the impact of awareness activities under the group (a) could not be evaluated the impact of group (b) activities could be sensibly assessed. Several countries have still reported on awareness campaigns directed to general public. However, most of reported awareness activities were oriented towards reinforcement of specific phase-out programmes bringing tangible results. One original approach took place in Mexico where the training manual on good servicing practices was illustrated through short demonstration type video clips produced at very low cost and made available on YouTube. These have so far been viewed close to 420,000 times.

47. Communications and awareness raising activities were also the main tools for achieving phase-out in small companies and even entire subsectors that were not eligible for funding. The cost-effectiveness of communications and awareness raising activities in this respect cannot be overestimated.

Conversions in the manufacturing sector

48. Conversion of manufacturing sectors in the eight Article 5 countries was addressed either through sector plans in China or as part of national phase-out plans in the other seven countries.

49. Each approach has its own specific features. The conversion of foam manufacturing enterprises presented a big challenge. In China initially there were more than 1,000 foam manufacturing companies in the sector some of which were absorbed by bigger companies and the rest were too small to be eligible for funding from the MLF. The implementation of the foam sector plan in China took place with the assistance of the China Plastic Processing Industry Association (CPPI) which is financed through membership fees paid by member companies, and reports to the Government. The CPPI visited and assisted each company to prepare its own conversion project. Eventually the sector phase-out was achieved through 11 group phase-out projects and 108 individual projects for a grand total of 358 companies converted. After the conversion, CPPI visited and monitored progress in each company

providing support to ensure the sustainability of the phase-out, through training on policies and regulations and safety issues. The Implementing Agency was able to monitor about 15 per cent of the sector. Similar approach was exercised in the implementation of refrigerator manufacturing sector plan.

50. In India, two CFC phase-out sector plans in the foam and refrigeration (manufacturing) sectors were merged together with the refrigeration servicing sector plan and included within the National CFC consumption phase-out plan (NCCoPP) at the time of its approval in April 2004. The convenience of having those projects as part of a more inclusive MYA created synergy and enhanced the coordination and optimization of other supporting initiatives such as policies and legislation, awareness raising activities and even training, all of which can effectively contribute to phase-out and reduce the overall cost. The success of the NCCoPP will be an asset for HPMP because of the learning curve, the network of stakeholders that has been created or strengthened, the know-how, and the success of the programme itself which has built the credibility on the environmental initiatives.

51. All countries in the sample completed the conversion of manufacturing enterprises. Reportedly, all of them undertook the screening process that determined the eligibility for funding of manufacturing enterprises.

Funding-related issues

Use of flexibility mechanism

52. All the countries visited used the flexibility mechanism in the implementation of their national ODS phase-out plans any time activities could not be implemented as planned or when new activities emerged. The flexibility clause allows for minor changes and the funding tranche mechanism allows for approval of bigger changes if requests for changes are reported properly and timely.

53. The request for funding of training activities under the NPP in Egypt was submitted at the 53rd meeting in excess of funding levels earlier approved by the Executive Committee. The MLF Secretariat identified this irregularity and the consideration of the request for the third tranche was deferred and subsequently corrected.

54. The existing mechanism was described as indispensable and effective by NOUs and credited as having contributed to the success of NPP implementation. No changes were proposed.

Modifications during project implementation

55. The implementation of NPPs in all sample countries required some changes in planned activities and some modifications in funding levels respectively. In Turkey, the budget items as approved in the NPP experienced serious changes. Thus, funding for retrofit activities have been utilized only at 4.7 per cent. Unutilized resources were transferred to chiller replacement programme which then tripled in value. All the adjustments in the initially approved budget have been reported to the Executive Committee in tranche progress reports and reflected in annual implementation programmes (AIPs). In Egypt, funds were allocated to the training programme and awareness-raising activities in excess of funding levels approved in earlier approved AIP. These irregularities were reported to the Executive Committee at the 54th meeting. No specific concerns have been expressed regarding inadequacy of funding levels and as such, this is not considered to be an issue hindering the implementation of NPP activities. The initial scope of activities as submitted in the project proposal can be reduced in the process of project review and approval and therefore, activities initially planned may not be implemented at the requested level of funding even if the country considers them important. There is also the case of needs identified during implementation that were not initially planned and consequently couldn't be met. Both situations of shortage of funds do not seem to affect the final results of the phase-out process in the countries under review although they probably imposed an additional burden on the project management.

56. There were two cases of surpluses at the time of achieving zero CFC phase-out. The World Bank reported unspent balance from the grant allocations in Turkey NPP amounting to US \$434,269 which was returned to MLF. By February 2010, the Egypt NPP unspent balance amounted to US \$354,000. By this time, almost all the planned activities have been completed and CFC consumption phased out. UNIDO submitted the request to the 60th meeting for funding the fourth and fifth tranches of US \$300,000 in total. The Secretariat suggested that UNIDO should examine the merits of focusing the final two tranches of the NPP on activities that will sustain zero consumption of CFCs and facilitate the phase-out of HCFCs in Egypt. UNIDO indicated that there is an urgent need to continue the implementation of the retrofit incentive programme, which would sustain the phase-out of CFCs and avoid economic disruptions in the future. The fourth and fifth tranches were approved and dedicated to retrofitting air conditioning units in rail way carriages and to completion of the data monitoring system.

Regulatory and policy issues

57. Policies and regulations constitute an essential component of ODS phase-out strategies for both ensuring the sustainability of the ODS phase-out and for achieving phase-out in subsectors that did not directly benefit from any other assistance. Policies and regulations usually require a long process for development and enactment, which includes a comprehensive process of consultation at both development and final approval stages. The communication and coordinating role of the NOU was described as very important to ensure the success of this process. Once a law is enacted, though, any related regulation is usually approved more expeditiously, which directly benefits the subsequent stages of ODS phase-out.

58. In the sample countries, governments adopted and promulgated the necessary set of regulations. In some countries tariff policies created conditions for phasing out of CFCs and introducing alternative technology. As a result the price of CFCs was permanently rising with declining availability. All over the body of existing policies and regulations created a legal ground for the introduction of HCFC related regulations which are in different stages of approval in the countries under review.

59. In India, refrigerant R&R was not included in the legislation because the regulation could not be enforced due to lack of resources. In Turkey, the regulation on mandatory R&R was adopted but not effectively enforced. Additional legislative measures in this regard are now under discussion by the Government and expected to be adopted this year. To encourage the application of the legislation the Ozone Unit in Colombia organized a workshop with the importers, which was very well received.

60. The time for the adoption of a policy and its related regulations differs according of the issue. In China for example, simple issues such as the ban of the use of CFCs in the solvent sector can take from three to six months since it is implemented through Ministry's notices. For more complex issues the process can last between two to three years mainly due to the consultative process. This variation in the decision-making process is applicable to all the countries. It is however reasonably likely to expect that it will take less time to effect changes in regulations for issues concerning HCFC phase-out, now that a legislative body is available and there is an accumulated knowledge on how to deal with such issues.

61. All the countries adopted a system of penalties in case if illicit imports of ODSs. In Mexico seizures of illegal ODS and HFC shipment were reported to take place rather frequently. The last case reported was an interception of a large cylinder of 16 tonnes identified to be HFC-134a. The shipment documentation was considered inaccurate and the cylinder was confiscated. In India there were many seizures in 2004-2005 at the Indo-Nepalese border. In Bangladesh there was a seizure through physical examination of 150 cylinders with CFC-12 but declared as HFC-134a. Penalties were imposed. In Chile one reported case concerned a shipment of 1,140 cylinders reported as HCFC 545 cylinders out of which turned out to be CFC-12. In such cases the importer covers the re-exportation costs and pays a fine.

62. As previously mentioned the NOU in China manages the PIC system with approximately 40 countries throughout the world and processes an estimated 40 PIC-related communication per year, very recently it could stop an illegal shipment of HCFC-22 to Israel and cancelled the company's licence. The Government believes that this PIC system has created a network of information and trade management in the region which together with the network meetings allow for useful exchanges of information.

Training of customs and other enforcement officers

63. Training of customs and other enforcement officers was initially included in RMPs in Bangladesh, Chile and Egypt or approved as an individual project in Colombia. Training activities continued under NPPs. As a result, all countries under review established rigorous customs procedures for border control on ODS imports. In all countries, customs departments had trained personnel and with the MLF assistance provided refrigerant identifiers to check points. In Turkey, refrigerant identifiers have not been frequently used since often there was no need for them, and generally, customs officers prefer using in-house analytical equipment that is available in major check points and more reliable.

64. The refrigerant identification equipment provided under NPPs is of a limited capability and cannot be used for identification of HCFC and HFC blends. The new more sophisticated refrigerant identifiers and gas chromatographs are becoming a necessity in border control. It is worth mentioning that special procedures for ODS and ODS alternatives imports such as mandatory customs red channel and industry-funded chromatography analysis of suspect imports are an excellent means to prevent illegal ODS trade in particular because of their deterrent value and seem to be a procedure worth adopting, but such procedures are out of the reach of smaller countries most of the time because of the costs involved.

65. In Bangladesh, the absence of laboratories empowered with accreditation capabilities was mentioned as an impediment factor as well as the massive presence of low quality ODS alternatives which not only can damage the equipment but also undermine the credibility of the ODS phase-out process.

66. It is difficult to assess the effectiveness of these training activities as percentage of trained to the total number of officers because of permanent rotation of personnel in customs departments. It is even more challenging to ascertain the effectiveness of training programmes through the seizure of ODSs since the ratio of seizures as compared to actual illegal imports cannot be known and statistics on seized ODSs are not always available.

67. The problem of rotation of customs officers was at least partially resolved in Turkey though establishing in-house training facility providing on the job training that proved to be very effective. In some countries, the sustainability of the training is also ensured through entry-level and online training modules but their updating must be guaranteed.

Reporting issues

Adequateness/quality of reports

68. The Executive Committee decides the release of each funding tranche in NPP contingent based upon receipt of the following reports from the implementing agency concerned:

- (a) The report on the implementation of the AIP attesting for the level of implementation of planned activities, achieved ODS phase-out and contracting and disbursement of funds allocated in the preceding year;
- (b) The AIP with activities to be implemented in future years, related proposed level of

funding and planned reduction in ODS consumption; and

- (c) The annual verification report prepared by an independent auditor attesting that the established control targets have been met.

69. The MLF Secretariat reviews additionally reports on the implementation of the country programme (CP) and report submitted by the government to the Ozone Secretariat under Article 7 of the Montreal Protocol.

70. The analysis of reporting by implementing agencies shows that the AIP and tranche progress reports in many instances did not follow decision 47/50. In particular, these reporting documents do not always include information on disbursements (all available uncommitted and undisbursed resources); completed activities and dates of completion of delayed activities; a comparison of what was planned in the previous annual tranche to what was achieved; the implementation of the flexibility clause and/or how unused funds from previous tranche had been allocated. In general, several reports have been found as bulky, inconsistent, not transparent in terms of changes proposed and not clear on the overall progress to date and the relative contributions of various completed activities to the phase-out achieved. An explanation could be that the standard AIP format attached in appendix to each NPP Agreement was not sufficiently explicit. The new format for implementation reports and plans that was formulated and attached to HPMP agreements should improve the situation.

71. In countries, where several implementing agencies are involved, NOU or PMU have to report to each of implementing agency periodically using different formats because of their different approaches to the implementation. The standardization of reporting formats in such cases is not always possible.

72. NOUs in countries under review believe that the present level of reporting could continue mainly because all related procedures are already in place - but should not increase. For instance, any additional reporting requires a formal procedure for signature and endorsement by the government. This will greatly complicate reporting through the online database since there is no documented report to be officially endorsed by the government. The reporting requirements could be streamlined if automated formats are created when possible and the CP Implementation Report and the Article 7 Report are synchronized.

Monitoring ODS production and consumption data

73. In all countries monitoring and reporting of ODS production and consumption data are based on information provided to NOU by customs authority and importers when they bring their consignment documents for further authorization by NOU. In Egypt, the General Organization for Exports and Imports Control (GOEIC) under the Ministry of Trade and Industry is also actively involved in monitoring and control of ODS imports. NOUs reported that it took time to establish the understanding and good channels of communication with entities involved.

74. Customs authorities in all countries have their own computerized data. In Egypt, the computerized system was recently introduced in GOEIC connecting border checkpoints and providing the flow of documentation and visual control via video cameras to the GOEIC headquarters. UNIDO provided the support in developing the required software. This computerized system is under the final checkout and soon will be connected with NOU and Customs internal network. In Mexico the creation by the NOU of the Sistema de informacion y Seguimiento de Substancias Agotadoras de la Capa de Ozono (SISSAO) by 2005 greatly improved the monitoring not only of substances but also of training activities through the registry of technicians. The database is currently linked to the customs system.

75. The verification reports provide a useful tool to ascertain the validity of reported ODS consumption data. In Egypt, the 2009 and 2010 verification reports revealed noticeable discrepancies when customs records are compared to the notifications issued by NOU for release of imports and made

recommendations on the improvement of the system. In Colombia verification reports are based on data produced by various entities (Foreign Affairs Ministry, the National Statistics Institute, DIAN). In the past there were some contradictions among data issued from various institutions. The creation of a unique instrument the Instrumento Unico de operaciones de Comercio Exterior (the single Instrument for Foreign Trade Transactions) greatly improved the reliability of information.

76. In accordance with Verification Guidelines approved by decision 46/38 in July 2005 the verification should review procedures on ODS imports/exports, such as sanctions or penalties to be imposed on violation of legal regulation; mechanisms and capacity for prosecution and enforcement; procedures to be applied in case of suspicious shipments; sampling or other identification methods used in determining ODS consumption. It appears that verification reports prepared in the sample countries did not provided all this information.

Efficiency of implementation

77. A number of observations of general nature related to the efficiency of implementation have been expressed during the evaluation team visits that could have implications for the implementation of HPMPs.

78. For example the NOU in China believes that the process for approval, implementation and monitoring of MLF projects seems to have become less flexible for the country even under the MYA approach, and flexibility, efficiency and procedures must improve for a successful and cost effective HCFC phase-out. It is necessary that the focus should be on sector-by-sector, results-driven and country-driven approach at all the stages of implementation of HCFC phase-out projects to guarantee their success. The cost-effectiveness of the project evaluation process could be improved by organizing field visits by the MLF Secretariat in order to better appreciate and get acquainted with the issues in the countries.

Reasons for delays and/or other challenges

79. Delays in NPP implementation have been identified in several countries. In Turkey, the implementation of end-user retrofit component was delayed by about three years because the concept of retrofitting 26,000 units of equipment proved to be unrealistic. The implementation of the training of refrigeration servicing technicians was delayed by about two years. The major reason of delay was a geographical scale of the programme, the number of trainees involved and a difficulty to reach them out and organize. The R&R operations started with three and four years of delay respectively due to administrative and logistic problems in finding and engagement of local executing agencies, delayed procurement and distribution of equipment.

80. In Egypt the submission of the request for the third tranche was deferred from 53rd to the 54th meeting because of the documentation submitted was found to be inadequate by the MLF Secretariat. Several planned activities

Division of responsibilities among lead and cooperating agencies, PMUs and NOUs

81. The modality of NPP implementation and management and administrative support varied from country to country dependant on scale of the project and internal procedures established in each implementing agency. The initial process of establishing PMU might be lengthy as it was the case in Bangladesh. Typically, when the PMU is established the division of responsibilities is clearly defined between MPU and NOU and reflected in the contract between the PMU and the implementing agency. The relationships and cooperation between PMU as an independent entity and NOU might be complicated by the internal hierarchy within the Government. Thus, in Egypt the independent PMU was included into the NOU structure in the middle of the NPP implementation time.

82. A special mention needs to be made of the organizational arrangement in India for the implementation of the National CFC Consumption Phase-out Plan (NCCoPP) which consisted of:

- (a) A Core Group formed by representatives from the Ozone Cell and all the five implementing/bilateral agencies involved in the project, who had quarterly decision-making meetings;
- (b) A Regional Management Organization (RMO) equivalent to a PMU established by the leading implementing agency GTZ, coordinating activities at the national level; and
- (c) Fifteen training cells for direct organization of training activities covering the entire country.

83. In China, the responsibility for implementation of Montreal Protocol related activities in the country is placed on the Project Management Office for the Implementation of MLF Projects (PMO) which is part of the Foreign Economic Cooperation Office (FECO) within the Ministry of Environmental Protection (MEP), has 39 professional staff and is supported by the Financial, Contract, Procurement and General Services Divisions of FECO.

84. The implementation process was assisted by industry associations such as the National Plastic Processing Industry Association (NPPI) for the foam industry and the Chinese Household Electric Appliances Manufacturers Associations (CHEAA) for the domestic refrigeration manufacturing industry, who were instrumental in the identification and initial contact with the companies. The PMO in turn, made direct contracts with the beneficiary companies and with the association that assisted the implementation process. The role of the implementing agencies has been one of technical assistance and initial channelling of financial resources.

85. In Turkey, The World Bank was the only implementing agency which assigned the Technology Development Foundation of Turkey (TTGV) as its financial intermediary with the full responsibility for the implementation of the project assisted by a national consultant for the whole duration of the project. Several international consultants participated in providing assistance and specialized expertise as required. TTGV has also engaged a number of local public organizations, industrial associations and individual enterprises for the implementation of individual components and activities on a contractual basis. The NOU was placed in the Ministry of Environment and Forests providing legislative and administrative support and liaisons with other governmental bodies.

86. The relationship between the lead implementing agency and the NOU in Mexico is described by both parties as very good, leading to effective collaboration. The UNIDO office in Mexico is very supportive and maintains regular contact with government officials.

87. The implementation of HCFC phase-out projects will benefit from the streamlining of lengthy procedures and of the number of implementing agency units involved in a project; from the empowerment with decision-making capabilities of the agencies staff in the country; from the increase of resources for missions to the country; and from the careful selection of consultants for production sector verification, taking into consideration the expertise of consultants from developing countries with experience on the issue.

Annex I

**EFFECTIVENESS OF THE PROGRAMME FOR TRAINING OF REFRIGERATION TECHNICIANS
IN PHASING OUT ODS AND CONTRIBUTING TO COMPLIANCE**

Country	MYA duration: Yr. started/ Yr. completed	Total No. of technicians in the country	MYA target of training programme	Year technicians training started/ ODS consumption	Year technicians training completed/ ODS consumption	No. of technicians trained under MYA	Per cent trained of total	Per cent trained of target	No. of equipped training facilities now	Training on-going (Yes /No /Not known)	Barriers identified	Certification	Remarks, benefits for HPMP
Bangladesh	2004-2011	25,000	20,000	2008 158.3	2011 48	6,450	26	32.30	n/a	Yes	Slow government procedures for approval of cooperation projects.	Training certificate has prestige	Creation of professional associations in refrigeration.
Chile	2008-	4,000	2,400	2008 47.9	2010 0	2,000	50	83	18	Not known	Late start. 1,049 were trained between Aug. 2009 and Jan. 2013. Barriers are administrative in nature	Yes, after passing exams	Manuals under development allowing technicians access to financial mechanisms
China	2004-2011	14,000 (1)	10,000	2005 13,123.8	2011 126.9	6,000	43	60	15	Yes	No barriers were identified	Yes by Ministry of Labour	Focused on MAC sector, later on chillers and industrial commercial refrigeration
Colombia	2003-2011	10,000	5,000	2005 1,104	2011 0	7,000	70.0	140	45	yes		Yes	Training module is in use since 1995. National Service of Apprenticeships is playing an important role.

Country	MYA duration: Yr. started/ Yr. completed	Total No. of technicians in the country	MYA target of training programme	Year technicians training started/ ODS consumption	Year technicians training completed/ ODS consumption	No. of technicians trained under MYA	Per cent trained of total	Per cent trained of target	No. of equipped training facilities now	Training on-going (Yes /No /Not known)	Barriers identified	Certification	Remarks, benefits for HPMP
Egypt	2005-2010	24,000	3,000	2006 449.2	2007 77.6	1,200	5.0	40.0	n/a	Not known	MYA target was not met due to Inefficient implementation planning	Not required	In addition 276 technicians were trained under RMP and unknown number under drop-in retrofit programme.
India	2004-2010	78,417	21,000	2005 1,957.8	2009 -659.9	10,090	13	48	15	Yes	No barriers were identified	Training completion diploma	Emission reduction estimated to be 10 to 40%. The model will be replicated in HPMP training programme.
Mexico	2004-2011	20,000	4,000	2004 1,430	2012 0	7,800	39	195	27	yes	Initially, lack of trust	Registry in IT database	IT registry promoted the significance of TP
Turkey	2001-2006	5,000-6,000	2,573	2004 257.6	2007 0.0	4,857	97.0	188.0	24	yes	Slow implementation due to Gov. change, communication barriers, management problems in KOSGEB	Mandatory for technicians purchasing ODS	Training is on-going using facilities established under MYA

Annex II

MYAs EVALUATED AND COVERED IN THE SYNTHESIS REPORT

Country	RMP approved; Date of approval; Implementing agency	MYA approved;	Date of approval	Implemented Agency	MYA current status
Bangladesh	Yes, November 1999, UNDP	National ODS phase-out plan	April 2004	UNDP, UNEP	On-going
Chile	Yes, March 1999, UNDP	Terminal CFC phase-out management plan	July 2008	Canada BL	On-going
China	No	Sector plan for the phase-out of CFC-11 in the foam sector	December 2001	World Bank	Completed, December 2010
		Sector plan for CFC final phase-out in domestic refrigeration and compressors	November 2002	UNIDO, Italy BL	Completed, December 2009
		Refrigeration servicing sector CFC phase-out plan	November 2002	UNIDO, UNEP, Japan BL	On-going
Colombia	No	National CFC phase-out plan	December 2003	UNDP	Completed, December 2011
Egypt	Yes; November 1999, Germany BL	National CFC phase-out plan	July 2005	UNIDO	On-going
India	No	CFC phase-out plan in the foam sector	July 2002	UNDP	Completed, December 2006
		CFC phase-out plan in the refrigeration sector (manufacturing)	November 2002	UNDP, UNIDO	Completed, March 2007
		National CFC consumption phase-out plan	April 2004	Germany BL, Switzerland BL, UNDP, UNIDO, UNEP	Completed, August 2010
Mexico	No	National CFC phase-out plan	April 2004	UNDP, UNIDO	Completed, December 2011
Turkey	No	National CFC phase-out plan	December 2001	World Bank	Completed, April 2008

Annex III

EVALUATION ISSUES

1. Effectiveness of MYA activities in phasing out ODS and/or contributing to compliance
 - 1.1 Assess the effectiveness of training of refrigeration technicians
 - 1.2 Assess the effectiveness of training of customs and other enforcement officers
 - 1.3 Assess the effectiveness of recovery and recycling activities
 - 1.4 Assess the effectiveness of incentive programmes to convert equipment of end users
 - 1.5 Assess the effectiveness of communication and awareness-raising activities
 - 1.6 Assess the effectiveness of conversions in manufacturing sector (if funded under the MYA)
2. Funding-related issues
 - 2.1 Examine the allocation of funds within MYAs and to what extent this allocation was modified during project implementation
 - 2.2 Examine whether the level of funds available enabled all planned project activities to be implemented
 - 2.3 Examine the extent to which any remaining funds were directed towards activities not originally envisaged to be undertaken in accordance to Executive Committee's decisions
3. Regulatory and policy issues
 - 3.1 Examine the effectiveness of any regulatory and policy measures adopted in reducing use and/or consumption of ODS and contributing to compliance
 - 3.2 Examine the reasons for any possible delays in introducing ODS licensing systems
4. Reporting issues
 - 4.1 Examine whether MYA tranche implementation reports and annual verification reports provided sufficient and timely information to allow the Secretariat and Executive Committee to monitor and confirm results, and whether this may have affected the implementation as originally planned
 - 4.2 Consider the reasons for any significant discrepancy in reporting key MYA-related data among the different reporting tools used under the Multilateral Fund
 - 4.3 Examine the effectiveness of procedures to monitor ODS production and consumption data.
5. Efficiency of implementation
 - 5.1 Consider the reasons for delays or other challenges encountered in implementing project activities and how these were addressed
 - 5.2 Examine the division of responsibilities among lead and cooperating agencies, PMUs and NOUs, and whether this division was adequate to ensure efficient implementation of project activities
 - 5.3 Consider the extent to which the internal procedures of implementing agencies, including their requirements for institutional arrangements, enable the efficient implementation of project activities

Annex IV

EVALUATION MATRIX SAMPLE

MYA activities / Deliverables	MYA expected outcomes / Performance indicators and the extent to which MYA objectives had been met	Source of information	HPMP planned activities / targets	MYA achieved results / lessons learned valuable for the implementation of HPMP
<p>Issue1: Effectiveness of MYA activities in phasing out ODS and/or contributing to compliance: Sub-objective 1.1: Assess the effectiveness of training of refrigeration technicians Intended results: Reduction of ODS emissions through the training of adequate number of technicians in good refrigeration servicing practices and extend the lifetime of the equipment through better repair and maintenance. Assist the Government to sustain training with respect to proper handling of new refrigerants by introducing these into curricula and thus strengthening of the training centres.</p>				
<p>Establishing training centres</p> <p>Conducting Train-the-Trainer Workshops and training and certification of # trainers</p>	<p>Timely procurement and delivery of training equipment</p> <p>Timely availability of translated training materials in the training process;</p> <p>Number of timely established and well equipped training centres Vs. MYA targets;</p> <p>Timeliness and number of training workshops conducted, and number of trainers prepared</p> <p>Number of certified trainers in comparison with MYA targets</p>	<p>Some information can be obtained from MYA progress reports by IAs and country programme implementation reports submitted by NOU to the MLF Secretariat.</p> <p>Reported data will be verified and lacking information will be obtained in the course of evaluation mission.</p> <p>Country case studies of mid-term MYA evaluation in non-LVC countries, when applicable.</p>	<p>The scope of refrigeration servicing operations dealing with HCFCs as identified in HPMP.</p> <p>Training and other activities proposed in HPMP addressing transition to non-HCFC technology in the servicing sector</p>	<p>The evaluation mission will establish the impact of the MYA training programme on the level of preparedness of handling HCFCs and available alternatives including hydrocarbons.</p> <p>The evaluation mission will learn how the future operation of existing and new training centres could benefit from MYA training programme</p>
