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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-third Meeting
Montreal, 27– 31 May 2019

Addendum

REPORTS ON PROJECTS WITH SPECIFIC REPORTING REQUIREMENTS

1. This addendum is issued to include reports on projects with specific reporting requirements pertaining to China.

2. The document is divided into the following parts:

Part I:	Review of current monitoring, reporting, verification and enforcement systems in accordance with HCFC consumption and production phase-out management plan agreements (decisions 82/65 and 82/71(a)) (UNDP, UNEP, UNIDO, and World Bank)
Part II:	Desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under stage I of the HCFC phase-out management plan and verification methodology (decision 82/67(c)) (World Bank)
Part III:	Financial audit reports for the CFC production, halon, polyurethane foam, process agent II, refrigeration servicing and solvent sectors (decision 82/17) (UNDP, UNEP, UNIDO, and World Bank)
Part IV:	Sector plan for the phase-out of methyl bromide consumption (decision 82/18(c)) (UNIDO)
Part V:	Sector plan for the phase-out of methyl bromide production (decision 82/19(c) and (d)) (UNIDO)

3. Each part contains a brief description of the report or the progress of implementation of projects, the Secretariat's comments and recommendations.

Background to the addendum

4. The reports contained in the present document are submitted in response to specific decisions of the Executive Committee adopted at the 82nd meeting.

I. Review of current monitoring, reporting, verification and enforcement systems in accordance with HCFC consumption and production phase-out management plan agreements (decisions 82/65 and 82/71(a)) (UNDP, UNEP, UNIDO, and World Bank)

5. At the 82nd meeting, the Executive Committee considered annual progress reports from the stage I of the HCFC phase-out management plan (HPMP) for China,[1] and requests for the third tranches of four[2] sector plans under stage II of the HPMP.[3] During the discussions in a contact group, several members expressed serious concern at approving additional funding at the meeting, given the unexplained emissions of CFC-11 in East Asia. Concern was also expressed about the reliable but incomplete information on possible compliance issues; one member recalled that the Government of China had acknowledged at the Thirtieth Meeting of the Parties that it had identified illegal production of CFC-11. Pursuant to decision XXX/3, more information had been requested on the cause of emissions of CFC-11 and it was suggested that the funding requests submitted be deferred until a subsequent meeting, when more information was available. Other members said that care needed to be taken, and that any decision to defer the funding requested at the meeting should not put into jeopardy the 2020 reduction target for China. The ongoing investigations into the cause of the emissions of CFC-11 meant that the Executive Committee needed to be cautious when reaching conclusions. It could take several years for all the relevant information to be assembled, and it was important to have clarity on what information was required, and what timeline for assembling it was considered.

6. Subsequent to those discussions, the Executive Committee decided to request the Government of China, through the relevant implementing agency, to submit at the 83rd meeting a review of the Country's current monitoring, reporting, verification and enforcement systems in line with its Agreements with the Executive Committee on the country's HPMP and HCFC production phase-out management plan (HPPMP), including information on the organizational structure and capacity at the national and local levels that demonstrated how the long-term sustainability of the phase-out of HCFCs in the consumption and production sectors was being ensured, and on the efforts to address any illegal trade in those substances. The Executive Committee also requested the submission of a progress report regarding actions taken with a view to strengthening of legislation on ozone-depleting substances (ODS) and implementation thereof in China (decisions 82/65 and 82/71(a)).

7. The review and progress report are discussed in Part I of the present document.

8. At the 82nd meeting, the Executive Committee also considered a document containing a note from the Secretariat[4] on issues related to: energy efficiency; cost guidelines for the phase-down of HFCs; and the increase in the global emissions of CFC-11. Subsequent to a discussion, the Committee *inter alia* requested the Secretariat to develop a document for consideration at the 83rd meeting that would include an overview of current monitoring, reporting, verification and enforceable licensing and quota systems, including the requirements and practices of the systems for reporting back to the Executive Committee that had been developed with support from the Multilateral Fund (decision 82/86(c)).

9. In response to decision 82/86(c), the Secretariat submitted to the 83rd meeting document UNEP/OzL.Pro/ExCom/83/38 to be discussed under agenda item 10. The Executive Committee

[1] Paragraphs 48 to 140 of document UNEP/OzL.Pro/ExCom/82/45

[2] The extruded polystyrene foam sector plan, the industrial and commercial refrigeration and air-conditioning sector plan, the refrigeration servicing sector plan and enabling programme and the solvent sector plan.

[3] Paragraphs 141 to 212 of document UNEP/OzL.Pro/ExCom/82/45

[4] UNEP/OzL.Pro/ExCom/82/70

may wish to note that this document describes monitoring, reporting, verification and enforceable licencing and quota systems, and could be useful when considering the report submitted by the Government of China in line with decisions 82/65 and 82/71(a).

II. Desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under stage I of the HCFC phase-out management plan and verification methodology (decision 82/67(c)) (World Bank)

10. During the discussions on the annual progress report on stage I of the polyurethane (PU) foam sector plan,[5] one member said that, for the PU rigid foam sector in particular, strengthening of verification of eligibility was needed to ensure that enterprises had not modified their practices, thereby affecting their eligibility for support from the Multilateral Fund. Such verification was recommended as best practice in the sector as a means of learning from, and responding to, the information provided in paragraphs 24 and 58 of document UNEP/OzL.Pro/ExCom/82/20,[6] including the unauthorized use of CFCs and HCFCs. Another member said that there was a need to strengthen verification and to develop a comprehensive monitoring and enforcement plan.

11. Accordingly, the Executive Committee *inter alia* requested the Government of China and the World Bank to prepare for the 83rd meeting a desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under the stage I of the HCFC phase-out management plan (HPMP) and a verification methodology that included random sampling in order to ascertain whether ODS that had already been phased out had been or were being consumed at those enterprises (decision 82/67(c)).

12. The desk study on the PU foam sector is discussed in Part II of the present document.

III. Financial audit reports for the CFC production, halon, polyurethane foam, process agent II, refrigeration servicing and solvent sectors (decision 82/17) (UNDP, UNEP, UNIDO, and World Bank)

13. At the 82nd meeting,[7] the Government of China submitted, through the relevant bilateral and implementing agencies, final progress reports, relevant research, technical assistance reports, and audit reports including the interest accrued during the implementation of the CFC production, halon, polyurethane (PU) foam, process agent II, refrigeration servicing and solvent sector plans. The Executive Committee decided to defer, to its 83rd meeting, consideration of the financial audit reports in China (decision 82/17).

14. Financial audit reports for those sectors are discussed in Part III of the present document.

IV. Sector plan for the phase-out of methyl bromide consumption (decision 82/18(c)) (UNIDO)

15. At the 82nd meeting, the Executive Committee considered the progress report on the implementation of phase II of the national plan for the phase-out of methyl bromide (MB) consumption in China.[8] The Executive Committee decided to request the Government of China and UNIDO to submit, at the 83rd meeting, the final report of phase II of the national plan for the phase-out of MB in China (decision 82/18(c)).

16. The final report of the MB consumption sector plan is discussed in Part IV of the present document.

[5] Paragraphs 83 to 101 of document UNEP/OzL.Pro/ExCom/82/45
[6] Reports on projects with specific reporting requirements.
[7] Paragraphs 4 to 74 of document UNEP/OzL.Pro/ExCom/82/20
[8] Paragraphs 79 to 89 of document UNEP/OzL.Pro/ExCom/82/20

V. Sector plan for the phase-out of methyl bromide production (decision 82/19(c) and (d)) (UNIDO)

17. At the 82nd meeting, the Executive Committee considered the report on the status of implementation of the sector plan for the phase-out of MB production in China.[9] Subsequent to a discussion, the Executive Committee decided *inter alia* to request the Government of China, through UNIDO, to provide a progress report at the 83rd meeting on the contract for the development of the management information system and its incorporation in the monitoring and supervision programme to be implemented by the Customs Authority, and an update to the work plan in order to ensure the long-term, sustained monitoring of MB after the completion of the sector phase-out plan of MB production, including the elaboration of policy and institutional arrangements demonstrating compliance, monitoring and enforcement (decision 82/19(c) and (d)).

18. The report and update to the work plan for the MB production sector plan are discussed in Part V of the present document.

[9] Paragraphs 90 to 108 of document UNEP/OzL.Pro/ExCom/82/20

PART I: REVIEW OF CURRENT MONITORING, REPORTING, VERIFICATION AND ENFORCEMENT SYSTEMS IN ACCORDANCE WITH HCFC CONSUMPTION AND PRODUCTION PHASE-OUT MANAGEMENT PLAN AGREEMENTS (DECISIONS 82/65 AND 82/71(A)) (UNDP, UNEP, UNIDO, AND WORLD BANK)

Background

19. On behalf of the Government of China, UNDP as the lead implementing agency for the HCFC phase-out management plan (HPMP), has submitted a report on the review of the Government of China's current monitoring, reporting, verification and enforcement systems in accordance with HCFC consumption and production phase-out management plan Agreements. The report includes both the review of the current monitoring, reporting, verification and enforcement systems in line with the HPMP and HPPMP Agreements, and the progress report regarding actions taken with a view to strengthening of legislation on ODS and implementation, as requested in decisions 82/65 and 82/71(a).

20. The report, which is appended its entirety to the present document, has five chapters:

Chapter 1	Background and objectives
Chapter 2	Compliance framework, including the ODS management system, laws and regulations
Chapter 3	Monitoring, reporting, and verification under the Government of China's HPMP and HPPMP, and efforts to address illegal trade and to ensure the long-term sustainability of the phase-out of HCFCs
Chapter 4	Review of the Government of China's ODS enforcement, identification of challenges, and plan of action to strengthen legislation and its implementation
Chapter 5	Challenges in achieving upcoming compliance targets and the need to approve tranches of HPMP and HPPMP

Secretariat's comments

21. The Secretariat noted with appreciation the report submitted by the Government of China through UNDP. The Secretariat reviewed the report and sought additional information and clarifications on the current monitoring, reporting, verification and enforcement systems, and the steps the Government of China has taken or intends to take to strengthen legislation on ODS and implementation thereof.

22. During the discussions, clarifications to many observations raised were provided and additional information was submitted, and subsequently incorporated by UNDP in the revised report submitted by the Government of China that is appended to the present document in Annex I. Therefore, the present document only reflects aspects of the discussion that provide additional elements that could assist the Executive Committee during its discussions on this matter.

23. The Secretariat's comments are divided into three sections:

(a) Overarching observations related to atmospheric monitoring, testing laboratories, strengthened inspections and enforcement, engaging industry and other stakeholders, penalties to users, source management, lessons learned from enforcement actions, monitoring of carbon tetrachloride (CTC), facilitating reporting of non-conformity with regulations, and extending penalties to end users;

(b) Technical clarifications related to monitoring and reporting under the HPMP and the HPPMP; and

(c) Reports of illegal production of controlled substances.

Overarching observations

24. In the following section, the Secretariat highlighted initiatives proposed by the Government of China that would strengthen the monitoring, reporting, verification and enforcement systems, and in some cases offered observations on how those might be further strengthened.

Atmospheric monitoring of ODS[10]

25. The Ministry of Ecology and Environment (MEE) will incorporate ODS, as well as HFCs, into its atmospheric monitoring network. MEE will work with the China Meteorological Administration and other organizations to jointly develop and manage the monitoring network.

26. There are over 1,000 air quality monitoring stations in China; instruments to measure ODS (and HFCs) would presumably only be needed in a fraction of those stations. The Government of China plans to proceed gradually, first undertaking a study, then developing a construction programme, establishing pilot stations in several key cities, and building up the long-term monitoring network based on the lessons learned. Monitoring stations would include key cities and background stations. The pilot cities are expected to be selected in 2020, with routine measurements planned within the next two to three years. Planning and construction of background stations would be initiated in 2021. The Government will make the data gathered from the monitoring available to the scientific research community.

27. The Secretariat considers the Government of China's plan to incorporate ODS, as well as HFCs, into its atmospheric monitoring network to be laudable, and an effective means to monitor and ensure the sustainability of the phase-out of controlled substances so far achieved. Given the complexity of the initiative, the Secretariat recommends that the Government of China proceed in a stepwise manner and take the necessary time to establish the network. The Secretariat also suggests that the Government closely consult with the scientific halocarbon measurement community in establishing the network and determining appropriate protocols and procedures.[11]

Establishment of testing laboratories[12]

28. There are only a few qualified institutions in China that can provide certified testing reports of samples, which are essential for executing enforcement on violating enterprises. Accordingly, MEE released the Notice on Constructing Monitoring Laboratory for ODS in industrial products in 2019 that *inter alia* includes the construction of six ODS testing laboratories and the establishment of relevant standards and specifications. Laboratory testing standards and specifications for ODS in industrial products will be formulated and certified by the end of 2019.

29. Effective enforcement requires that cases of wrongdoing can be adjudicated. The establishment of the six testing laboratories will be an important step in strengthening the Government's enforcement capability. The Secretariat notes that currently, those laboratories would focus on testing foam and pre-blended polyols. In the future, the Government of China may wish to consider expanding the capability for testing other products or equipment, as necessary.

[10] Discussed in section 4.2.5 of the report submitted by the Government of China.
[11] More information on atmospheric monitoring is contained in document UNEP/OzL.Pro/ExCom/83/38.
[12] Discussed in section 4.2.5 of the report submitted by the Government of China.

Strengthened inspections and enforcement

30. Local ecology and environment bureaus (EEBs)[13] have and will continue to play a key role in monitoring and enforcing the ODS phase-out. EEBs are *inter alia* responsible for the long-term monitoring of compliance of enterprises after completion of projects. The Secretariat notes that this may be a challenge to EEBs for a variety of reasons, including *inter alia* provinces that have a large number of small and medium-sized enterprises (SMEs), limited capacity and resources to undertake monitoring and inspections, limited equipment to test products and the presence of controlled substances, and where an industry may have a large impact on the local economy. In this regard, the MEE may wish to consider complementing the efforts of the EEBs by undertaking periodic independent inspections of a small number enterprises, and testing samples from a small number of products:

(a) For inspections, the enterprises could be selected from: a list of enterprises that had registered with an EEB to consume ODS or had received an ODS quota but were no longer registered or requesting a quota; from enterprises that purchased certain raw materials (e.g., methylene diphenyl diisocyanate (MDI) used in the production of foam; CTC, anhydrous hydrogen fluoride (AHF)); from the list of clients provided by dealers and systems houses; and from information gleaned from market surveillance mechanisms and other sources;

(b) For tests of products, these could be done for products manufactured with ODS and extensively used in the country (e.g., spray foam applied to a recently constructed building; the foam and refrigerant in a recently manufactured appliance; a container of refrigerant gas).

Source management[14]

31. The Government of China plans to strengthen ODS source management, which will prevent illegal behavior with regard to ODS, and will strengthen the monitoring, reporting, verification, and enforcement framework.

32. The Secretariat considers these planned efforts laudable. To further strengthen the monitoring framework, the Secretariat suggested that the Government of China consider monitoring the sales and use of AHF (which is required for the production of all controlled substances; however, it also has a broad range of uses beyond such production, including for pharmaceutical production, semi-conductor manufacturing, and others), and MDI (which is only used in foam manufacturing). The Government of China indicated that as both AHF and MDI were legal products, additional monitoring of their sales and use would not comply with China's administrative law and, therefore, could not be implemented.

Enforcement actions[15]

33. Since August 2018, the Government of China has launched specialized ODS law enforcement inspections, including tracking down of illegal production; in addition, it undertook several special enforcement actions, including "Sky-patching," "Goddess of the Earth," "Shield of the Nation," and "Green Fence Action."

34. The Secretariat noted with appreciation the efforts by the Government of China to crack down on illegal ODS behavior, and considers the reporting thereof to be a testament to China's commitment to the

[13] Roles and responsibilities of EEBs are presented in various sections of the report submitted by the Government of China.
[14] Discussed in section 4 of the report submitted by the Government of China.
[15] Discussed in section 3.4.1 of the report submitted by the Government of China.

Montreal Protocol. The Secretariat noted that in the future, such special enforcement actions and inspections could become part of the regular enforcement and inspections, as necessary.

Monitoring of CTC[16]

35. The Government of China plans to strengthen the monitoring and reporting of CTC by *inter alia* establishing a whole process real-time monitoring mechanism at all chloromethane (CM) enterprises that would *inter alia* include the installation of meters for CTC by-product, and measurement of CTC in production, storage, conversion, sales, and residual liquid.

36. The Secretariat considers the proposed measures to monitor CM production facilities, as well as downstream CTC sales and use, to be key elements to the strengthening of CTC monitoring and reporting. The value of such strengthening is evident, as some illegal production facilities recently discovered by the Government were able to obtain CTC and use it as a raw material to produce CFC-11.

37. The Secretariat notes, however, that the monitoring mechanism does not include perchloroethylene (PCE) plants. Numerous sources[17] indicate that, depending on the production process, adjusting the reaction conditions could allow the production of 100 per cent PCE, or 100 per cent CTC, or a mixture of both products. At the time of finalization of the present document it was not clear whether the PCE plants in China used a different production process that would prevent the production or by-production of CTC. Additional information might help determine whether monitoring of the PCE plants by MEE could be beneficial in ensuring a comprehensive monitoring of CTC. The report on CTC production and feedstock applications in China, to be submitted[18] in line with decision 75/18(b)(iii), may be helpful in this regard.

38. Other activities being proposed by the Government, including the investigations of CTC production and feedstock uses, market supervision and information collection on ODS sales, and the training and capacity building on ODS supervision and enforcement for local EEBs, will also help inform the establishment of a whole process real-time monitoring mechanism for CTC. The Executive Committee may wish to note that the Government of China is proposing to use approximately US $2.25 million of remaining balances from the process agent II project for implementing several of these activities, as described in the section on "process agent II" in Part III of the present document. That section provides substantive technical information on CTC in China. Accordingly, the Executive Committee may wish to consider discussing matters related to CTC under Part III of the present document.

Facilitating reporting of non-conformity with regulations

39. As noted by several participants at the international workshop on capacity building for the implementation of the Montreal Protocol,[19] enforcement actions frequently benefit from input provided by the regulated industry. Indeed, it is not unusual for industry itself to have a better understanding of the market and actors in the market than the Government authorities that regulate that industry. The industrial associations in China, which are also involved in the sector plans, similarly play a role in monitoring and

[16] Discussed in section 4.2.1 of the report submitted by the Government of China.
[17] For example, document UNEP/OzL.Pro/ExCom/58/50; "SPARC Report on the Mystery of Carbon Tetrachloride," SPARC Report No. 7, WCRP-13/2016 ed. Q. Liang, P. A. Newman and S. Reimann, available at https://www.wcrp-climate.org/WCRP-publications/2016/SPARC_Report7_2016.pdf; USEPA 2017, "Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal: Tetrachloroethylene (perchloroethylene)" available at https://www.epa.gov/sites/production/files/2017-02/documents/perchloroethylene.pdf; Sherry et al. 2018, "Current sources of carbon tetrachloride (CCl4) in our atmosphere," Environ. Res. Lett. 13 024004.
[18] This report is further discussed in Part III of the present document.
[19] Beijing, 18-19 March 2019.

enforcement by providing information on the sectors and enterprises.[20] EEBs may also invite industrial associations and individual experts to participate in enforcement actions to provide on-site technical support. The associations share information with enterprises, carry out publicity and training, launch initiatives to encourage industry compliance, and may provide government departments with clues of illegal behaviors.

40. In addition, China established an environmental protection hotline (12369) in line with environmental protection law, open to public reports on potential environmental violations. The reports are directly submitted to city-level EEBs and trigger next-step measures, such as on-site visits and sample collection. Personal information is protected and kept confidential. The Government of China treats information from stakeholders as one out of many sources for monitoring and enforcement.

41. Article 9 of the Regulation on Administration of Ozone Depleting Substances (Decree No. 573)[21] provides the right to all units and individuals to report violations of the regulations, and stipulates that the department receiving a report of a violation shall reward the person making the report if the violation is ascertained through investigation. Regarding the former, while Article 9 specifies that the department receiving the report will maintain the confidentiality of the reporting person, protection from retaliation is not explicitly mentioned. The Government of China could consider including such protections as a mechanism to encourage reporting. Regarding the latter, it is unclear whether rewards have been provided to any individuals that have brought forward information. The Government of China could consider publicizing such rewards as a mechanism to encourage reporting wrongdoing.

Extending penalties to end users for non-conformity with regulations[22]

42. Penalties may be imposed on enterprises that contravene the Regulation on Administration of ODS. As further discussed in Part II of the present document, the Secretariat suggested that the Government of China consider extending such penalties to users. For example, if a spray foam enterprise were to use a banned substance in a large construction project, the penalty could be applied to the enterprise undertaking the construction project; if an SME installed a piece of commercial RAC equipment containing a phased-out ODS in a large enterprise (e.g., a supermarket chain), the large enterprise could also be subject to a penalty. Such penalties could incentivize large enterprises to ensure that all elements in their supply chain strictly adhere to governmental regulations.

Technical clarifications

43. Technical clarifications related to the monitoring and reporting under the HPMP and the HPPMP for China are provided below.

Monitoring and reporting under the HPMP

44. All enterprises with HCFC consumption above 100 metric tonnes (mt) must have a quota, while enterprises with annual HCFC consumption below that level do not require a quota but must register with the local provincial EEB. As the phase-out of HCFCs progresses under the HPMP, it is likely that in all sectors consumption will be increasingly dominated by enterprises with a consumption below 100 mt. During the discussions with UNDP, the Secretariat suggested that the Government consider gradually reducing the 100 mt threshold to ensure that a majority of the enterprises in a sector will require a quota, thereby ensuring the effectiveness of the quota system to control sector-level consumption in line with the Agreement. UNDP indicated that the existing system had proven effective during the implementation of

[20] For example, as discussed in Part II of the present document, the CPPIA has developed an annual mass-balance analysis for the PU foam sector that compares total MDI sales with reported use of blowing agents to detect possible gaps for further investigation. See also sections 2.21 and 3.4.2 of the report submitted by the Government of China.
[21] See Annex I of the report submitted by the Government of China.
[22] Discussed in section 3.3.2.2 and annex I of the report submitted by the Government of China.

HPMP and, therefore, that the Government would maintain it in subsequent stages of the HPMP. Given the challenge of managing consumption in sectors with a large number of SMEs, China also relies on the production sector quota system, which limits the quantity by HCFC that can be used domestically.

45. Sub-grant agreements (SGAs) specify that if the beneficiary enterprise fails to stop the use of HCFCs in accordance with the provisions of the SGA, or continues to use HCFCs and other phased-out ODS, it will be regarded as a breaching party. To date, no beneficiary under the HPMP was found to have breached its SGA by resuming consumption of HCFCs or other controlled substances. Once a conversion at an assisted enterprise has been completed and national acceptance achieved, the responsibility to monitor the enterprise passes to the local EEB, though during the implementation of HPMP and during the term of the HCFC grant agreement, IECO and bilateral and implementing agencies can still carry out on-site visits to enterprises. Upon national acceptance, local EEBs incorporate the enterprises into their regular monitoring and inspection programme, as well as coordinate special actions targeting ODS already phased out or still under control. The monitoring and inspection programmes may vary due to different circumstances in each province. Generally speaking, an enterprise is usually inspected at least once per year.

46. Enterprises that consumed more than 100 mt per year (and, therefore, had a quota and had registered with IECO), and that converted without funding from the Multilateral Fund, do not receive certificates of national acceptance after the conversion.[23] Their conversion should be reported and registered with local EEBs in line with environmental impact assessment (EIA) requirements, and local EEBs are responsible for the regular monitoring and inspections of such enterprises after their conversions.

47. All beneficiary enterprises are obliged to receive inspections and verifications conducted by the implementing agencies or their designated institutions. The implementing agencies verifications are usually conducted once a year at random beneficiary enterprises, in line with the requirements stipulated in the Agreement between the Government of China and the Executive Committee. Under stage II of the HPMP, such verifications may take place at a random sample of at least 5 per cent of the manufacturing lines which had completed their conversion in the year to be verified, on the understanding that the total aggregated HCFC consumption of the random sample of the manufacturing lines represents at least 10 per cent of the sector consumption phased out in that year. Enterprises that did not receive funding from the Multilateral Fund for their conversion are not included in such verifications. For those enterprises, MEE and local EEBs implement quota and registration management according to the ODS Regulation and the 2013 Circular.

48. Issues related to the PU foam sector, including the treatment of controlled substances contained in pre-blended polyols, the classification of systems houses as enterprises needing a quota, and other matters, are discussed in Part II of the present document. China's ODS import and export management online approval system does not include controlled substances contained in pre-blended polyols, nor does the Government notify countries to which controlled substances contained in pre-blended polyols are exported, be it through informal and voluntary prior informed consent (iPIC) mechanism or through other means, nor when such exports are to a free-trade zone (FTZ). The issue of exports of controlled substances contained in pre-blended polyols, including to FTZs, is also discussed in document UNEP/OzL.Pro/ExCom/83/38.

Monitoring and reporting under the HPPMP

49. The Government of China clarified that in order to achieve the compliance targets of the HCFC production sector, it *inter alia* established a tradable production quota management system that only covered producers already established at the time of the approval of stage I of the HPPMP. Production facilities established after that time are not allocated and cannot obtain a quota, and are only allowed to

[23] For example, in the stage II of the room air-conditioning sector plan, more than half of the phase-out will be achieved through the conversion of enterprises that did not receive funding from the Multilateral Fund for those conversions.

produce HCFCs for feedstock uses and not for controlled uses. No quota is needed when the production of HCFCs is for feedstock uses.

50. All producers, irrespective of whether they only produce for feedstock use, controlled use, or some combination thereof, are required to report the data specified in section 3.2.2.3, i.e., production, purchase, detailed sales information for different uses (including sales amount, the buyer and users), internal use, stockpile, as well as the raw materials. Feedstock users must register with MEE, irrespective of their level of consumption, and registered users must then report the controlled substances used as feedstock in their process to MEE, who periodically crosschecks feedstock use reported by the feedstock users with the sales for feedstock reported by the producers.

Reports on illegal production of controlled substances

51. The report submitted by the Government of China includes information on 24 cases of illegal production, 44 cases of illegal use, and 5 cases of illegal sales of ODS that were investigated and given penalty from 2010 to the first half of 2018. With regard to the illegal production, 14 cases involved CFC-11. About 84 tonnes of illegal CFC-11 were destroyed, production facilities were dismantled, and fines were imposed on four enterprises for illegal use of CFC-11.

52. Additional information on the cases of illegal production beyond that included in the report was provided as follows:

(a) Of the 14 cases involving CFC-11, six were found in 2012-2013, six in 2014, one in 2015, and one in 2017. The 2014 case [24] appears to have used CTC and AHF as raw materials, as both CFC-11 and CFC-12 were discovered on-site, as was CTC (13.9 mt). A total of 1.2 mt of CFC-11 was reported; no information on the quantity or fate of the CFC-12 is available. Given the lack of records at the facilities, and a lack of technical expertise and equipment with the relevant enforcement agencies, no information is available on the other cases of illegal production that were found, including the capacity, quantity of CFC-11 produced, and raw materials used;

(b) In 2015, one case of illegal production of CFC-12 was found. As CFC-11 and CFC-12 are typically co-produced, it is unclear whether the production process in this case was different than the one used in the 14 cases involving CFC-11. Information on the capacity of the facility, the quantity of CFC-12 produced, and the intended use of the CFC-12 was not available;

(c) One case of illegal production of MB was found in 2014;

(d) As further described below, three cases of illegal HCFC production were found in 2013, 2014, and 2017; and

(e) It is unknown what the five remaining cases of illegal ODS production produced or intended to produce, given the lack of documentation at the illegal facilities, and the limited technical expertise by the relevant law enforcement personnel that undertook the inspections, including equipment to identify ODS. MEE plans to organize training for investigation agencies to improve their technical capacity to recognize and document illegal ODS production.

[24] Case 3, as described on page 31 of the appended report submitted by the Government of China.

53. Since August 2018, two additional illegal CFC-11 production facilities in Liaoning and Henan Province have been found.[25] Almost 30 mt of CFC-11 and 177.6 mt of raw materials were seized in those two cases. The Government confirmed that those facilities used the liquid phase fluorination process, with CTC and AHF as raw materials and antimony chloride as the catalyst. At the time of finalization of the present document, it was not clear how the enterprises noted above were able to purchase CTC.

54. The Secretariat understands that it is technically challenging to only produce CFC-11 (or CFC-12) when using the liquid phase fluorination process; it is not clear that small, illegal production facilities would have that capability, including the required careful control of reaction conditions. Recent scientific observations found an increase in the emissions of CFC-11 but not of CFC-12. The Secretariat also notes that the increased emissions of CFC-11 from East Asia reported in the scientific literature are 13,000 mt/year (±5,000 mt/year).

55. The following information was provided on the three cases of illegal HCFC production:

(a) In 2013, an enterprise transformed its HFC-32 facility to illegally produce HCFC-22. It planned to produce HCFC-22 as raw material (i.e., feedstock) for its downstream tetrafluoroethylene (TFE) facility. The enterprise was penalized by the local EEB and the production line was shut down;

(b) In 2014, an enterprise set up a HCFC-22 production line to use it as feedstock in its downstream TFE and HFC-125 facility without approval. The enterprise was penalized by the local EEB and all the facilities had been shut down; and

(c) In 2017, an illegal plant set up a small HCFC-141b facility that produced approximately 27 mt of HCFC-141b. The enterprise was penalized and the HCFC-141b facility was dismantled and destroyed as required by the local EEB.

56. Based on the limited information available, it appears that the two cases of HCFC-22 production are different than the case of HCFC-141b. The latter appears to be a small, stand-alone facility, while the former two appear to have occurred at enterprises that have integrated facilities that use an HCFC as a feedstock in their downstream production process. Such facilities may have large production capacity. A preliminary review of information provided by the Government indicates that the process used to monitor the HCFC feedstock use at facilities, including integrated facilities, is similar to the methodology used by the World Bank during the verification of HCFC production, including *inter alia* questionnaires prior to onsite visit, raw material consumption and product output ratio, source of the HCFCs used for feedstock, stock level on site, sales data of products, and any information on production expansion. IECO crosschecks the raw material used by feedstock users with the sales data reported by HCFC producers. Such monitoring is undertaken once every two years by an independent technical entity contracted by the PMU through technical assistance under the HPPMP. In addition, the Secretariat understands that integrated facilities that produce HCFCs internally and use all produced HCFCs as a feedstock would be registered as HCFC producers and not feedstock users; however, it is not clear whether all such HCFC production facilities have registered with MEE. As the information on the process used by the Government to monitor feedstock users is limited, the Secretariat has included a recommendation to the Sub-Group on the Production Sector to request additional information in this regard.

57. With regard to the HCFC-32 production facility that was illegally converted to production of HCFC-22, it is unclear whether the existing equipment was modified or new equipment purchased, or if the facility swung to produce HCFC-22 using the existing equipment (i.e., only the raw materials[26] and

[25] Described on pages 31 and 32 of the report submitted by the Government of China.

[26] Production of HFC-32 uses AHF and dichloromethane (i.e., methylene chloride) as raw materials, while production of HCFC-22 uses AHF and trichloromethane (i.e., chloroform).

operating conditions were changed). The Secretariat is unclear on the technical and economic feasibility for a HFC-32 production line to be modified or to swing to HCFC-22, and whether other fluorochemical production processes could similarly be modified or swing to HCFC-22. In this regard, the Government of China might wish to undertake a review of the technical and economic feasibility for fluorochemical production processes swinging to being modified for the production of HCFC-22, and to share the results of that review with the Executive Committee.

58. The illegal production cases identified and prosecuted in China since 2010 had not been previously reported to the Executive Committee. The Committee may wish to note that in document UNEP/OzL.Pro/ExCom/83/38, the Secretariat is putting for its consideration a request to all Article 5 countries that received funding for the phase-out of production of ODS for controlled uses and for institutional strengthening to *inter alia* report to the Secretariat any instances where the country had found cases of illegal production, and to request the Secretariat to notify the Executive Committee of such cases so that it could decide what measures or actions would be appropriate.

59. Should additional information on the cases of illegal ODS production in China become available prior to the 83rd meeting, the Secretariat will inform the Executive Committee, accordingly.

Conclusions

60. The Secretariat appreciates the detailed information provided by the Government of China on its monitoring, reporting, verification and enforcement systems, and steps it has taken to strengthen those. While numerous measures will be taken to strengthen China's systems, and collectively they will all be important, three stand out as being particularly meaningful:

(a) The ODS atmospheric monitoring network, once established, will serve as an independent mechanism for the Government to monitor that it continues to meet the targets specified in its Agreements with the Executive Committee. Establishing and maintaining that network will require substantial resources, and reflects the commitment of the Government of China to the implementation of the Montreal Protocol. The commitment by the Government to make the data gathered from its network available to the scientific community will advance scientific understanding of halocarbons in the atmosphere and further the objectives of the Vienna Convention;

(b) The establishment of six testing laboratories by the end of 2019 is a key step to strengthening the Government of China's enforcement capabilities, as it directly addresses the existing limited testing capability;

(c) China has decided to focus considerable attention and dedicate resources to improved monitoring of CTC. The planned whole process real-time monitoring mechanism at CM enterprises includes measures that are far-reaching and would ensure full and accurate monitoring of CTC where those measures are deployed.

61. While China has a robust system in place for the monitoring, reporting, verification and enforcement of ODS phase-out, as well as plans to take additional measures to strengthen that system, the Secretariat notes the following:

(a) Local EEBs play a key role in monitoring and enforcing the ODS phase-out. MEE may wish to consider complementing the efforts of the EEBs by undertaking periodic independent inspections of a small number enterprises, and testing samples from a small number of products. Such inspections and testing could be a part of future special enforcement actions and inspections, and could become integrated into regular enforcement and inspections, as necessary;

(b) In addition to the improved monitoring of CTC at CM facilities, consideration should be given to monitoring PCE plants;

(c) Expeditious disclosure of illegal production of controlled substances, which points to a demand for those substances, would help Executive Committee members better understand how China is addressing any potential gaps in its monitoring and enforcement mechanisms;

(d) Given the limited information available on some of the cases of illegal production, additional investigation into possible undeclared production of ODS at larger, integrated facilities would be merited. In addition, it would be helpful to better understand how feedstock uses of ODS are monitored; and

(e) The cases of illegal production are also potential opportunities to learn how such facilities are able to purchase, for example, CTC; what the intended uses of the ODS are; and who are the likely customers. Therefore, training of the enforcement personnel to identify ODS production and to preserve key technical information and data in cases of non-conformity with applicable regulations is recommended.

Secretariat's Recommendation

62. The Executive Committee may wish to:

(a) Note the review of the current monitoring, reporting, verification and enforcement systems implemented by the Government of China in line with its Agreements with the Executive Committee on the country's HCFC phase-out management plan and HCFC production phase-out management plan, and the progress report regarding actions taken with a view to strengthening of legislation on ODS and implementation thereof in China, submitted in line with decisions 82/65 and 82/71(a); and

(b) Note with appreciation the intention of the Government of China to include the monitoring of ozone-depleting substances (ODS) and HFCs in its atmospheric monitoring, and the commitment by the Government to share the data gathered from that monitoring with the scientific community, [and to request the Government of China to provide an update on the progress of establishing the monitoring network to the first meeting of 2021].

PART II: DESK STUDY ON THE CURRENT SYSTEM OF MONITORING CONSUMPTION OF FOAM BLOWING AGENTS AT ENTERPRISES ASSISTED UNDER STAGE I OF THE HCFC PHASE-OUT MANAGEMENT PLAN AND VERIFICATION METHODOLOGY (DECISION 82/67(C)) (WORLD BANK)

Background

63. On behalf of the Government of China, the World Bank has submitted to the 83rd meeting the desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under stage I of the HPMP and a verification methodology that includes random sampling in order to ascertain whether ODS that had already been phased out had been or were being consumed at those enterprises (decision 82/67(c)).

64. The desk study, which is appended in its entirety to the present document, has five chapters:

Chapter I	Introduction
Chapter II	HCFC phase-out in China's PU foam sector
Chapter III	Established HCFC consumption monitoring system for PU foam
Chapter IV	Lessons learnt
Chapter V	Proposed methodology for verifying the use of phased-out substances.

Secretariat's comments

65. The Secretariat noted with appreciation the comprehensive report submitted by the Government of China through the World Bank, as well as the thorough process followed by the Government to describe and analyse past and current capacity for monitoring and verification of ODS phase-out, to identify gaps and challenges in the current system, and to propose a methodology for verifying the use of phased-out substances while addressing those gaps.

66. Upon reviewing the desk study, the Secretariat identified several areas for which additional clarification or information was required. Although numerous clarifications were discussed, the present document only reflects aspects of the discussion that provide additional elements to the information already contained in the revised desk study submitted after the discussions, and available in its entirety in Annex II of the present document.

67. The additional information below is presented in the same order as the chapters of the desk study.

<u>HCFC phase-out in China's PU foam sector</u>

Additional information on the role of systems houses in monitoring, reporting and verification

68. Given the key role that systems houses play in the PU foam sector by formulating polyols containing blowing agents (controlled and alternatives) for downstream users:

(a) The Secretariat requested additional information about their role and responsibilities in the phase-out of CFCs and the HPMP, and how the monitoring of ODS phase-out takes place for assisted and non-assisted systems houses. The Government of China explained that during the CFC phase-out period there were only about ten systems houses that supplied

pre-blended polyols. It was only when HCFC-141b penetrated the market after the ban of CFCs that the systems house business started booming in China. Stage I of the HPMP started involving systems houses in phasing out HCFC-141b. In the sub-agreements signed with IECO, systems houses agreed to freeze their HCFC-141b consumption under the baseline year level, which would control HCFC-141b consumption and create an incentive for the penetration of alternative technologies. During sector surveys, such as the survey for the preparation of sector plans and the SME market survey, systems houses played an important role in providing downstream client information, encouraging eligible enterprises to apply for funding, and providing technical support;

(b) The Secretariat suggested that the proposed methodology for verifying use of phased-out substances should include the specific roles that the systems houses could play to help monitor and verification ODS phase-out. For example, systems houses could help accelerate and increase the registration of enterprises, report breaches of agreements, increase awareness in SMEs on the phase-out control measures and on the availability of alternative technologies, and facilitate their introduction. The Government of China indicated that during stage II of the HPMP, systems houses would be provided with more funding and more obligations for phasing out HCFC-141b and for providing technical assistance to downstream users. Measures include, but are not limited to, building up alternative pre-blended polyols production capacity, gradual reduction of HCFC-141b from the baseline year, and technical assistance to SME clients. Local EEBs will be encouraged to communicate with systems houses and to build their capacity for reaching out to the SMEs in their regions; and

(c) The Secretariat suggested to classify systems houses as PU foam enterprises and not as distributors, so they could be registered with the MEE when they consume above 100 mt of HCFC rather than when they consume above 1,000 mt. The Government of China explained that it would not make a difference as, in line with the regulations, all systems houses must register either with the MEE or with provincial EEBs, and that all of them were subject to monitoring and obliged to receive inspections by the MEE and local EEBs.

69. The Secretariat notes with appreciation that in the proposed methodology for verifying the use of phased-out substances, the revised desk study lists systems houses as one of the main sources of information on downstream clients, which will be used to upgrade the registry of PU foam enterprises maintained by the EEBs. The Secretariat still considers that having the systems houses classified as PU foam enterprises rather than distributors will allow MEE to have a better understanding of the sector and the flows of blowing agent and pre-blended polyols containing controlled substances.

Additional information on coverage of monitoring verification and reporting through EEBs

70. Based on the desk study and on previous progress reports on stage I of the foam sector plan of the HPMP, the Secretariat noted that IECO's cooperation with the EEBs' monitoring of ODS phase-out had predominantly focused on11 provinces.[27] Given the likelihood that there were PU foam SMEs in other provinces, the Secretariat enquired about additional efforts made to ensure that the remaining provinces/autonomous regions/municipalities had sufficient capacity for local ODS management in the PU foam sector. In this regard, the Government of China explained that:

(a) Even though there were PU foam enterprises and systems houses scattered throughout other regions in China, strengthening the monitoring capacity in these 11 key provinces and cities received priority as they accounted for over 90 per cent of the national HCFC

[27] Guang Dong, Hebei, Henan, Jiang Su, Liaoning, Qingdao, Shang Dong, Shanghai, Sichuan, Tianjin, Zhe Jiang.

consumption;

(b) Local ODS management capacity was also being built across all provinces. The local EEBs collected ODS consumption data in their regions, issued ODS phase-out policies and information in the foam sector, provided training for relevant project officials on ODS policy and regulations, and organized on-site verifications and enforcement inspections in relevant sectors. Public awareness activities had been organized in the regions as well, such as the workshops on ODS management regulations and alternative technologies for PU foam enterprises and systems houses; and

(c) During the ODS campaign in August 2018, inspections were carried out in all provinces simultaneously. It was proven that other provinces had established registries of PU foam enterprises and systems houses, and had implemented enforcement measures that involved investigating enterprises. Stage II of the HPMP would further assist the provinces in need of technical or financial support, and pay close attention to the regions that reported any signs or cases of illegal use of phased-out ODS. Workshops for local EEB officers would be organized on a regular basis.

71. The Secretariat noted with appreciation the additional information on the progressively increasing capacity of all EEBs, especially where no Multilateral Fund projects had been implemented and where the exposure to the monitoring work being done might have been lower. The Secretariat considers that the technical assistance activities included in the PU foam sector plan of stage II of the HPMP could help increase the capacity of all EEBs where PU foam is manufactured. The Secretariat suggested considering an interprovincial EEB officers' network for information exchange and capacity building on ODS management, following a model similar to the one established by the regional networks of ozone officers implemented by UNEP. The Government appreciated the suggestion, acknowledging that the inter-regional information exchange needed strengthening.

Mechanisms to facilitate reporting of non-conformity with regulations in the PU foam sector

72. As discussed in Part I of the present document, the Secretariat encourages the Government of China to continue developing and promoting whistle-blower protection mechanisms to ensure safe reporting of non-conformity with ODS regulations, and to continue raising awareness in the industry on the environmental consequences and the competitive disadvantage suffered by the law-abiding enterprises as consequences of illegal behaviour.

Extension to end users of penalties for non-conformity with regulations in the PU foam sector

73. Considering that the proposed methodology for verifying use of phased-out substances includes intensifying penalties for violations, the Secretariat asked if the Government of China had considered extending penalties to users (e.g., large construction projects should be accountable for the materials used, including the blowing agent in the spray foam). The Government indicated that it was difficult to impose penalties on end users, as they were usually not capable of testing the components contained in products. End users purchase products and/or services, and rely on the quality assurances provided by the suppliers. The current ODS legislation and policies have established a whole process management system of ODS production, use, sales, import and export.

74. The Secretariat agrees that most end users need to rely on the quality assurances provided by the suppliers. With regard to larger end users, such as large construction projects, the Secretariat does not have information from other Article 5 countries on any specific measures to enforce bans on the use of blowing agents (e.g., on-site inspections of final product at large end users). It is noted, though, that the proposed methodology includes foam product sampling from ODS users (foam producers) and distributors. This issue was not further discussed in the time available for the preparation of the present document.

Laws and regulations related to ODS contained in pre-blended polyols

75. The Secretariat requested clarification on how the ODS contained in pre-blended polyols were considered in the comprehensive set of laws, regulations, rules and policies in place to manage and monitor ODS in China. The Government explained that, according to its rules and regulations, especially the 2013 Circular issued by the MEE, enterprises that consumed HCFCs contained within pre-blended polyols were treated as HCFC consumers, and therefore had to apply for a consumption quota if the HCFC contained within the pre-blended polyol was above 100 mt per year, or register with provincial EEBs if the HCFC was below 100 mt per year. Systems houses must also be registered with the MEE (if their HCFC consumption is above 1,000 mt per year) or provincial EEBs (if below 1,000 mt per year), depending on their sales volumes, and to keep records of their sales. The records could show where the pre-blended polyol was sold. But due to the complexity of the entire supply chain and the possibility of the involvement of different levels of dealers, it is difficult to accurately distinguish domestic sales from exports based solely on the records of an individual systems house. Several parts of the report indicate that pre-blended polyols are included in monitoring actions, particularly in terms of site inspections.

76. The Secretariat notes that the regulations treat HCFC and HCFC contained in pre-blended polyols equally. Therefore, exports of HCFC contained in pre-blended polyol should be tracked in the same manner as exports of HCFC, including export quotas. Accordingly, the Secretariat recommends that the Government of China considers developing a system to better identify, record, control and report exports of pre-blended polyols containing controlled substances, and to include ODS contained in pre-blended polyols in the iPIC mechanism, if that was not already being done. While this goes beyond the monitoring, reporting and verification of ODS phase-out in China, it has a value in the monitoring, reporting and verification in other countries.

Provisions for breach of contract in SGAs signed by assisted CFC enterprises

77. The Secretariat requested clarification on whether the SGAs signed by enterprises assisted for CFC phase-out also contained provisions for breach of contract, and whether such provisions were ever used (e.g., under the HPMP there is a penalty of up to 10 per cent of the SGA value, or termination of the SGA and return of assistance in cases where beneficiary enterprises do not stop, or restart using HCFC-141b). The Government of China clarified that the provisions for breach of contract were also contained in the SGAs for the CFC phase-out sector plan, and that to date no beneficiary under the CFC sector plan or the HPMP had been identified in breach of an SGA. A beneficiary would be considered to be in breach of contract under "the circumstances that the beneficiary does not strictly perform the obligations, responsibilities, representations and guarantees under this contract." The commitment letter agreeing to stop using ODS is an attachment to the SGA. This contract obligation is not the only measure to ensure that enterprises stop and do not restart using ODS. Local EEBs and the MEE will not issue a HCFC quota or registration to an enterprise that has completed a conversion sub-project. Without an HCFC quota or registration, enterprises are breaking ODS rules if they re-use HCFCs.

78. The Secretariat notes the system to ensure that enterprises with SGAs continue in conformity with ODS regulations after completion of conversion to an alternative. For other enterprises that did not receive Multilateral Fund assistance, and therefore did not enter into SGAs, having them registered by the EEBs will ensure that they are covered by the monitoring system.

Additional information on identified cases of illegal use of ODS

79. In providing additional information to the Secretariat on the cases of illegal use of CFC-11 that have been identified, the Government of China indicated that:

(a) A major cause of illegal production and use of CFC-11 was the low cost of CFC and the formulation, which cut the price of the final products, because the production process with

CFC-11 was comparatively simple with a low technical difficulty threshold;

(b) None of the PU foam enterprises and systems houses found with traces of CFC-11 had received Multilateral Fund assistance; and

(c) If a systems house was found with traces of CFC-11, under the current monitoring system the environmental inspectors would start the procedures to trace both the supplier of the CFCs and the clients of the pre-blended polyols.

Established HCFC consumption monitoring system for PU foam and lessons learned

80. Regarding the main differences between the current monitoring system and the monitoring system for CFCs, in addition to information already contained in paragraphs 22 to 27 and 72 to 79 of the desk study, the Government of China indicated as fo llows:

(a) One gap in CFC monitoring was the lack of a systematic procedure to register and track ODS-using enterprises. This was one of the major lessons, and therefore a tracking system of enterprises had been incorporated in the HCFC phase-out period;

(b) Another major difference was that support for monitoring capacity was being strengthened through on-site sample collection, blowing-agent detectors and testing centre development;

(c) Both the systematic procedure to track ODS-using enterprises and the improvement in monitoring and enforcement capacity applied to HCFCs and CFCs; and

(d) Another important lesson was the need for periodic checks at a macro level to see whether foam blowing agent consumption was on par with the foam being manufactured.

Issues related to the registry of systems houses and PU foam enterprises

81. The desk study describes a comprehensive system to monitor ODS phase-out in registered enterprises. However, based on the information in the desk study, it is possible to surmise that the number of non-registered enterprises (especially SMEs) is large. Furthermore, the desk study also indicates (paragraph 26) that at the time of CFC phase-out there was no systematic procedure in place to register and track ODS-using enterprises. The Secretariat considers that the system to monitor ODS phase-out in the PU foam sector could be further strengthened by covering a large number of enterprises that so far had not been registered.

82. A summary of the discussion on this matter is presented below:

(a) The Government of China acknowledges that there is a need for the provincial and local EEBs to modify their lists and databases to include not only enterprises that still use HCFCs, but also those that have phased out ODS. The Government has included the upgrade of the existing registry as part of the methodology proposed for verifying the use of phased-out substances, but acknowledges that it will need time to implement this measure across the provinces. As part of the methodology, EEBs are encouraged to enlarge their registry through business registration information shared by local industry (including systems houses) and commerce administrations, Internet searches, surveys and other types of reconnaissance;

(b) In order to help address the identified challenge of expediting the creation of registries, the Secretariat requested clarification on whether the fine of 200,000 Yuan for non-registered enterprises would be an incentive for enterprises that had not registered to do so. The Government of China explained that as the process of registration was still ongoing and

new in some provinces, the fine could be waived for enterprises that came forward voluntarily at any time; and

(c) In order to create a more comprehensive registry, the Secretariat also asked whether the Government of China had considered having a registry of PU foam enterprises/systems houses rather than a registry of HCFC users. The Government clarified that China's ODS regulations could only refer to controlled substances, and a sector could not be regulated just because it was a sector. As such, when HFCs become controlled substances in China, there will be the legal mandate to require registration.

Additional information on the current system of on-site inspections by EEBs

83. On the current EEBs' protocol for inspections of enterprises after project completion (number of inspections per year, criteria for selection of enterprises to be inspected, methodology of inspection, criteria to determine a suspicion of contravention, type and number of samples taken per year), the Government of China explained that each EEB developed a different monitoring work plan based on its specific circumstances, including the concentration of enterprises in the region, the geographical distribution of enterprises and prioritized sectors.

84. On the role of the World Bank as the implementing agency of the PU foam sector:

(a) The World Bank can also inspect an enterprise that has already completed national acceptance years after that national acceptance, as long as the overall project grant agreement (GA) is in place. For example, under the PU foam sector plan of stage I, all conversions were completed by the end of 2018, but the World Bank could organize visits in cooperation with IECO until mid-2019, when the GA ends. Approximately five to ten enterprises are visited a year; and

(b) The World Bank's provisions on environmental and social safeguards ensure that a mechanism to mitigate environmental impact and ensure sustainable phase-out during implementation to completion is put into place, and that the said system is taken over through country regulations and processes after completion to ensure sustainability.

Proposed methodology for verifying the use of phased-out substances

Additional information on the proposed system of on-site inspections by EEBs

85. The methodology for verifying the use of phased-out substances proposes that, while the stage II of the PU foam sector plan is still ongoing, IECO and/or the World Bank will undertake random visits to at least ten per cent of PU foam enterprises a year that have converted one year prior or more. In addition, the Secretariat suggests that at the end of stage II of the PU foam sector plan, IECO and/or the World Bank undertake random visits to five per cent of the enterprises that have achieved national acceptance at least two years before to ensure that they are not using ODS, and to verify whether they are still using the agreed alternative. The Government of China gave assurances that this could be done within the original proposal of ten per cent by ensuring that some of the enterprises were among the first to complete their conversions.

86. The Secretariat requested an overall estimate of the annual cost of inspections proposed in all PU foam enterprises and systems houses in a given EEB jurisdiction, noting that the cost of an on-site visit to an enterprise was US $500 plus US $450 for samples taken and US $120 for samples tested. The Government of China reported that the estimated annual cost of the inspections was around US $2.25 million, based on an estimate of more than 100 systems houses and more than 2,000 PU foam enterprises across the country.

Additional details on the instant blowing-agent detectors proposed to be distributed to EEBs

87. The Secretariat agrees that the use of the recently available instant blowing-agent detectors proposed for EEBs could make the process of on-site inspection and sample analysis more cost-effective. Upon request from the Secretariat, the Government of China reported that the instant detectors were suitcase-sized and not hand-held, and that they were capable of testing the components of foam products, blowing agents, and pre-blended polyols. In testing, the collected sample is put into the detector through the feed port. The detector then generates the testing map against the chemicals contained in the sample through gas chromatography. As per the different peak times of chemicals, the components of blowing agents can be preliminarily screened, including CFC-11, HCFC-141b, HFC-245fa, and cyclopentane. The process to test one sample usually takes about 20 minutes. The cost for the detector is around US$ 20,000. The Secretariat notes that around 35 detectors will be procured and distributed with balances from the CFC PU foam, solvent, production, and refrigeration servicing plans.[28]

88. On whether the HPMP progress reports would include the findings of these monitoring, inspection and enforcement actions being undertaken by EEBs, the Government of China indicated that HPMP progress reports would comprehensively reflect the implementation progress of the HPMP within the reporting period, in line with its Agreement with the Executive Committee. As indicated in the Secretariat's comments on the financial audit of the CFC, CTC and halons sector plans (Part III of the present document), the Secretariat supports the use of these remaining balances indicated in some of those sectors for supply of ODS instant detectors to EEBs, on the understanding that the Government of China will continue to report on the results of local EEBs monitoring efforts, including cases were CFC-11 was detected, in future financial audit reports. Once all the remaining balances under the projects included in the financial audit have been disbursed and those projects have been completed, the Secretariat proposes that the Government of China continue such reporting under the annual progress reports of the PU foam sector of the HPMP.

Methodology for balancing raw materials in the foam sector

89. The Secretariat noted with appreciation the methodology for balancing raw materials in the foam sector to infer total blowing agent, which is proposed on an annual basis. This methodology could strengthen the Government of China's monitoring system for foam blowing agents as well as support a verification methodology to ascertain whether ODS that have already been phased out are still being consumed. However, the Secretariat is uncertain that the data from that analysis would be of sufficient accuracy to enable a verification of whether additional foam blowing agents may be in the market. In particular, the variation in the parts of blowing agent contained in polyols, which will vary based on application, may create possible uncertainties regarding blowing agents use (e.g., while the use of HCFC-141b or of HFCs may be well known, the precise consumption of other blowing agents will be more uncertain). Given the magnitude of annual PU rigid foam production in China (approximately 1.7 million mt per year), these uncertainties may become large. The Secretariat nonetheless considers that the analysis would be useful in detecting changes in trends that could be further investigated, rather than providing a stand-alone method of verification.

90. In addition, the following related issues were discussed:

(a) The Secretariat recommended monitoring MDI sales and use so that a registry of PU foam enterprises and systems houses (rather than HCFC users) could be established and maintained. The Government of China indicated that information exchange had been established and data on the sales of MDI had been collected and analyzed. With regard to the issue of management of MDI sales, as indicated earlier, there are limitations in terms of what the Government of China can mandate enterprises to report on, especially those

[28] Refer to the Secretariat's comments in Part III of the present document.

not using ODS and therefore not under the ODS regulations;

(b) Upon request, the Government of China also confirmed that information obtained from the mass balance analysis could be crosschecked with information from the systems houses and those enterprises that had a quota or that were registered with an EEB in order to provide a fairly good understanding of what the market looks like at a more macro level. This also includes the amount of HCFC-141b produced;

(c) On whether this methodology could help detect if there was widespread illegal use of CFC-11 in the sector, the Government of China indicated that it was one way to monitor whether there was widespread use of an unknown blowing agent, but it was understood that it could not help detect isolated incidences of banned and illegal ODS. The mass balance of raw material method can indicate overall PU foam production and can help crosscheck the blowing agents in the sector. However, given the use of different alternatives such as HFCs, water blown formulations, and HFOs in the market, detected gaps cannot directly translate into illegal use of CFCs. The proposed method serves as an alarm system that triggers further investigation when a deviation is detected.

Conclusions

91. The Secretariat appreciates the detailed information and the proposed methodology for verifying the use of phased-out controlled substances contained in the desk study prepared by the Government of China, as well as the additional clarifications reflected above and open discussion on issues raised. The Secretariat considers that the system to monitor, report and verify compliance with the phase-out of ODS in the PU foam sector has been strengthened over the years in terms of the ODS regulatory framework, the capacity of institutions in charge of monitoring, and cooperation with stakeholders. The methodology can continue to be strengthened and expanded to have a larger coverage of enterprises. Better understanding of the demand for and consumers of illegally produced blowing agents would be beneficial. As described in the discussion, several of the observations by the Secretariat have already been included in the whole monitoring system, or are being taken into consideration to continue strengthening the system. In the case of other observations, the Government of China indicated that they were more difficult to implement.

92. A summary of the Secretariat's observations is presented below:

(a) The established procedures for monitoring ODS phase-out in the PU foam sector are effective in the PU foam enterprises and systems houses that are already registered. The registration of additional PU foam enterprises and systems houses, particularly those that have never received Multilateral Fund assistance and SMEs, will help increase the coverage of the monitoring system. The measures proposed in the desk study to accelerate the registration of additional enterprises are a priority;

(b) The role of systems houses in identifying and providing information on SMEs to EEBs will need to be enhanced. This will also help in improving the registry of enterprises. A more systematic inclusion of the systems houses in the implementation of stage II of the PU foam sector of the HPMPs will strengthen their capacity to provide assistance to downstream users and at the same time to help EEBs to identify and monitor them. The Secretariat considers that having systems houses classified as PU foam enterprises rather than distributors will assist MEE in having a better understanding of the sector and the flows of blowing agent and pre-blended polyols containing controlled substances;

(c) As most work has so far focused on the 11 provinces where 90 per cent of the consumption is, it is also important to build the capacity of all EEBs, wherever there is PU foam manufacturing and use. The proposed methodology includes cross-regional cooperation

and technical assistance activities under stage II of PU foam sector plan of the HPMP, which will also help strengthen EEBs to undertake monitoring and enforcement activities, on the understanding that once the capacity is established, EEBs shall allocate budgets for routine monitoring activities, as confirmed by the Government;

(d) The Secretariat suggests that the Government to continue developing and promoting whistle-blower protection mechanisms to ensure safe reporting of non-conformity with ODS regulations, and to continue raising awareness in the industry on the environmental consequences and the competitive disadvantage that law-abiding enterprises suffer as a consequence of illegal behaviour;

(e) The Government of China may wish to consider whether it would be beneficial to have a greater involvement of large end users in the monitoring and verification activities, whether by ensuring accountability of the materials used in their projects or by undertaking on-site inspection and sampling of final products at large end users in addition to the proposed inspections to PU foam enterprises and systems houses;

(f) The Secretariat recommends that the Government of China considers developing a system to better identify, record, control and report the exports of pre-blended polyols containing controlled substances, and to use that system for reporting under the informal and voluntary iPIC mechanism, if possible;

(g) As noted in document UNEP/OzL.Pro/ExCom/83/38, the Executive Committee may wish to clarify that all Article 5 countries that receive assistance from the Multilateral Fund and that produce or import controlled substances to blend them in pre-blended polyols for export, should report such exports, identifying the country or countries to which the pre-blended polyols are exported and the respective quantities of ODS contained therein; and

(h) The methodology of balancing raw materials in the PU foam sector can strengthen the Government of China's monitoring system of foam blowing agents as well as provide support to a verification methodology to ascertain whether ODS that have already been phased out are still being consumed. The Secretariat considers that monitoring MDI sales and use will also provide useful reference information and will be helpful in maintaining a registry of PU foam enterprises and systems houses (rather than HCFC users).

93. The Secretariat supports the proposed methodology for verifying the use of phased-out substances in the PU foam sector presented in the desk study, noting the observations above, and supports the efforts to improve registration, on-site inspection and testing capacity. The Secretariat recommends that the Government of China continue to report on the results of local EEBs monitoring efforts, including cases were CFC-11 was detected, in future financial audit reports, and once all the remaining balances under the projects included in the financial audit have been disbursed and those projects have been completed, to continue such reporting under the annual progress reports of stage II of the PU foam sector of the HPMP.

Secretariat's recommendation

94. The Executive Committee may wish:

(a) To note with appreciation, the desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under the stage I of the HPMP and the verification methodology to ascertain whether ODS that had already been phased out had been or were being consumed at those enterprises, attached to document UNEP/OzL.Pro/ExCom/83/11/Add.1; and

(b) To consider any additional guidance that the Executive Committee may wish to recommend for the implementation of stage II of the PU foam sector plan in light of the observations in paragraph 92 of document UNEP/OzL.Pro/ExCom/83/11/Add.1.

PART III: FINANCIAL AUDIT REPORTS FOR THE CFC PRODUCTION, HALON, PU FOAM, PROCESS AGENT II, REFRIGERATION SERVICING AND SOLVENT SECTORS IN CHINA

Background

95. In line with decisions 71/12(b)(ii) and (iii)[29], 72/13[30], 73/20(b)[31], 75/18[32], 77/26(b)[33], and 80/27[34], the Government of China submitted to the 82nd meeting, through the relevant bilateral and implementing agencies, final progress reports, relevant research, technical assistance reports, and audit reports including the interest accrued during the implementation of the CFC production, halon, PU foam, process agent II, refrigeration servicing and solvent sector plans.

96. At the 82nd meeting, the Executive Committee decided to defer, to its 83rd meeting, consideration of the financial audit reports for CFC production, halon, polyurethane foam, process agent II, refrigeration servicing and solvent sectors in China (decision 82/17). Accordingly, the Government of China, through the relevant implementing agencies, has submitted to the 83rd meeting an update as of April 2019 to the reports presented at the 82nd meeting.

97. In order to reflects the updates since the 82nd meeting, the Secretariat is using the same document used at the 82nd meeting[35] **including in bold new text associated to the review of the updated report.**

Planned budgets and progress reports

98. As of 31 August 2018, remaining balances amounted to US $22,236,071. **As of 28 February 2019, the remaining balance has been reduced to US $15,498,653 million.** Table 1 presents an overview of

[29] The Committee invited the Government, through the relevant implementing agency, in future financial audit reports, to provide data on all funds that were being held by the Government for disbursement to beneficiaries, and the interest accrued from those balances, on the process agent II, solvent and the refrigeration servicing sector plans; and information on progress related to the work plans for the sector plans and its proposal on how to use potential balances.
[30] The Committee invited the Government, through the relevant implementing agency, to submit to the 73rd meeting the financial audit reports for the process agent II, solvent and CFC refrigeration servicing sectors, together with the plans for the remaining funds for the halon, CFC production, foam, process agent II, solvent, and CFC refrigeration servicing sectors, describing how they would be used for activities related to ODS phase-out and allow for the completion of those sector plans by the end of 2018.
[31] The Government and the relevant bilateral and implementing agencies were requested to submit annual progress reports, audit reports, and interest accrued during the implementation of the CFC production, halon, PU foam, process agent II, refrigeration servicing and solvent sector plans, until the completion of all activities no later than 31 December 2018, and to submit project completion reports for the sector plans no later than the first meeting in 2019.
[32] The Government was invited to include the results of the activities on the screening and evaluation of CFC-free substitutes and the development of new substitutes in a report to be submitted when those activities had been completed; to collect information where available on halon recovery as part of its collection of information on CFC recovery during visits to ship dismantling centres; and to undertake a study on its country's production of CTC and its use for feedstock applications and to make the results of the study available to the Committee by the end of 2018.
[33] The Government was requested to provide to the 79th meeting final study reports on all research and development projects undertaken with funds from the Multilateral Fund under the CFC production sector.
[34] The Committee noted with appreciation that the Government has confirmed that the funding balances associated with each of the sector plans will be fully disbursed by the end of 2018; that relevant research and technical assistance reports will be submitted to the last meeting of 2018, and that the project completion reports will be submitted to the first meeting in 2019.
[35] Part I of document UNEP/OzL.Pro/ExCom/82/20

fund disbursements between **31 August 2018 and 28 February 2019**, fund balances, and the planned completion dates for each of the sector plans.

Table 1. Planned budgets for the use of remaining funds (US $)

Activity	Balance as at 31 August 2018	New disbursement	Balance as at 28 February 2019	Completion date
CFC production: Total approved US $150,000,000 (World Bank)				
Recruitment for technical support, and organization of technology workshop on alternatives	0	**0**	**0**	2014
ODS import and export management MIS	0	**0**	**0**	2015
Research and development on ODS alternatives	420,089	**368,655**	**51,434**	**2019**
Supervision and management	199,765	**29,465**	**170,300**	**2019**
Total	**619,853**	**398,120**	**221,733**	
Halon sector: Total approved US $62,000,000 (World Bank)				
Establishment of a national halon recycling management center, including capacity building, detecting equipment and information system	1,975,083	**438,368**	**1,536,715**	2022
Establishment of a halon-1211 recycling center, including collection, transportation, recycling and reclamation	3,017,686	**0**	**3,017,686**	2022
Establishment of a halon-1301 recycling center, including collection, transportation, recycling and reclamation	1,039,530	**0**	**1,039,530**	2022
Technical assistance: investigation of halon quantities for the civil aviation industry and for the ship recycling industry; and policy and regulations for halon recycling	2,917,936	**0**	**2,917,936**	2022
Disposal of unusable halon and residues	1,504,105	**0**	**1,504,105**	2022
Total	10,454,340	**438,368**	**10,015,972***	
Process agent II: Total approved US $46,500,000 (World Bank)				
Capacity building for local **EEB**s	288,357	**280,000**	**8,357**	2018
Research on ODS substitution and development of trends of alternative technologies	62	**0**	**62**	2018
CTC residue disposal	5,445,970	**3,228,084**	**2,217,886**	**2019 and 2020****
Study on production of CTC and its use for feedstock applications	89,417	**10,412**	**79,005**	**2019 and 2020****
Monitoring, management and post evaluation	1,458,721	**36,081**	**1,422,640**	**2019 and 2020****
Total	7,282,527	**3,554,577**	**3,727,950**	
PU foam: Total approved US $53,846,000 (World Bank)				
Screening and evaluation of CFC-free substitutes and development of new substitutes	270,935	**270,935**	**0**	2018
Additional provincial foam activities (capacity building for 11 provinces)	490,812	**290,812**	**200,000**	**Jun-2019**
Technical service for the foam enterprise for better application of new alternatives	375,377	**375,377**	**0**	2018
Continue monitoring of CFC phase-out in the foam sector	370,373	**273,393**	**96,980**	**Mar-2019**
Project monitoring and management	147,901	**147,901**	**0**	2018
Total	1,655,398	**1,358,419**	**296,980**	
Refrigeration servicing: Total approved US $7,884,853 (Japan, UNEP, UNIDO)				
Ongoing activities (e.g., eight training centres, training on disposal ships sector, Shenzhen demonstration project)	9,124	**9,124**	**0**	2018
Training programmes for ICR/RAC sub-sectors	551,849	**146,194**	**389,731**	**Jun-2019**
Research on leakage of refrigeration during R-290 RAC servicing and operation	282,040	**0**	**282,040**	2018
Data survey	80,552	**80,552**	**0**	2018

Activity	Balance as at 31 August 2018	New disbursement	Balance as at 28 February 2019	Completion date
Monitoring and management	95,846	**95,846**	**0**	2018
Capacity building on ODS monitoring (reallocation of funds from training activities)	0	**0**	**15,924**	**Jun-2019**
Total	1,019,411	**331,716**	**687,695**	
Solvent sector: Total approved US $52,000,000 (UNDP)				
Combating ODS illegal activities: capacity building for 10 local customs offices	522,765	**69,646**	**453,119**	**Jun-2019**
Capacity building for ODS-related personnel in 14 provinces	340,000	**340,000**	**0**	2018
Public awareness and publicity activities	0	**0**	**0**	2018
Alternative technology assessment and research	0	**0**	**0**	2017
Electronic file management system	92,307	**0**	**92,307**	**Jun-2019**
Activity management and monitoring	249,470	**246,573**	**2,897**	**Jun-2019**
Total	1,204,542	**656,219**	**548,323**	
Summary				
CFC production (US $150,000,000 - World Bank)	619,853	**398,120**	**221,733**	**2019**
Halon sector (US $62,000,000 - World Bank)	10,454,340	**438,368**	**10,015,972**	**2022**
Process agent II (US $46,500,000 - World Bank)	7,282,527	**3,554,577**	**3,727,950**	**2020**
PU foam (US $53,846,000 - World Bank)	1,655,398	**1,358,419**	**296,980**	**2019**
Servicing (US $7,884,853 - Japan, UNEP, UNIDO)	1,019,411	**331,716**	**687,695**	**2019**
Solvent (US $52,000,000 - UNDP)	1,204,542	**656,219**	**548,323**	**2019**
Total	**22,236,072**	**6,737,419**	**15,498,653**	

*** Out of the balance of US $10.02 million, US $2.38 million are committed on ongoing activities. The US $7.64 million not committed yet will be used on the establishment and operation of the halon-1211 recycling center, halon-1301 recycling operations, capacity building for halon recycling stations, procurement of halon detecting instrument, policy and regulation research for halon recycling, investigation of halon quantities in key areas of China and disposal of unusable halon and residues.**

**** Remaining activities under contract expected to be completed by December 2019. Remaining unallocated balances of approximately US $2.25 million are proposed to be re-allocated to the long-term monitoring and management of ODS. Those activities are expected to be completed by December 2020.**

99. The progress reports included disbursement as of **28 February 2019**. Financial audits of the disbursements as of 30 June 2018 were conducted by Daxin Certified Public Accounts LLP according to national standards. The audit opinion was that the grant and expenditure statements for the CFC production, halon, CTC process agent, polyurethane foam, solvent and refrigeration servicing sectors were in compliance with the rules of the Montreal Protocol and the accounting standards of China and had been fairly and justly presented by the **International Environmental Cooperation Center**/Ministry of Ecology and Environment (**IECO**/MEE) of China. **No Financial audit has been commissioned for expenditures after 20 June 2018, the next Financial audit would cover expenditures from 1 July 2018 to 30 June 2019.**

100. The activities implemented in each sector plan since 1 July 2017 are summarized below.

CFC production sector

101. Since 2015, the only remaining activities in the CFC production sector plan are in research and development (R&D) of ODS alternatives, and supervision and management. A total of US $402,414 **had** been disbursed **between the 80th and 82nd meeting. Since the 82nd meeting, an additional US $398,120 has been disbursed.** The remaining funding of US $**221,733** is expected to be disbursed by the end of **2019**.

102. Regarding R&D of ODS alternatives, thirteen proposals have been selected, **all** of which have been completed; **twelve have passed project acceptance** while the last project (at Beijing University of Chemical Technology on a new production process of HFO-1234yf and HFO-1234ze in laboratory) is **expected to have project acceptance in June 2019. Since the 82nd meeting, US $368,655 was disbursed,**

with the last payment of US $8,050 to be made upon project acceptance of that last project. Due to currency fluctuations between the time when the contracts were signed and when payments were made, there is an unallocated balance of US $43,384 that the Government of China proposes to use to purchase instruments for ODS monitoring for local Ecology and Environment Bureaus (EEBs) to build their capacity and achieve sustainable CFC phase-out compliance.

103. A total of US $233,411 had been allocated to supervision and management. **IECO** has disbursed US $**63,111**[36] to produce video training materials for ODS import and export management **(US $32,073, with a remaining contract value of US $88,080)**, **for a training workshop held 21-23 January 2019 in Changsha for 140 officers from all the provincial EEBs (US $22,390), for a video on industry compliance that was screened on the 2018 Ozone Day (US $32,073, with a remaining contract value of US $80,080) and for the 2018 financial audit for all the sectors (US $8,649)**. The **remaining unallocated** balance will be used by IECO to purchase instruments for ODS monitoring for local **EEBs** to build their capacity and achieve sustainable CFC phase-out compliance. **At the time of finalization of the present document, the Secretariat is unclear of the exact value of that remaining unallocated balance.**

Halon sector

104. A total of US $1,237,015 was disbursed between the last progress report and 31 August 2018, **and an additional US $438,368 was disbursed up to 28 February 2019**. In 2014, IECO prepared a plan to develop the national halon recycling and management system (NHRMC), and the remaining funding of the halon sector was entirely designated to support this program. Between 2015 and 2016, IECO established the NHRMC in cooperation with the certification center for fire products within the Ministry of Public Security. In 2017, the NHRMC publicized halon recycling in Shanghai, and worked with the government and the private sector to encourage halon recycling. Based on the experience gained in the last three years and feedback received, in 2018, NHRMC and **IECO** redesigned the work plan, started a project to develop an information management system and recycled 1.5 tonnes of halon-1301 from Tianjin and Jiangsu. Part of the remaining funding will be used for the purchase of equipment for stations, centers and local fire-fighting bureaus to analyze halon product components and identify their purity during recycling.

105. **In 2018, Shanghai Leinuo Security Technology Co., Ltd also recycled 450 kg of halon-1301 from discarded ships for sale. As the market price of recycled halon-1301 was insufficient to cover the recycling cost, Leinuo applied to NHRMC for a compensatory subsidy, which NHRMC is currently evaluating. In January 2019, Leinuo was formally certified as national halon-1301 recycling station and will receive assistance to enhance its capacity.**

106. **IECO** is currently selecting qualified enterprises to undertake the establishment of a halon-1211 recycling center. The project is estimated to start in 2019 and be completed in 2020. In the meantime, **IECO** will provide assistance to the enterprise Zhejiang Dongyang chemical Co., Ltd to ensure the safe storage of 2,261.4 tonnes of halon-1211. **In December 2018, IECO and NHRMC approved the project at US $1.45 million for new storage tanks and cylinders and the establishment of a stocks management and monitoring system. Currently, IECO and NHRMC are addressing safety concerns raised by the local government and the project is expected to restart soon. IECO** and NHRMC plan to organize the policy and regulation research for halon recycling in 2019.

107. **IECO and NHRMC will sign a contract for US $200,000 with the Shanghai fire department to investigate halon quantities and distribution in the Shanghai district. Investigation of halon quantities in other provinces is currently in preparation.**

[36] This value is different from the US $29,465 reported in Table 1. At the time of finalization of the present document, the reason for this discrepancy is unclear.

108. NHRMC and **IECO** are committed to exploring the feasibility of international cooperation on halon recycling and disposal, to assist other Article 5 countries in achieving the compliance target. In the next few decades, HFC fire-fighting products have the potential to become the main substitute for halon products. Considering that the Kigali Amendment will gradually reduce the production and consumption of HFC, relevant experience learned from the establishment of NHRMC could be adapted to HFC recycling, reclaiming, recovering and disposal.

109. **With the funding so far disbursed, the Government of China has gradually established and operated the NHRMC. Out of the balance of US $10.02 million, US $2.38 million are committed on ongoing activities. The US $7.64 million not committed yet will be used on activities aimed to further improve the recycling system and achieve sustainable management of halons, including: the establishment and operation of the halon-1211 recycling centre, halon-1301 recycling operations, capacity building for halon recycling stations, procurement of halon detecting instrument, policy and regulation research for halon recycling, investigation of halon quantities in key areas of China and disposal of unusable halon and residues. These activities will be implemented between 2019 and 2022.**

Process agent II

110. A total of US $190,050 was disbursed between the **80th meeting** and 31 August 2018. **Since then, a total of US $3,554,577 has been disbursed.** Six **EEBs** working with producers of CTC and other ODS received assistance to set up ODS management offices, establish specialized channels for enterprises to report ODS data, and undertake on-site inspections of enterprises. The project has been completed and the last payment **was** disbursed in **January 2019, for a total disbursement of US $280,000 for this activity. The remaining balance of US $8,357 is proposed to be allocated to strengthened ODS monitoring and management.**

111. A CTC residue disposal project is being implemented to support CTC by-producers in the disposal of their distillation residues from CTC refining and conversion facilities. Contracts for US $4.6 million in total were signed with nine enterprises for the construction of incinerators (3), the upgrading of existing incinerators (2), the construction of residue reduction devices (2), and for operation costs subsidies (2). **Construction of the three incinerators and two residue reduction devices has been completed, with the incinerators and devices tested; one enterprise finished the upgrade to its existing incinerator, while the other has not yet finished its upgrade. On-site verification of the two enterprisers receiving subsidies for the operation of their incinerators confirmed their use to dispose CTC residues. The level of disbursement for those activities was US $3,228,084, with US $1,371,915 in payments still to be made upon completion of the activities by December 2019. The remaining balance of US $845,970 is proposed to be allocated to strengthened ODS monitoring and management.**

112. As per the requirements of decision 75/18 of the Executive Committee, a study on China's production of CTC and its use for feedstock applications was launched in March 2018. Questionnaires for methane chloride production enterprises (CTC by-producers) and CTC feedstock use enterprises have been designed and were distributed in July. On-site investigations at the enterprises are being carried out, and a report assessing current emissions from CTC production and the feedstock usage is under preparation. **A Chinese version of the report was submitted on 23 April 2019; the Secretariat was unable to review that report in time for inclusion in the present document.**

113. Decision XXIII/6 specifies that after 31 December 2014, the use of CTC for the testing of oil in water would only be allowed under an essential use exemption. In 2017, the Government of China announced its commitment to phase out the use of CTC for laboratory testing of oil in water by 2019. In January 2018, **IECO** signed a contract with Tianjin Eco-Environmental Monitoring Center to develop alternative testing standards. Technical ways of replacing CTC with n-hexane have now been determined, and three national standards have been developed and were released and **became effective 1 January 2019, and US $10,978, representing the final payment under the contract, was disbursed**. **The contract with**

Beijing Guohua Jingshi Consulting Co., Ltd., was signed in August 2018 to continue training and advocacy for alternative technologies to replace analytical use of ODS in laboratories; the contract value is US $110,224, and the first payment of US $10,978 was disbursed. A further US $14,125 was disbursed to experts for technical support for project evaluation, acceptance and site verification.

114. In addition, two projects have been launched to strengthen capacity building for sustainable compliance with the Montreal Protocol. One project is the design and construction of an ODS online data reporting information system (stage II) (**US $250,000**). The online system will **complement the HCFC online management information system established under the stage I of the HPPMP by** incorporating data on all ODS **and will be a management platform to MEE and local EEBs to monitor enterprises under their jurisdiction**. The other project is capacity building for customs in the area of supervision and management of ODS (**US $750,000**). **IECO is coordinating the supervision and management of ODS trade with the new department at the Customs Authority given institutional reforms at the Customs Authority.**

115. **Given unallocated balances of approximately US $1.24 million, the Government of China proposes to undertake the following activities to enhance the long-term monitoring and management of ODS:**

(a) Construction and upgrade the online monitoring system on CTC production. This system would complement the ODS management information system by focusing on the CTC production, conversion, sales and stockpile among all the CM producers;

(b) Investigations of CTC production and feedstock uses. This activity will complement the study to be submitted in line with decision 75/18, which was carried out by an expert with a focus on CTC emissions during CTC production and feedstock uses. This activity is planned as an on-site survey and verification for CTC production and feedstock uses. PCE plants would not be covered;

(c) Support to enterprises on development and supply of the necessary reagent (substitute of CTC) that is applied by the amended national standard. The supply of substitute, PCE, does not fulfill the market demand after the new standard was released. This activity would support reagent manufactures to set up the necessary purifying facilities of PCE to meet the requirements of the new standard and market demand;

(d) Training and capacity building on ODS supervision and enforcement for local EEBs. The activity is to conduct regular training courses to local EEBs on ODS management, inspection, supervision and enforcement. Staff from provincial, municipal and county-level EEBs engaged in environmental monitoring will be trained;

(e) Market supervision and information collection on ODS sales. A consulting firm will be contracted to collect information of ODS sales and market, and to identify suspected illegal sales. The information related to such sales will be reported to MEE for further action; and

(f) Technical, policy and law support on ODS management, inspection, supervision, enforcement, as well as ODS disposal, etc. Individual experts will be hired to provide such support to relevant institutions.

PU foam

116. A total of US $506,548 was disbursed between the last progress report and 31 August 2018**, and an additional US $1,358,419 was disbursed up to 28 February 2019. The remaining balance of US $296,979 is being used in the procurement of instant blowing agent detector and the international workshop on capacity building for the implementation of the Montreal Protocol held in March 2019.** Ten research activities implemented in the PU foam sector were completed during the first half of 2018. These proposals had been selected to support the development of formulations with zero-ODP and low-GWP blowing agents at low prices that could be used by small and medium-sized enterprises (SMEs), and formulations of pre-blended polyol systems to optimize the stability, performance and insulation properties of foam products.

117. In June 2018, a spray field test was completed at a construction site in Hebei province with HFO as the blowing agent. The field test sprayed over 2,350 m^2 for domestic buildings. Dimensional stability, insulation performance, and other relevant foam properties **were** assessed in the winter under low ambient temperature **and the report is being finalized**.

118. In December 2014, **IECO** signed contracts with four systems houses that established production capacity for water-blown based pre-blend polyols by installing production facilities and laboratory equipment, and through trials and testing of the new formulations. Currently, the systems houses are providing technical services to downstream foam enterprises and have sold over 2,000 mt of alternative pre-blended polyols to downstream users including SMEs. The four projects were completed in June 2018 **and the systems houses received their last payment early 2019.**

119. **IECO** also signed contracts with **EEB**s in 11 provinces/cities aimed at enhancing public awareness of ozone layer protection, strengthening sustainable compliance capability, and ensuring that no CFCs or other controlled ODS would resurge post 2010. Up to the reporting date, the 11 local **EEB**s had fulfilled the goals and conditions as per required in the contract. The projects have strengthened the knowledge, management and enforcement capacity of these 11 regions, and promoted awareness of the national ODS management regulations. The 11 **EEB**s **completed** the projects in December 2018 **and received final payments on their contracts**.

120. The Government has issued the Regulations on ODS Management and the Circular on the Management of Construction of Facilities Producing or Using ODS, and has taken other policy actions to prohibit the re-use of phased-out CFCs and enforce the controls on HCFCs. However, the foam sector contains a large number of enterprises with various applications. Therefore, **IECO** has continued monitoring activities through contracts with five provinces (i.e., Hebei, Henan, Shandong, Si Chuan and Tianjin), where the majority of systems houses and foam enterprises are located, to visit chemical dealers, systems houses, and foam enterprises to collect samples of blowing agents, pre-blended polyol systems, and final foam products. Over 420 foam enterprises and systems houses have been visited, and over 780 foam and raw material samples have been collected. According to the preliminary test of the samples, there is a small percentage of those samples suspected of probably containing phased-out CFC/HCFC. **Three enterprises in Shandong were detected with illegal use of CFC-11, and were subject to the punishment in accordance with ODS management regulation.**

121. The Government considers that the monitoring activities have effectively enforced the established policy system. However, the efficiency of inspection and monitoring of the foam sector can be hindered by the number of subsectors and system houses, inadequate knowledge on the part of inspectors regarding foam production, and an insufficient number of blowing-agent detectors (not all cities and counties have them). In addition, the regulations on ODS management are concise and do not provide detailed instructions on dealing with each specific situation that may arise, leaving things up to provincial policy and **EEB** interpretation. Moreover, the alternative technologies have not penetrated the sector and higher costs undermine the willingness of SMEs to convert to zero-ODP, low-GWP alternatives. These challenges are

well noted by **IECO** and MEE, which will continue providing technical support to local **EEB**s and environmental monitoring branches via different channels.

122. **Fourteen instant blowing agent detectors were procured and allocated to five EEBs to continue monitoring of CFC phase-out in the foam sector. Based on the positive results obtained in improving the efficiency of inspections, US $200,000 were allocated to procure ten additional detectors to strengthen monitoring and enforcement capacity in key provinces lacking testing equipment.**

123. **In order to improve testing capacity and facilitate enforcement (only three institutions that can provide certified testing reports), the Government of China will support six additional testing centers to adopt a technical standard on testing blowing agent in foam and become certified as PU foam blowing agent testing labs by the end of 2019.**

124. **The Government of China also held the International Workshop on Capacity Building for the Implementation of the Montreal Protocol in China on March 18 2019, with participation of over ten Article 5 and non-Article 5 parties, the Ozone Secretariat, the Fund Secretariat, the Scientific Assessment Panel and all implementing agencies. Balances of nearly US $100,000 were committed to deliver this workshop, the testing fee for the samples of foam and polyols accrued since August 2018 and increasing testing capacity.**

CFC refrigeration servicing sector

125. A total of US $550,473 was disbursed between the last progress report and 31 August 2018, **and an additional US $331,716 was disbursed up to 28 February 2019**. All of the 13 training centers established by **IECO** in 13 cities to implement vocational training courses for servicing technicians have completed their projects. As of August 2018, more than 4,100 technicians, trainers and students had been trained (three of the centres have completed the training programme). In 2017-2018, **IECO** conducted site visits and issued final reports for all 13 training projects.

126. By the end of 2018, an additional 500 technicians **were** trained in the two additional training centres contracted in 2017. In 2018, **IECO** signed contracts with **four** additional training centers for training in good refrigeration practices **that will finish by mid 2019**, **and completed a** research on refrigerant leakage control during the operation and servicing of R-290-based air-conditioning systems, and the two surveys on the disposal-ships sector and on the cold chain in supermarkets. **A total of 150 technicians and managers from the disposal-ships sector were trained on ODS management policies and reduction of ODS emissions through recovery.**

127. Monitoring and management activities (including consultancy, training, evaluation and verifications) will be conducted by **IECO** to achieve sustainable compliance with CFC phase-out. **A balance of US $15,924 from training activities was allocated to monitoring for the procurement of ODS instant detectors to support EEBs in undertaking on-site inspections.**

Solvent sector

128. A total of US $773,756 was disbursed between the last progress report and 31 August 2018, **and an additional US $656,219 was disbursed up to 28 February 2019**. As of August 31, 2018, 3,800 officers from ten customs offices had received training on ODS-related issues and each customs office that had made ODS checking part of its regular work received testing equipment. As of 30 June 2018, more than 5,000 local **EEB** officers had received training on ODS-related policies, and over 18,000 people had participated in public awareness activities. Local **EEB**s organized more than 30 on-site inspections of ODS enterprises. **All 31 EEB**s **assisted finished** completion reports and **received** the final payment by the end of 2018.

129. **IECO**, with the support of Peking University, finished the report "Analysis on the impacts of ratification by China of the Kigali Amendment on HFC management." Research on alternative technologies and on silicone oil optimization at five institutions[37] was completed. Management and monitoring activities, including on-site verifications, monitoring audits and project evaluations, continued to be implemented.

130. **An electronic management system for ODS related documents is being finalized and the last payment for US $92,307 will be disbursed once the system is totally verified and accepted by IECO. A balance of US $2,987 will be disbursed shortly to support the international workshop on ODS management in China. A balance of US $453,119 has been committed to the procurement of ODS instant testing equipment to support key EEBs.**

131. **As per decision 73/20, UNDP revised the PCR submitted in 2012 to reflect the activities implemented under the solvent sector during the last four years. A final PCR will be submitted when the remaining balances are disbursed.**

Interest accrued

132. Table 2 presents the amount of interest collected.

Table 2. Interest reported from the sector plans in China (US $)

Sector	1 July 2017 – 30 June 2018	1 January 2010 – 30 June 2018
CFC production, halon, process agent II, and PU foam	2,837	21,109
Refrigeration servicing	5,574	93,565
Solvent	11,364	325,636
Total	**19,775**	**440,310**

133. As in past reports, the interest accrued for the solvent sector is significantly higher than that accrued for other sectors, as interest from RMB accounts is higher than interest from US dollar accounts. **Interests accrued between 1 July 2018 and 30 June 2019 will be calculated in the Financial audit for that period.**

Secretariat's comments

Overall progress

134. At the 80th meeting, the implementing agencies provided reassurance that the funding balances associated with each of the sector plans would be fully disbursed by the end of 2018 and that the project completion reports would be submitted to the first meeting of the Executive Committee in 2019. Subsequently, the Executive Committee noted with appreciation *inter alia* that the Government of China had confirmed that all activities associated with each of the sector plans would be completed by the end of 2018, that relevant research and technical assistance reports would be submitted to the last meeting of 2018, and that the project completion reports would be submitted to the first meeting of the Executive Committee in 2019 (decision 80/27(c)).

135. Furthermore, during the 80th meeting, the Committee held informal discussions on the issue of the return of balances, and in reporting the outcome of those discussions, one member, supported by another member, said that, while the request for the return of the outstanding balances to the Fund had been withdrawn, in his view and in the view of others, outstanding balances should in principle be returned to the Fund or offset against future approvals, and the issue of the return of balances should be revisited at a future meeting of the Committee (UNEP/OzL.Pro/ExCom/80/59).

[37] Beijing Yuji, Dongyang Weihua, Shanghai Xilikang, Quzhou Sancheng and Huaxia Shenzhou.

136. The progress reports submitted to the 82nd meeting indicate that the commitment to complete all activities by the end of 2018 **had** not been fulfilled in several of the sector plans, and some sector plans **were** proposed for extension to 2020 (process agent II) and to 2022 (halon). It **was** also noted that all other sector plans with the planned completion date of December 2018 (CFC production, PU foam, servicing, solvent) **had** balances, which **were** planned for disbursement in 2019. Out of the balance of US $25.89 million, as of 30 June 2017, only US $4.13 million (16 per cent) had been disbursed. The balance **at the 82nd meeting** of US $22.24 million **was** still only 43 per cent of the total balance of US $52 million available in 31 December 2009.

137. The Government of China noted the points raised above, and emphasized that there was no specific decision or requirement to return funds, further stating that the remaining funds are necessary to achieve the overall goal of permanent and sustainable phase-out and have been programmed accordingly. In addition, the Government of China indicated that:

(a) All substantive activities in the CFC production, PU foam, refrigeration servicing and solvent sectors will be completed as scheduled by December 2018 and final disbursements will be made in 2019 after satisfactory completion of the activities by December 2018;

(b) The major reason for non-completion of the halon sector activities is that from 2014 to 2018, **IECO** focused on building the foundation and gradually developing the national halon recycling and management system. **IECO** summarized the lessons learned from the demonstration project of the halon bank (2008-2013) and set up a strategic plan that established the halon recycling system in 2014. After four years of efforts, the national halon recycling and management system is established and in operation;

(c) There were three main reasons for the non-completion of the process agent II sector plan. First, as CTC residue disposal is also controlled by the hazardous waste management system in China, **IECO** first completed the feasibility analysis before the project was launched, including site visits with experts to the CTC by-producers and hazardous waste disposal centers, and several rounds of discussion with the key provincial **EEB**s. Second, building the capacity of local **EEB**s is a long-term project under which the local **EEB**s were required to carry out numerous activities and to meet the relevant milestones. Finally, CTC, as a by-product of CM plants, will continue to be generated, and it is expected that its use as a feedstock will continue in the future. Hence, continued long-term monitoring of the production and use of CTC is always required. And it is necessary for MEE to improve and refine the regulations.

Additional comments on overall progress from the updated report submitted to the 83rd meeting

(This entire subsection from paragraphs 138 to 148 is new. However, to facilitate reading the bold has been removed)

Date of completion of the sector plans

138. At the 82nd meeting, the Government of China indicated that all substantive activities in the CFC production, PU foam, refrigeration servicing and solvent sectors would be completed as scheduled by December 2018 and final disbursements would be made by 2019 after satisfactory completion of the activities in December 2018; while the completion of the process agent II and halon sector plans would be December 2020 and December 2022, respectively. However, the Executive Committee did not take a decision on this matter and decided to defer consideration of the financial audit reports to the 83rd meeting (decision 82/17). The updates indicate that none of the sector plans was completed in December 2018 as all of them have additional activities ongoing/planned in 2019.

139. Noting that the Executive Committee did not decide on the extension of the projects beyond December 2018, the Secretariat considered that no further activities should have been conducted in 2019. The Government of China considered that the assessment that no other activities should have been conducted in 2019, cannot be deemed correct or incorrect from the Committee's perspective.

140. The updated dates of completion of the sector plans proposed by the Government of China are June 2019 for CFC production, PU foam, refrigeration servicing and solvent sectors, December 2020 for the process agent II and December 2022 for the halon sector plan.

Use of funds from several sectors in common activities

141. It was also noted that part of the balances in several of the sectors were being allocated to cross-cutting areas related to the overall monitoring of the plans (e.g., the procurement of ODS identifiers, assistance to customs, monitoring workshop, the cost of the technical audit for all sectors to one sector, i.e., CFC production). The Government of China indicated that some of the balances are precisely being allocated to this type of activities following strong signals from the Committee and the Secretariat that balances should be diverted away from the narrow focus of individual sector plans to monitoring to ensure sustainable ODS phase-out, particularly sustainable CFC-11 phase-out.

142. On the area of capacity building to EEBs, which was present in several sectors and is practically completed, the Government of China provided an overarching summary of the assistance provided over the years and the results obtained. A total of 31 EEBs participated in the ODS capacity building project during the past five years with support, respectively from the PU foam sector plan (11 EEBs, US $2,900,000), the process agent II sector plan (six EEBs, US $2,800,000) and the solvent sector plan (14 EEBs, US $3,880,000).[38]

143. A brief summary of the activities implemented as provided by IECO is presented below:

(a) Established compliance coordination mechanism for ozone layer protection at local Government level; carried out data survey on ODS production and consumption, and on ODS sales, import and export, where relevant; and identified ODS consumer enterprises in their jurisdiction;

(b) Strictly controlled new construction projects through environmental impact assessment approval at local level to ensure that no new ODS production and consumption facilities are approved in China except for feedstock use;

(c) Organized training workshops on ODS management and compliance targeting city or county level officers and enterprises. More than 35,000 officers of local EEBs and other relevant authorities and more than 13,000 enterprises management staff have received training. Organized awareness-raising activities on ozone layer protection across the country through internet, television, schools or communities; and

(d) Took actions jointly to crack down ODS illegal behaviors based on the information received through the reporting platform and other sources, the ministry and local EEBs.

144. In addition, using funding from the CFC production sector, a training workshop was held in Changsha, Hunan Province 21-23 January 2019 for 140 officers from all provinces to share experience and lessons learned on ODS management.

[38] A table with the value of the contracts signed with each EEB was made available to the Secretariat.

145. Regarding the plan to supply of ODS instant detectors to EEBs to strengthen their monitoring and enforcement capacity, which is also present in several of the sector plans, the Government of China provided an overarching summary as well. The total funding for this purpose is estimated at US $768,479 from the following sources: CFC production plan (US $99,436), PU foam sector plan (US $200,000), solvent sector plan (US $453,119) and servicing sector (US $15,924). In order to efficiently use funds, MEE plans to combine the balance from those four sectors to purchase the same type of detectors for local EEBs. MEE plans to purchase detectors as much as possible through centralized procurement. It will cover all provincial EEBs, especially major PU foam consumer areas, which will be equipped with more detectors.

146. The Government of China also explained that the instant detectors are suitcase-size, capable to test the components of foam products, blowing agents as well as pre-blended polyol. In testing, the collected sample is put into the detector through the feed port. The detector then generates the testing map against the chemicals contained in the sample through gas chromatography method. As per the different peak times of chemicals, the component of blowing agents can be screened on a preliminarily basis. The entire testing process of one sample usually takes about 20 minutes. They cost US $20,000 a piece and they are locally produced.

147. The Secretariat supports the use of these remaining balances for supply of ODS instant detectors to EEBs on the understanding that the Government of China will continue to report on the results of local EEBs monitoring efforts, including cases were CFC-11 was detected, in future financial audit reports. Once all the remaining balances under the projects included in the financial audit have been disbursed and those projects have been completed, the Secretariat proposes that Government of China continue such reporting under the annual progress reports of the HPMP PU foam sector.

Summary of remaining balances and activities proposed

148. In summary, based on the information provided by the Government of China, out of the fund balance of US $15.49 million, a total of US $5.60 million are already allocated to ongoing activities, out of which US $768,479 have been reallocated for the supply of instant ODS detectors to EEBs as part of monitoring activities. Out of the funding not allocated yet, US $7.64 million belong to the halon sector plan and will be used in the activities aimed to further improve the recycling system and achieve sustainable management of halons (as described in the halons section above) and US $2.25 million belong to the process agent II sector plan, out of which US $1 million will be used in an online ODS management system and customs training, and US $1.24 million will be used in six activities to strengthen long-term, sustainable ODS monitoring (as described in the process agent II section above, and Secretariat comments on these monitoring activities are below).

Monitoring sustainability of the phase-out

149. Each sector plan allocated funds for activities the Secretariat considers would contribute to the sustainable, long-term monitoring of the phase-out, including supervision and management, activities related to information management, capacity building for **EEB**s, and other activities. At **the 82nd meeting** the Secretariat **requested that** the Government of China provide additional information on how the activities undertaken would contribute to the sustainable, long-term monitoring of the phase-out. The input provided by the Government of China and the Secretariat's comments are below.

CTC production sector and the process agent sector

150. CTC continues to be co-produced at CM plants (together with methyl chloride, methylene chloride and chloroform) where the ratio of CTC produced is reduced as much as possible. CTC is still used for feedstock by a number of chemical producers, for process agent (PA) applications where CTC emission control is applied, and for laboratory uses as allowed by the Parties to Montreal Protocol, governed by the

Country's registration and quota system. In order to ensure that CTC production and consumption is limited within the amount allowed by the Government of China, CTC consumption quotas for laboratory uses and PA applications are issued by the MEE/**IECO** to relevant enterprises. Each CTC feedstock user is required to be registered in MEE/**IECO**. Qualified CTC producers are allowed to sell CTC to the CTC users with consumption quota or registration. Any excess CTC produced by qualified producers has to be converted to methylene chloride/perchloroethylene (MCl/PCE) or incinerated. Hence, continued monitoring of the production and use of CTC, and reporting of CTC production /consumption data to MEE/**IECO**, and regular inspection by local **EEB**s is required.

151. In order to strengthen the daily monitoring of CTC producers by both MEE and local **EEB**s, the CTC online monitoring system is planned to be restarted and upgraded. An online monitoring platform is to be set up, through which MEE and local **EEB**s would get real-time data from the CTC producers.

152. As identified during implementation of the CTC production phase-out plan, residues containing CTC are generated with CTC production. If not incinerated, or entrusted for incineration, there is a risk that CTC could be recovered and sold for illegal uses. In order to reduce the risk, incineration facilities at nine CM plants have been funded by **IECO** and the local **EEB**s will have to monitor disposal of CTC residues.

153. In 2017, the Government of China announced its commitment to phase out the use of CTC for laboratory testing of oil in water by the year of 2019. In order to replace CTC with a non-ODS extracting agent in oil in water tests, research, tests and analysis have been completed by MEE, through which ways for replacing CTC have been determined and the relevant national standards are expected to be released in the near future. Given that replacing CTC is not only a technical issue, MEE will continue to carry out relevant training and advocacy for alternative technologies and launch a project to encourage enterprises to improve the quality of the alternative reagent to replace CTC in laboratories.

154. The Government also indicated its understanding that the remaining funds could also be used for any new process agents the Parties might decide to add to the list of process agents controlled by the Montreal Protocol.

155. Understanding these challenges, the Government of China sees the need to extend the program beyond 2018 and continue to use the funds to ensure the sustainability of the phase-out of CTC for controlled uses.

156. The Secretariat noted with appreciation the proposal to allocate US $1,200,000 for long-term monitoring and management for the sector. While supporting the allocation of funding for this purpose, the Secretariat noted the substantial level of funding and sought to better understand how the activities that would be funded would relate to those already undertaken. The Secretariat also sought clarification on how CTC producers obtain their qualification; how users become registered, and whether such registration would be restricted to users with a demonstrated PA application, feedstock use, or laboratory use; whether and how **IECO** allocated a quota for CTC; additional information related to the online monitoring system, including when it is expected to be operational; and whether all CM plants were required to have and operate an incinerator to dispose of CTC residues.

157. The Government of China informed that there are 15 CM producers with co-production of CTC and other CMs. Only three out of the 15 CM producers are allowed to sell CTC to registered users with an annual quota from **IECO** for feedstock, laboratory, and PA uses only. Only CTC producers that have a production quota before 2007 are allowed to sell CTC. MEE/**IECO** reviews their status annually.

158. In total, there are eight enterprises for laboratory use and PA use that is required to apply for annual procurement quota to MEE. For 2017, MEE issued 395 mt quota to these eight enterprises. For feedstock users, MEE performs annual registration management. The CTC feedstock user applying for registration

must submit the necessary approval documents, including an environmental impact assessment (EIA). **IECO** announces the registration results on its website after reviewing the submitted documents to confirm the feedstock use and the quantity of CTC, which cannot exceed the approved capacity of the feedstock facility in the EIA document. The registration specifies the type of product to be produced using CTC and quantity of CTC.

159. In China, the CTC residue disposal is required to comply with the hazardous waste management regulations, which is a different regime from ODS regulations. According to the current policy, CMs producers could choose to dispose the CTC residue at their own disposal facilities with EIA approved by local **EEB**s, or send the residue to a qualified hazardous waste disposal centre. The producers are required to report the amount of residue produced, disposed, and stored to local **EEB**s. In addition, in-house disposal facilities are monitored by local **EEB**s to ensure compliance with the national discharge standard and the requirements of the approved EIA. **IECO further clarified that three of the CM producers are part of a group of companies with HCFC-22 production; however, those CM plants are not part of the HCFC-22 production companies but independent entities within the group of companies. Therefore, the incinerators used for the destruction of HFC-23 by-product are different from the incinerators used to destroy CTC; subsidies provided for the destruction of HFC-23 by-product are similarly distinct from those provided for the destruction of CTC.**

160. The local **EEB**s inspect all CTC producers and registered users in areas under their jurisdiction. According to the current regulations, there is no mandatory requirement for inspection frequency, but in practice it is at least once a year. Local **EEB**s inspect distributors that store CTC onsite. Regular inspection of CTC producers and feedstock users will continue after the funding has been exhausted and the project completed.

161. The CTC online monitoring system was shut down in 2015 due to a technical issue. That system only covers CMs producers under the CTC sector plan but not the new CMs producers, and so MEE/**IECO** has been working to find ways to expand the CTC online monitoring system to all CMs producers.

162. The Executive Committee had invited the Government of China to undertake a study on its production of CTC and its use for feedstock applications and to make the results of the study available to the Executive Committee by the end of 2018 (decision 75/18(b)(iii)). **The Secretariat received a Chinese version of the report on 23 April 2019. IECO is in the process of translating the document. The Executive Committee may wish to request the Secretariat to prepare a document based on that report for the 85th meeting.**

163. **Remaining balances are planned to be used for an ODS online management system (US $250,000), for capacity-building with the Customs Authority (US $750,000), and for six activities to strengthen long-term, sustainable ODS monitoring (US $1.24 million). The Secretariat notes the following:**

(a) **The ODS online management system will enable all enterprises that use ODS to apply and register as an ODS user, and to report data. Accordingly, the Secretariat supports the proposal in principle, while noting that the Secretariat is not sufficiently familiar with the details of the existing ODS online management system to be able to identify how that system will be modified and, therefore, a reasonable level of funding for this activity. Moreover, funding from other projects, including MB production, the industrial and commercial refrigeration and the room air-conditioning sector plans under the HPMP, and the HPPMP, has similarly been used to strengthen the ODS online management system. Such pooling of funding is likely an efficient use of resources, but makes monitoring the financial and implementation progress challenging;**

(b) Funding is similarly proposed under the MB production sector for capacity-building with the Customs Authority. IECO clarified that the contract under the MB production sector is focused on methyl bromide used for quarantine and pre-shipment (QPS) uses, while the capacity-building under the process agent II plan would be focused on anti-smuggling efforts. Given the delays in signing the contract under the MP production sector, the Secretariat believes it will be important to closely monitor the progress of this activity to ensure that it can be completed by December 2020;

(c) While the six proposed activities will be useful, the Secretariat is unclear who much funding would be allocated to each activity. In addition, the Secretariat considers that additional reporting to the Executive Committee on the outcome of some of the activities would be useful. For example, the activity related to market supervision could provide a better understanding of how facilities that produced CFC-11 were able to purchase CTC. Moreover, the market supervision activity appears to be an activity that that a consulting firm would undertake for the duration of the contract for that activity. The Secretariat suggests that such market supervision would continue to be helpful after the completion of the project, and that a budget within MEE be allocated for that purpose. The construction and upgrade of the online monitoring system on CTC production would enable such market supervision. The Secretariat suggests that the Government of China, through the World Bank, provide additional information on the proposed activities, their budget, and a progress report on their implementation, to the 85th meeting. The Executive Committee may also wish to provide additional guidance on the US $1 million allocated to the ODS online management system and capacity-building with the Customs Authority.

164. **As further discussed in the document on the overview of the Country's monitoring, reporting and verification contained in Part I of the present document, the Secretariat strongly supports the proposed measures to strengthen the monitoring of CTC, and shares the view that improved CTC monitoring is vital to ensuring both the sustainability of the phase-out of controlled uses of CTC and of the production of CFCs. Based on additional information provided by the Government of China, recently discovered illegal CFC production facilities used the common production pathway, i.e., liquid phase fluorination of CTC and anhydrous hydrogen fluoride in the presence of antimony chloride; those facilities were able to purchase CTC for use as a raw material, suggesting that strengthened mechanisms to monitor CTC will be beneficial. The Secretariat believes the measures proposed will help in this regard. However, the Secretariat is unclear why PCE plants have not been included in the Government of China's CTC monitoring efforts.**

CFC production phase-out

165. **At the 82nd meeting,** the Government indicated that, as found in recent atmospheric monitoring results, it appeared that there is some production and emission of CFCs, especially CFC-11. As all the known CFC production facilities were dismantled as part of the CFC Phase-out Sector Plan and **IECO** had visited all the previous producers of CFCs and found that none of them had restarted CFC production, any CFC production would come from illegal production facilities set up without permits. The Secretariat notes that the verifications submitted in line with the CFC production phase-out sector plan included photographic and video evidence demonstrating that key equipment had been destroyed or rendered unusable.

166. In order to identify any illegal CFC production, the monitoring of CTC production will be strengthened as indicated under the PA project. In addition, **IECO** proposes to expand the provincial atmospheric monitoring program in some provinces where illegal production might take place.

167. Production of CFC requires CTC and anhydrous hydrogen fluoride. Noting that monitoring the use of anhydrous hydrogen fluoride would be difficult, the Secretariat considers that strengthened monitoring of CTC production will be a key step in preventing future illegal CFC production. Similarly, the Secretariat considers that the proposal to expand the provincial atmospheric monitoring program would be invaluable in detecting and deterring future illegal CFC production. The Secretariat enquired whether the current provincial atmospheric monitoring program already included instruments to observe CFCs and CTC, and how it would be expanded. **The review of current monitoring, reporting, verification and enforcement systems (decisions 82/65 and 82/71(a)) submitted by the Government of China provides additional information on the Country's atmospheric monitoring network, and its plans to expand it to ensure the sustainability of ODS phase-out. In addition, that document highlights additional measures that could be used to strengthen the monitoring of facilities that produce chemicals other than ODS.**

PU foam sector

168. The Government indicated that while it assumed that CFC-11 had been phased out, it is now known that some CFCs might be illegally produced and used as blowing agents in the PU foam sector. In order to monitor what kind of blowing agents are used and to identify potential illegal use of CFC-11 in the PU foam sector, the inspection capacity of local **EEB**s has been strengthened. However, increased monitoring of PU foam manufacturers and foam systems houses is still needed. Hence, the Government considers that the continuation of the monitoring program beyond 2018 is needed until the Government of China's funding is fully exhausted.

169. In addition, although there is extensive, ongoing monitoring of foam enterprises that converted from CFC-11, including sampling of foam for analysis of the foam blowing agent content, the Government recognizes that there could be a gap in CFC-11 monitoring if all applications are not addressed beyond foam. Accordingly, the Government of China and the implementing agencies plan to coordinate monitoring between sectors.

170. The Secretariat emphasized the need to ensure the sustained phase-out of CFC-11 even after the funding under the PU foam sector plan was exhausted, and noted that 420 foam enterprises and systems houses have been visited in five provinces, and over 780 samples of raw material have been collected for analysis. With regard to the small percentage of samples suspected to contain CFC-HCFC, the Secretariat asked if the analysis by the certified labs confirmed use of CFC and, if so, in what proportion and what relevant rules and regulations would apply to enterprises using it.

171. The Government informed that the enterprises that have samples containing CFC-HCFCs are under investigation and hence under the joint mandate of the local **EEB** and Public Security (local police). The results were expected to be released to the public by the end of October. **The updated report indicated that three enterprises in Shandong were detected with illegal use of CFC-11, they were subject to punishment in accordance to regulations and the cases were closed. The Government clarified that this was part of the provincial monitoring activities. The ten cases reported in the monitoring and evaluation report are an outcome of the 2018 special campaign implemented.**

172. On the relevant rules and regulations that would apply to enterprises using banned ODS, the Government indicated that so far, three enterprises had been detected illegally using CFC-11, and had been subject to the punishment set out in accordance with ODS management regulation.

173. The Secretariat notes that the use of HCFC-141b by an enterprise that committed to phase out may be subject to an enforcement action according to local regulations. However, in the case of CFC-11, it would have to be determined whether the origin is stockpile, recycled gas from previous uses (e.g., chillers) or production after the total phase-out deadline, which would potentially incur a penalty for non-compliance with the Agreement for CFC production and perhaps the Agreement for CFC consumption. This would require further analysis.

Solvent sector

174. For the solvent sector plan, the Government indicated that to further strengthen sustainable, long-term monitoring of the phase-out in the solvent sector, **IECO** supported local **EEB**s to monitor ODS activities and control illegal ODS production and use in their province. In addition, some local **EEB**s had established long-term mechanisms by issuing ODS management policies and effectiveness assessment requirements for ODS management officers. Also, by supporting the development of implementation techniques for the solvent sector, several experts had been trained to provide long-term and effective support for the sustainable, long term monitoring of the phase-out. The Secretariat noted that those activities were helpful but that it was still unclear how these actions, in particular the latter, would help ensure the sustainable, long-term monitoring of the sector.

Servicing sector

175. The Government indicated that the technical assistance projects on research into servicing leakage and the data survey are closely connected to HPMP implementation. The research on leakage of refrigerant during R-290 RAC servicing and operation is part of research into alternatives. The data survey in the supermarket sub-sector is connected with promoting good servicing practices in that sub-sector. The Secretariat noted that those activities were helpful but not related to ensuring the sustainable, long-term monitoring of the sector.

Halon sector

176. The situation for the halon sector is somewhat different from other sectors as there is a continued demand for halon-1211 and halon-1301 for uses where alternatives are not available. Those applications are supposed to be met by recovered and recycled halons until alternatives are available. The halon recycling program was an essential element in the halon sector plan. The China halon sector plan also includes halon banking as a key component. The implementation of the halon banking component has been delayed as reported.

177. The Government considers that the risk of illegal production of halon-1211 is very low given the large stock of halon-1211 produced before the total phase-out and the minimal annual demand of 20 to 30 mt/year. The remaining stock of halon-1211 is at one former halon-1211 producer. The Government of China proposes to either move all or part of it so it can be stored under safe and controlled conditions, or to destroy/convert some of it. The Government of China believes that this is important to avoid the emission of over 2,200 mt of halon-1211.

178. In contrast, halon-1301 is still produced solely for feedstock use; such newly produced halon-1301 is not added to stocks but is instead used exclusively as a feedstock. The Government assumes that the demand for controlled uses of halon-1301 is covered by existing stocks, and that halon-1301 is recovered from dismantled fire-protection installations and reclaimed for applications where no alternatives exist yet. There is a continued demand for halon-1301 for existing fire extinguishing systems where no other alternatives can be used due to safety issues, and for civil aviation, where there are still no alternatives available for certain aircraft fire suppression systems. Civil aviation is expanding globally, especially in China, with an expected annual growth of over ten per cent over the next five to ten years.

179. There are two issues related to halon-1301. First, halon-1301 is still being produced[39] for feedstock use by one producer and sold to eight producers of fipronil (a pesticide). Hence, it is essential to ensure that all newly produced halon is sold to those eight enterprises and that they are using it as feedstock for fipronil and not selling it for other uses. The second challenge is to ensure sufficient supply of halon-1301 to the

[39] As noted in UNEP/OzL.Pro/ExCom/82/SGP/03, HFC-23 is used as a feedstock during the production of halon-1301.

remaining users with no approved alternatives, especially civil aviation. The Government considers that in order to avoid the need for production for essential use, it is clear that as of today, the demand can only be met by halon-1301 recovered from the market. Hence, continuation of the halon-1301 recycling programme is essential to ensure supply of halon-1013 and avoid the risk of illegal production.

180. The Secretariat agrees that the halon recycling programme is a valuable element in ensuring continued supply of halon-1301. However, the Secretariat was not clear how the Government of China intended to ensure the long-term, sustainable monitoring of the halon phase-out after completion of the project.

Financial issues in specific subsectors

181. With regard to the CFC production sector plan, the Secretariat noted that a contract for US $112,153 was signed for the production of a video on ODS basic knowledge, progress in the implementation of the Montreal Protocol and necessary implementation skills for enforcement officers and ODS dealers. In explaining how this activity is related to the CFC production sector and how it will enhance the sustainable monitoring of the phase-out, the Government explained that the series of video textbooks will be used by the customs department during the management of ODS import and export training aimed at improving the supervision ability of customs staff, and improving the performance knowledge of on-campus customs officers. It will also train enterprises engaged in ODS import and export to comply with the requirements of ODS management, in order to enhance the training sector's ODS compliance awareness, management skills and management level.

182. In relation to PA II, in August 2018 contracts for US $4.6 million were signed with nine enterprises for the construction of three incinerators, the upgrading of two existing incinerators, the construction of two residue reduction devices, and for operation cost subsidies in two cases. Given that the enterprises will receive the first installment of 80 per cent of the contract value by the end of 2018, the Secretariat requested clarification regarding the milestone that the enterprises need to achieve to receive the funding and asked whether this was a retroactive project. The Government explained that these are investment projects to be completed by 2019 (not retroactive) and that the milestone for the first payment is completion of the upgrade or establishment of the disposal facilities. The enterprises involved must bear most of the cost of establishing or upgrading the facilities, with **IECO** only providing a small portion of the funds to encourage the internal disposal of the CTC residues. This project is aimed at encouraging CTC producers to dispose of their CTC residue internally instead of sending it to other disposal centers or even selling it to be re-used. The Secretariat notes that such sale would be considered consumption.

Research and technical assistance reports

183. On the expected impact of the technical assistance provided with these balances on the implementation of the HPMP sector plans, the HPPMP, and the phase-out of HCFCs, the Government affirmed that technical assistance is necessary in the CFC PU foam and CFC production sectors to ensure that manufacturers using alternatives and producers of alternatives to CFC continue to have the best technical options available to them as the market evolves. In particular, the goal is to prevent those enterprises that have chosen ODS alternatives from defaulting to HCFCs if they have experienced challenges with other alternatives.

184. In the past four years, the solvent sector plan supported research and several studies, including research and development for alternatives with zero-ODP and low GWP. Two new alternatives (HC solvent, solvent-free silicon oil) had been chosen by solvent enterprises to replace HCFC-141b during phase-out implementation, and the other three alternatives are at the stage of preparing related qualified certification for more applications. The goal of this research and these studies is to provide sustainable technical solutions to industry, and to try to prevent them from using HCFCs when they encounter any technical challenges.

185. The progress report of the PU foam sector included interesting abstracts of the studies completed, mostly on the performance of alternatives. Taking into consideration that the studies have taken place with Multilateral Fund assistance, the Secretariat requested the complete reports of the research activities in all sectors in order to consider how they could be disseminated. **IECO** noted the Secretariat's request for submission of the relevant reports, and indicated that it would communicate with the institutions to confirm whether there is confidential information that cannot be disclosed. **Several of these reports have already been shared with the Fund Secretariat, while others are being finalized.**

Secretariat's recommendation

186. The Executive Committee may wish:

(a) To note:

(i) The financial audit reports **and updates** for the CFC production, halon, polyurethane (PU) foam, process agent II, solvent and servicing sectors in China, contained in document UNEP/OzL.Pro/ExCom/**83/11/Add.1**;

(ii) That the funding balances associated with each of the sector plans had not been fully disbursed **by April 2019**;

(iii) That the Government of China has confirmed that the CFC production, PU foam, solvent and servicing sector plans will be completed and the associated balances will be disbursed **in 2019**;

(b) To agree to extend the process agent II and the halon sector plan to 2020 and 2022, respectively;

(c) To request the Government of China, through the relevant implementing agency:

(i) To submit to the first meeting in 2020 the financial audit report as of December 2019 for the CFC production, halons, process agent II, PU foam, solvent and CFC refrigeration servicing sectors, and the project completion reports for the CFC production, PU foam, solvent and servicing sectors;

(ii) To return to the Multilateral Fund at the first meeting in 2020 any funding balances associated to the CFC production, PU foam, solvent and servicing sectors;

(iii) To report on the results of local EEBs monitoring efforts, including cases were CFC-11 was detected, in future financial audit reports, and once all the remaining balances under the projects included in the financial audit have been disbursed and those projects have been completed, to continue such reporting under the annual progress reports of the PU foam sector plan of the HCFC phase-out management plan; and

(iv) To submit the **remaining** completed research and technical assistance reports undertaken in all sectors, for possible dissemination to other Article 5 countries;

(d) To request the Government of China, through the World Bank, to provide additional information on the proposed activities to be undertaken under the process agent II sector plan, their budget, and a progress report on their implementation, to the 85th meeting; and

(e) To request the World Bank to submit an English translation of the study on China's production of CTC and its use for feedstock applications, submitted in line with decision 75/18, as soon as possible so that it can be presented to the 85th meeting.

PART IV: SECTOR PLAN FOR THE PHASE-OUT OF METHYL BROMIDE CONSUMPTION (UNIDO)

China: Phase II of the national plan for the phase-out of MB – final report (UNIDO)

187. At the 82nd meeting, the Executive Committee considered the MB phase-out project in China and requested the Government of China and UNIDO to submit the final report to the 83rd meeting (decision 82/18(c)).

188. In line with decision 82/18(c), on behalf of the Government of China, UNIDO submitted the final report for phase II of the MB phase-out plan, which resulted in the phase-out of 698.8 ODP tonnes of MB representing the remaining consumption in the tobacco sector and the total consumption in the agriculture sector. Previously, phase I of the project resulted in the phase-out of 389 ODP tonnes of MB in the commodities sector and part of the consumption in the tobacco sector.

189. From 2015 to 2018, China applied for MB critical use exemptions (CUEs) nomination for ginger protection in Shandong Province. The Parties to the Montreal Protocol authorized CUEs as follows: 114 mt (68.4 ODP tonnes) for 2015,[40] 99.75 mt (59.85 ODP tonnes) for 2016,[41] 92.977 mt (55.79 ODP tonnes) for 2017,[42] and 87.24 mt (52.34 ODP tonnes) for 2018.[43] China reported MB consumption under Article 7 of the Montreal Protocol below the amount authorized for the CUEs for 2015 to 2017, and reported MB consumption within the CUE for 2018.[44]

190. The work plan for phasing out MB for CUEs included the following components: management of MB for CUEs; optimization of soil disinfestation systems; and establishment of a sustainable performance management system.

191. The Agricultural Department of Shandong Province developed the regulations for consumption of MB for critical uses, and within this regulation, the Shandong Agricultural Environment Protection and Rural Energy Station developed a tracking management plan to ensure that MB consumption would not exceed the CUEs for those years. An annual monitoring report on the usage of MB were prepared annually, confirming that the CUE allocations for open field and protected cultivation ginger were tracked and used only in areas with high rates of soil-borne disease.

192. From 2016 to 2018, the project focused on integrated demonstration and evaluation of the outcomes of soil disinfection technology, formulation of technical standards, application and promotion of soil disinfection technology and technology exchange. The Institute of Plant Protection of the Chinese Academy of Agricultural Sciences (IPP-CAAS) completed the soil disinfection technology evaluation for ginger, strawberry, tomato and yam.

193. For the main target crops (i.e., ginger, strawberry, and tomato) rapid detection methods for soil-borne pathogens were established; specialized service systems for soil fumigation with chemicals were developed for use by small farmers; and application methods including through capsule, injection spray, drip irrigation and pesticide spray were developed. Alternative technologies such as chloropicrin, dazomet, metham sodium and dimethyl disulfide, were adopted for ginger and yam crops. Training on these technologies was provided, and field visits were conducted for agricultural departments, technicians and growers. Over 2,400 farmers and 700 participants from local agricultural departments were trained from

[40] Decision XXVI/6
[41] Decision XXVII/3
[42] Decision XXVIII/7
[43] Decision XXIX/6
[44] Based on the final report submitted for the project.

2016 to 2018 on crops pest identification, integrated pest management, soil disinfection technologies, and soil fumigation service systems.

194. Capacity building included the recruitment of three full-time staff: a project officer, a project assistant, and an information officer.Consultants in soil fumigant registration, soil fumigation technology, policy development, and project promotion were also recruited.

195. Technical reports on soil disinfestation technology and a project brochure were published; news coverage on project achievements and a documentary film on soil disinfection were broadcasted; and workshops on technologies and management of MB phase-out in agriculture were conducted.

196. The Ministry of Agriculture announced the ban on the use of MB in the agriculture sector as of 1 January 2019.

Financial report

197. A total of US $14,789,342 was approved for the MB phase-out project in China, consisting of US $7,185,958 for phase I and US $7,603,384 for phase II. Of this total amount US $14,789,342 had been disbursed (100 per cent).

Secretariat's comments

198. The Secretariat noted that the Government of China continues to control the use of MB within the country, and that the consumption of MB was within the amounts approved for CUEs. It was also noted that as a result of the implementation of the national MB phase-out plan in the consumption sector, from 1 January 2019, there is a ban on the use of MB in the agriculture sector, except for quarantine and pre-shipment applications.

199. The Executive Committee may wish to note that China reported zero consumption of MB for 2018, except for the CUEs approved by the Parties to the Montreal Protocol, as stated in the final report. China has not yet submitted its ODS consumption data under Article 7 of the Montreal Protocol. In addition, China did not apply for CUE nomination for MB for 2019.

200. The Government has committed to the MB phase-out achieved through the project by banning the use of this substance in the agriculture sector and not applying for CUE nomination for MB.

Secretariat's recommendation

201. The Executive Committee may wish:

(a) To note:

(i) The final report on the implementation of the phase II of the national plan for the phase-out of methyl bromide (MB) in China, submitted by UNIDO, contained in document UNEP/OzL.Pro/ExCom/83/11/Add.1;

(ii) That no consumption of MB was reported in China for 2018 except for any critical use exemptions approved by the Parties to the Montreal Protocol;

(b) To request the Government of China and UNIDO:

(i) To include in the verification of the 2018 MB production requested by decision 82/19(e) the amounts used for MB consumption; and

(ii) To submit the project completion report, no later than the 84th meeting in line with decision 82/18(c).

PART V: SECTOR PLAN FOR THE PHASE-OUT OF METHYL BROMIDE PRODUCTION (UNIDO)

202. UNIDO, on behalf of the Government of China, had submitted to the 82nd meeting, a report on the status of implementation of the sector plan for the phase-out of MB production, and the 2017 production and controlled use verification report, in line with decision 73/56(b). Subsequent to a discussion, the Executive Committee decided *inter alia* to extend the date of completion of the MB production sector plan to 31 December 2021, and requested the Government of China, through UNIDO, to submit to the 83rd meeting a progress report on the contract for the development of the management information system (MIS) and its incorporation in the monitoring and supervision programme to be implemented by the Customs Authority, and an update to the work plan in order to ensure the long-term, sustained monitoring of MB after the completion of the sector phase-out plan of MB production, including the elaboration of policy and institutional arrangements demonstrating compliance, monitoring and enforcement (decision 82/19(c) and (d)).

203. On behalf of the Government of China, UNIDO submitted to the 83rd meeting the requested progress report and update to the work plan.

Progress report on the contract with the Customs Authority

204. As the General Administration of Quality Supervision, Inspection and Quarantine has been incorporated into the Customs Authority, the International Environmental Cooperation Center (IECO) of the Ministry of Ecology and Environment (MEE) and the Customs Authority are negotiating a new memorandum to define activities to be carried out during the period 2019 to 2021. Once that memorandum has been finalized, IECO will sign a contract to carry out the activities.

Implementation plan for 2019–2021

205. The work plan consists of near-term activities focused on monitoring and supervision of MB production in 2019 to 2021, and activities intended to ensure the long-term compliance through the establishment and implementation of effective MB monitoring and supervision programmes and tools.

206. Regarding the former, IECO will undertake three sub-activities:

(a) Strengthen MB producers' data collection by improving the data collection forms and assisting producers to submit those completed forms quarterly;

(b) Strengthen feedstock data collection and analysis through continued monitoring of MB feedstock use and assessing and crosschecking that data with current and historic data; and

(c) Recruit independent experts to carry out annual verifications of the 2019-2021 MB production; independent verifications after 2021 are not planned.

207. Given that MB production will continue for feedstock and quarantine pre-shipment (QPS) uses after the completion of the project, the following activities will be undertaken to ensure long-term supervision and management:

(a) Implementing a MB labelling and traceability system based on the needs of the three MB producers and QPS and feedstock users' suggestions;

(b) Undertake two surveys of MB feedstock uses (covering 2017-2018 and 2019-2020, respectively) to crosscheck production data and reported feedstock use, and to develop a database of MB feedstock uses. The surveys will focus on Jiangsu, Shandong, Shanghai,

and Zhejiang provinces, where feedstock uses of MB is concentrated. After 2021, the ODS MIS will be operational and the MB feedstock uses will be incorporated into the ODS MIS, and data will be updated regularly. Currently, MB feedstock users must register with MEE, and MB producers can only sell MB to such registered users; however, while IECO carries out periodic inspections at select users, MB feedstock users currently do not report their MB feedstock use to MEE. Once the ODS-MIS is operational, MB feedstock users will submit their consumption data to MEE through the ODS-MIS platform, and the local Ecology and Environment Bureaus (EEBs) will have access to the ODS-MIS, thereby complementing MEE's monitoring and supervision;

(c) Strengthening the mechanisms supervising the production, use and management of MB for QPS through a cooperation between MEE and the Customs Authority. Based on the MB labelling and traceability system, MB produced for QPS will be recorded and tracked from production through use, providing information to the existing quarantine treatment supervision system in order to collect data and enable statistical analysis; strengthen existing monitoring of MB concentration during QPS fumigations and provide data (including MB concentration and dosage) to the existing quarantine treatment supervision system; establish a coordination mechanism with MB fumigation enterprises to promote protocols aimed at reducing MB emission from QPS fumigation; promote awareness on MB QPS uses through meetings, trainings, and field visits; and update the publication "Animal and plant quarantine treatment principle and application of technology" to reflect best practices. Reference material will continue to be updated to reflect new technologies and recommendations, and the Customs Authority will continue to organizing necessary trainings for customs officers and local EEBs, as necessary, after the completion of the project;

(d) Training and awareness-raising activities for MB stakeholders on national and international policies related to MB production, consumption and phase-out; and training workshops for MB stakeholders for customs officers and local EEBs to strengthen their capacity to implement their monitoring and management functions; and

(e) Establishment of an expert team comprising national experts to assist in the implementation of the work plan, including assisting in monitoring and evaluation duties, formulating or assessing implementation strategies and plans, formulating technical specifications, making technical evaluations for procurement of equipment and services, and recommending policies and regulations on MB consumption and production sectors.

208. The budget for the 2019-2021 work plan is shown in Table 3.

Table 3. 2019-2021 budget for the MB production sector in China (US $)

Activities	Budget (US $)
Verification on MB producers over the 2018-2021 period	25,000
MB feedstock use record management	8,000
Survey of MB feedstock uses (focused on Jiangsu, Shandong, Shanghai, and Zhejiang)	90,000
MB product labelling management and traceability system	120,000
Monitoring and supervision programme (Custom Authority): -Traceability by recording QPS use -Better use of current monitoring tools -Improved QPS fumigation and tracking -Awareness-raising activities -Update current reference materials	350,000
Data collection and assessment over the 2019-2021 period	12,000
Training workshops and awareness-raising for stakeholders	20,000
Expert team for technical assistance and consultancy services	7,104
Total	**632,104**

209. Given that production of MB for feedstock and QPS uses will continue after the completion of the project, IECO confirmed that the following activities will continue after 31 December 2021:

(a) MB producers will continue to submit to IECO quarterly production and sales data, and IECO will continue to review that data and the required supporting documentation, including the warehouse log, raw materials log, batch production log, and so on;

(b) IECO will continue to review feedstock applications, including verifying the necessary supporting documents, and will continue to analyse the database of enterprises using MB for feedstock uses, and crosscheck the information to make sure that MB does not flow to controlled uses;[45]

(c) MB producers will continue to have to sign sales contract with each MB user and to specify the quantity and the purpose of the MB sold. MB producers cannot sell MB to individuals;

(d) MB producers account MB sales as QPS only after receiving the QPS fumigation license issued by the relevant authority. For the import and export of goods that have to undergo QPS fumigation, certificates that prove that goods have been fumigated according to relevant standards and requirements are issued to import or export companies by the relevant authorities. For domestic QPS use, fumigation has to be performed or authorized by a national or local plant, animal or environmental protection or health authority, and MB producers have to obtain the certification from relevant authorities to guarantee the purpose; and

(e) MB producers can sell MB only to qualified MB feedstock users, which are registered with the appropriate Government authority, or for QPS based on the above.

Secretariat's comments

Progress report on the contract with the Customs Authority

210. The contract with the Customs Authority for the development of the MIS and its incorporation in the monitoring and supervision programme has not yet been signed. In particular, IECO and the Customs Authority are negotiating a new memorandum to define activities to be carried out, and only subsequently will the contract be signed. Noting the limited time before the completion of the project, the Secretariat suggested that, through UNIDO, the Government of China provide an update on the status of the new memorandum and contract with the Customs Authority to the 84th meeting, on the understanding that the allocated funds (US $250,000, plus agency support costs of US $18,750 for UNIDO)[46] would be returned to the Multilateral Fund at that meeting if the contract were not signed by then. In light of the time that may be needed to finalize the necessary arrangements, it was agreed that, if necessary and on an exceptional basis, this update could be provided verbally at the 84th meeting itself, rather than by the customary deadline for projects with specific reporting requirements.

Implementation plan for 2019–2021

211. The Secretariat supports the proposal to establish a MB labelling and traceability system in concept but was unclear how the system will operate, the timeline for its establishment, and that a budget within

[45] For example, from January 2017 through December 2018, IECO received and audited 90 applications for MB feedstock uses, related to medicines, chemicals, pesticides, fine chemical, engineering and biological applications, and conducted regular on-site verification of those users to make sure the application were correct and the condition for MB feedstock uses persisted.

[46] As further described in UNEP/OzL.Pro/ExCom/82/20.

IECO would be allocated to ensure it would continue to be used and maintained after the completion of the project. UNIDO clarified that the system was still in its concept stage, that once the Executive Committee had approved the work plan, IECO would, in consultation with the three MB producers, the fumigation industry and industry experts, draft terms of reference on how the system shall be structured and work, and the timeline. The sustainability of the system will be ensured through the ODS-MIS platform, which will include an interface module to integrate MB data. The Secretariat suggested that an update on the MB labelling and traceability system be included in the annual progress report submitted to the 84th meeting.

212. Based on the implementation plan for 2019-2021, and the commitment of the Government of China to continue implementing the activities noted above after the completion of the project, the Secretariat considers the work plan in order to ensure the long-term, sustained monitoring of MB after the completion of the sector phase-out plan of MB production to be meaningful.

Secretariat's recommendation

213. The Executive Committee may wish:

(a) To note the progress report on the contract for the development of the management information system (MIS) and its incorporation in the monitoring and supervision programme to be implemented by the Customs Authority, and the update to the work plan in order to ensure the long-term, sustained monitoring of methyl bromide (MB) after the completion of the sector phase-out plan of MB production, submitted by UNIDO contained in document UNEP/OzL.Pro/ExCom/83/11/Add.1;

(b) To request the Government of China, through UNIDO, to provide an update on the contract for the development of the MIS and its incorporation in the monitoring and supervision programme that will be implemented by the Custom Authority to the 84th meeting, on the understanding that if the contract had not been signed by the first day of the meeting, the US $250,000, plus agency support costs of US $18,750 for UNIDO, associated with the activity would be returned to the Multilateral Fund; and

(c) To request the Government of China, through UNIDO, to include an update on the MB labelling and traceability system in the annual report on the status of implementation of the sector plan for the phase-out of MB production in China to be submitted to the 84th meeting in line with decision 82/19.

Review of China's Current Monitoring, Reporting, Verification and Enforcement Systems in accordance with HCFC Consumption and Production Phase-out Management Plan Agreements

Table of Contents

1. Introduction and background

1.1 Introduction

In Decision 82/65 and Decision 82/71, the Executive Committee (ExCom) requested the Government of China, through the relevant implementing agency: i.) to submit, at the 83rd meeting, a review of the current monitoring, reporting, verification and enforcement systems in line with its Agreements with the Executive Committee on the country's HCFC phase-out management plan and HCFC production phase-out management plan, including information on the organizational structure and capacity at the national and local levels that demonstrated how the long-term sustainability of the phase-out of HCFCs in the consumption and production sectors was being ensured and on the efforts to address any illegal trade in those substances; and ii.) further to submit, at the 83rd meeting, a progress report regarding actions taken with a view to strengthening of legislation on ODS and implementation thereof in China.

The objective of this report is to provide the ExCom, in accordance with its relevant decisions, with a comprehensive review of the current mechanism of China's ODS control and phase-out, which includes: i.) information on the compliance framework to the Montreal Protocol in China; ii.) current monitoring, reporting, and verification under China's Stage I and Stage II HCFCs Phase-out Management Plans; iii.) Enforcement review and action plan. This report also provides the basis for the ExCom's consideration to Stage II HPMP tranche request and HPPMP for China at its 83rd meeting.

1.2 Structure of the report

This report consists of five chapters. Chapter 1 introduces general background and objective of this report.

Chapter 2 summarizes the compliance framework to the Montreal Protocol in China, where the ODS management system and relevant laws and regulations are reviewed respectively.

Chapter 3 details the current monitoring, reporting, and verification under China's Stage I and Stage II HCFCs Phase-out Management Plan. Followed by a review on HCFCs phase-out at the national level, detailed MRV under HCFCs production and consumption sector is presented. Efforts to address illegal trade and how the long-term sustainability of the phase-out of HCFCs was being ensured are demonstrated as well at the end of this chapter. This chapter also sums up lessons learned during the implementation.

Chapter 4 reviews the overall situation on ODS enforcement in China where challenges are identified as well. This chapter also outlines the action plan to strengthen legislation and its implementation.

The last chapter assesses the challenges in achieving the compliance targets and urgent need of approving tranches of HPMP and HPPMP.

1.3 The Montreal Protocol and China

China acceded to the Vienna Convention for the Protection of the Ozone Layer in 1989 and the Montreal Protocol on Substances that Depleted the Ozone Layer (hereinafter referred to as the Montreal Protocol) and the London Amendment in 1991 and compiled the China's

Country Program for Ozone Depleting Substances Phase-out (hereinafter referred to as Country Program) for guiding the phase-out activity in 1993. Subsequently, China ratified the Copenhagen Amendment in 2003 and the Montreal Amendment and the Beijing Amendment in 2010. As a responsible country, the Government of China is actively fulfilling the obligations specified under the Montreal Protocol. Under the principle of "common but differentiated responsibilities", China stands ready with the international community to seriously implement the Montreal Protocol as always to protect the ozone layer and address climate change.

With great efforts in the last 30 years, China has achieved the phase-out of five main ODS and completed the first stage of HCFCs phase-out. China completed the phase-out of the production and consumption of CFCs and Halons on July 1st 2007, two and a half year earlier than the phase-out schedule of the Montreal Protocol. Until January 1st 2010, except for essential use, China had completely phased out the production and consumption of CFC, Halon, CTC and TCA (5 year ahead of schedule). Then, China realized the total phased-out of production and consumption of Methyl Bromide in controlled use by January 1st 2015. Subsequently, guided by a series of national strategies and strong political commitment, China has completed the first stage of HCFCs phase-out, having achieved HCFC freeze target at 2013 and 10% reduction target at 2015. During the first stage of HCFCs phase-out, China has phased out 71,000 MT of HCFCs production and 45,000 MT of HCFCs consumption, closed down 88,000 MT production capacities, meeting the targets specified for Stage I HPMP and HPPMP in advance. So far, China has in total phased out over 280,000 MT of ozone depleting substances (ODS), accounting for more than fifty percent of the amount phased out in developing countries. Moreover, for maximize the climate benefit, 76% of the HCFC phase-out projects in Stage I HPMP adopted low GWP alternatives.

1.4 Multilateral Fund and China

As an article 5 country, China advocates the establishment of multilateral funds to provide financial support to developing countries. During 1991-1997, project by project submission and approval has been the predominant modality for funding ODS phase-out. In 1997, China Halon phase-out sector plan was approved at the ExCom's 23rd Meeting, marking the turning point from a project-by-project approach to the performance-based multi-year sector approach. The sector approach was more effective in phasing out ODS than project-by-project approach by combing the policy and regulation activities in the implementation.

For the sustainable phase-out of ODS, China implemented its country program with the principle of four synergies among production phase-out, consumption transition, formulation and implementation of policies and regulations, and development of alternatives. Over 400 projects and 31 sector plans have been developed and implemented with supports from the Multilateral Fund in achieving the complete phase-out of production and consumption of controlled uses of CFCs, halons, carbon tetrachloride (CTC), methyl chloroform (TCA) and methyl bromide (MBr), and the first stage of HCFCs phase-out of controlled uses in both production and consumption sectors. During the implementation of Multilateral Fund projects, China has developed a compliance mechanism which includes monitoring, reporting, verification systems in accordance with the relevant guideline, policies and requirements established by the Multilateral Fund, and has effectively supervised the phase-out activities and its results. The compliance mechanism has been continuously strengthened and improved over time, laying the foundation for the subsequent supervision and management of HCFCs phase-out.

China is the largest country of HCFCs production, consumption and export. HCFCs phase-out in China involves several industries including chemical production, PU foam, XPS foam, room air conditioning, industrial/commercial refrigeration and air conditioning, solvent and

servicing sectors. HCFCs production industries and HCFCs-consumed manufacturing industries have a great implication on the economy and employment of China. The transition from HCFC to environmentally friendly alternatives is full of challenges and complexity in terms of alternative technology, market and industry scale. China's compliance is crucial to the success of the Montreal Protocol due to its high global share.

In 2011, the 64th and 65th Meeting of the ExCom of the Multilateral Fund approved Stage I of the HCFC Phase-out Management Plan (HPMP) for China for polyurethane (PU) foam, extruded polystyrene (XPS) foam, industrial/commercial refrigeration and air conditioning (ICR), Room air conditioning (RAC), Solvent sector and Servicing and Enabling Component to phase out 3,386 ODP tons of HCFCs consumption. The agreement between the Government of China and the ExCom was updated several times and finalized at the 67th meeting. In 2013, the ExCom approved Stage I of the HCFC Production Sector Phase-out Management Plan (HPPMP) for the period 2013-2016. According to the Stage I of HPPMP and for the purpose of achieving the freeze target in 2013 and 10% reduction target in 2015, China had planned to phase out about 3,970 ODP tons HCFCs production at the first Stage.

At the 76th and 77th meetings, the ExCom approved Stage II of the HPMP for China for 6 consumption sectors to reduce HCFCs consumption by 37.6% of the baselines by 2020 and the total phase-out of HCFCs in the PU foam, XPS foam and solvent sectors by 2026. The 79th ExCom meeting approved the Agreement between the Government of China and the ExCom for the implementation of Stage II of the HPMP. The approval of the overall Stage II HPPMP has been delayed, with a bridging fund approved on an exceptional basis at the 81st ExCom for production closure or quota reduction to meet the 2018 compliance target.

According to the Agreements for Stage I/II HPMP and HPPMP, China should meet the annual production and consumption limits of HCFCs including the national level and sector level. The Agreement also stipulates conditions for funding release, monitoring, flexibility, responsibilities of the country and bilateral and implementing agencies, non-compliance issues etc. For the monitoring of Stage I/II HPMP and HPPMP, China will ensure accurate monitoring of its activities under the agreements and will establish and maintain a system to monitor the production and consumption to ensure compliance with the targets. The reporting and monitoring requirements are listed in the appendix of the agreements; these are attached as annexes of the report.

2. Compliance framework to the Montreal Protocol

2.1 ODS management system in China

2.1.1 National-level organizational structure

National Leading Group for the Protection of the Ozone Layer and its Office. The National Leading Group for the Protection of the Ozone Layer (hereinafter referred to as the Leading Group) was set up in 1991 by the Government of China. The Leading Group is responsible for the coordination of critical matters related to the compliance with the Montreal Protocol, review of guiding principles and policies for compliance, review the compliance programme and work plans and oversee the implementation of the work plans, and deal with emerging issues which require the considerations of the Leading Group. As the coordination mechanism for ozone layer protection at central level consisting of 18 ministries at its beginning, the Leading Group has been adjusting its members constantly with the institutional reforms of the

Government of China in the past years. With the most recent restructuring of government agencies undertaken in 2018, the Leading Group is now composed of thirteen ministries. Ministry of Ecology and Environment (MEE, formerly known as MEP), as the leading ministry of the Leading Group, is responsible for the supervision and examination of the implementation of the Montreal Protocol, organization of compliance activities and formulation of policies and measures. Its specific work is undertaken by the Office of the leading group.

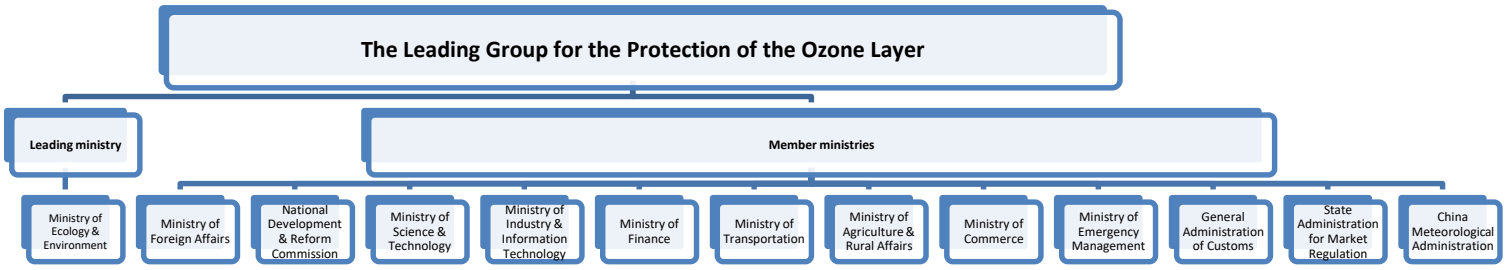

Figure 1 The Leading Group for the Protection of the Ozone Layer

National Management Office for ODS Import and Export. National Management Office for ODS Import and Export (hereinafter referred to as the I/E Office) was co-established by three ministries, including MEE, Ministry of Commerce (MOFCOM) and General Administration of Customs (GAC) in 2000. Its main responsibilities are the daily management of import and export of controlled ODS as authorized by the three ministries. MOFCOM's responsibilities are issuing import & export license to traders and formulating import & export catalogue of controlled ODS of China. GAC is responsible for ODS border management, transforming the catalogue to HS codes, ODS import & export data statistics; supervision, inspection on and release of ODS imports and exports, coordination on the formulation of ODS import & export regulations and policies, and fighting against illegal ODS trades. China's custom branches on borders are under the vertical management of GAC.

Figure 2 National Import and Export Management Office

Coordination Group for the Compliance with the Montreal Protocol within MEE and its Office (National Ozone Unit). Coordination Group for the Compliance with the Montreal Protocol within MEE (hereinafter referred to as the Coordination Group) consists of 9 departments and affiliated agencies of MEE, whose specific work is undertaken by its Office. The Office of the Coordination Group, which undertakes the daily work of the Office of the Leading Group internally, functions as the National Ozone Unit (NOU) of China. As the national focal point of the Protocol and the MLF ExCom, The Office is responsible for daily liaison with the Ozone Secretariat, MLF Secretariat and the international implementing agencies. The Office of the Coordination Group is set up under the Department of Atmospheric Environment, MEE, with Department of Atmospheric Environment, Department of International Cooperation and FECO as members.

Industrial associations and research institutes. The Government of China cooperates closely with relevant industrial associations and research institutes, which mainly participate in data

survey of ODS sectors and potential beneficiaries, research of alternative technologies, formulation of sector phase-out roadmaps and, providing technical consultancy in the development and preparation of conversion project documents and sector plans, providing suggestions to government in the formulation of relevant policies. Industrial associations are also responsible for assisting relevant departments in implementing compliance policies and requirements.

2.1.2 Local EEB and other authorities

Local ecology and environment bureaus (former local EPBs), together with other relevant competent authorities in thirty-one provinces, autonomous regions and municipalities directly under the central government of China have established provincial mechanism for ozone layer protection, which are responsible for: 1) implementing ODS policies, regulations and regulatory documents issued by central government, formulating provincial policies and regulatory documents, for example controlling new construction, reconstruction and expansion projects of ODS and ODS-based products through construction projects management system and environmental impact assessment system; 2) supervising and inspecting the production, consumption, sale, import and export of controlled substances; 3) conducting trainings on environment management and enforcement officers and enterprises; 4）organizing activities to raise the awareness of the public to protect the ozone layer. Besides, local EEBs provide assistance for the implementation of HPMPs, including selecting potential beneficiaries, cross checking ODS production and consumption data, conducting environmental assessments and promoting alternative technologies, etc.

2.2 ODS laws and regulations in China

The Government of China formulates relevant laws, regulations, rules and regulatory documents to support comprehensive domestic compliance in China.

2.2.1 Laws

Approved by the National Peoples' Congress, the *Law on Air Pollution Control and Prevention of the People's Republic of China* (hereinafter referred to as the Law on Air) was revised in 2014 and came into effect in 2015. Article 85stipulates that "the State encourages and supports the production and use of ODS alternatives, reduce the production and use of ODS step by step until complete phase-out. The State implements total amount control and quota management on ODS production, use, import and export. Specific measures shall be prescribed by the State Council".

2.2.2 Regulations on Administration of Ozone Depleting Substances

The *Regulations on Administration of Ozone Depleting Substances* (hereinafter referred to as the Regulations), formulated by the State Council in accordance with the stipulations of the Law on Air and came into force on June 1, 2010, is the most comprehensive special regulation on ODS control in China. The Regulations consists of 6 chapters and 41 articles, which are Chapter I General Provisions, Chapter II Production, Sale and Use, Chapter III Import and Export, Chapter IV Supervision and Inspection, Chapter V Legal Liability and Chapter VI Supplementary Provision. The Regulations establishes total amount control and quota management system, stipulating lifecycle management on the production, sale, use, import

and export of ODS. The Regulations also defines that local EEBs and relevant departments at or above the county level shall be responsible for the supervision and management of ODS within their regional jurisdiction.

Table 1: The Regulation on Administration of Ozone Depleting Substances

Chapters	Chapter Names	Main contents
Chapter I	General Provisions	• formulation and publish of the controlled list of ODS; • lifecycle management on ODS production, use, disposal, recycling and destruction required; • polices formulation required; • encouragement of alternatives and alternative technologies;
Chapter II	Production, Sale and Use	• scope of application of quota and registration management; • conditions of quota application; • procedures of issuing quota;
Chapter III	Import and Export	• license management on ODS import and export required; • responsibilities of MEE, MOFCOM and GAC
Chapter IV	Supervision and Inspection	• requirements on ODS supervision and inspections for environmental protection authorities, especially at local levels
Chapter V	Legal Liability	• punishment on illegal behaviors
Chapter VI	Supplementary Provision	• date of entry-into-force

2.2.3 ODS rules and regulatory documents

MEE, MOFCOM and GAC jointly formulated the *Management Measures of Import and Export on ODS (Ministerial Letter NO. 26)* in order to strengthen ODS important and export management. The document was revised recently in 2014.

Meanwhile, over a hundred supporting policies, regulatory documents and management documents such as bans have been formulated and issued by MEE or members of the Leader Group jointly in order to phase out ODS as per the requirements of the Montreal Protocol. A lifecycle management on ODS, especially HCFCs, based on the above organizational and legal system has therefore been conducted to ensure that ODS consumption and production phase-out are sustainable. Bans on construction projects of new, renovated and expanded ODS production capacity have been implemented through construction project management and environmental impact assessment systems so that the source of ODS production is curbed in line with the phase-out schedule. Quota management has been applied in the management of controlled ODS to reduce production, use, import and export of ODS step by step. Quota and registration management on HCFC production and consumption has been implemented since 2013 in order to ensure the phase-out of HCFCs according to the stipulation of the Regulations.

Table 2: Main policies on ODS management

Classification	Policy
Management on new construction, reconstruction and expansion projects	**Circular on Management of Establishment of ODS Production and Consumption Facilities (MEP Letter No. 2018-5)**
Production and consumption quota management	Circular on Implementation of Quota License for Production of Halon Extinguisher (NEPA Letter No. 1997-764)
	Circular on Strengthening Management of HCFC Production, Sale and Consumption (MEP Letter No. 2013-179)
Import and export management	**Management Measures of Import and Export on ODS (Ministerial Letter NO. 26)**
	China import and export list of controlled ODS (six batches)
Bans	Circular on the Ban of the Re-deployment of Halon Fire Extinguishers in Non-essential Places (MPS Letter 1994-94)
	Circular on the Ban of CFCs in Aerosol Sector (NEPA Letter 1997-366)
	Ban on the Use of CFCs in New Automobile Production in China's Automobile Sector (MMI Letter 1997-099)
	Ban on the Use of CTC as Solvent (MEP Letter 2003-69)
	Circular on the Ban of Use of CFC-113 as Solvent (SEPA Letter 2004-449)
	Ban on the Production and Use of Trifluorotrichloroethane (2005-60)
	Ban of the State Tobacco Monopoly Administration and SEPA on the use of CFC-11 as tobacco expansion agent in the tobacco sector (2006-2)
	Announcement of the State Grain Administration and the SEPA on the Complete Cessation of the Use of Methyl Bromide in the Grain Storage Industry (2006-4)
	Circular on the Ban of Production of CFCs (SEPA Letter 2007-43)
	Ban on the use of chlorofluorocarbons (CFCs) as foaming agents (2007-45)
	Ban on the production, sale, import and export of household electrical appliances with chlorofluorocarbons (CFCs) as refrigerants and foaming agents (MEP Letter 2007-200)
	Ban on the use of methyl bromide in the tobacco sector (2008-1)
	Circular on the Ban of Production and Use of TCA (MEP Letter 2009-39)
	Ban on the use of CFCs in the production of non-inhaled medicinal aerosols (2013-9)
	Ban on the use of methyl bromide in agriculture sector (MOA Letter 2552)
	Announcement on the Ban of Production of Refrigerator Freezer Products, Refrigerated Container Products and Electric Water Heater Products with Fluorodichloroethane (HCFC-141b) as Blowing Agent (MEE Letter No. 2018-49)
Alternative management	Catalogue of Guidance on Industrial Structure Adjustment
	Circular on Issue of Catalogue of Recommended ODS Alternatives (Revised) (SEPA Letter No. 2007-185) (the Catalogue is being updated)
Supervision management	Circular on Strengthening the Supervision and Management of Local Environmental Protection Bureaus in the Protection of the Ozone Layer (NEPA Letter No. 1997-185)
	Circular on Strengthening the Management of Phase-out of Ozone Depleting Substances (SEPA Letter No. 2007-40)

Ecology and environmental authorities at national and local levels take different responsibilities in ODS management. ODS management, therefore, are conducted currently through a two-tier modality at national and local level as per the stipulation of the Regulations. Details are showed in Table 3.

Table 3: ODS Management at national and local level in China

National Level	Production quota management
	Consumption quota issued (exemption, critical use, HCFCs >100 mt)
	Import/Export license
	Registration for feedstock use
	Registration for HCFCs sales (>1000 mt)
Local Level	Ban on new construction project of ODS production and consumption except feedstock use
	Registration for HCFCs sales (<1000 mt)
	Registration for HCFCs consumption (<100 mt)
	Registration of ODS recycling/reuse/destruction at provincial level
	Registration of servicing with ODS at county level or above
	Supervision on enterprise level and law enforcement

3. Monitoring, reporting and verification under Stage I and Stage II HCFCs phase-out

3.1 Review on implementation of HCFCs phase-out at the national level

3.1.1 HCFCs phase-out overall progress of Stage I and Stage II

Since the approval of Stage I of the HPMP in 2011 and Stage I of HPPMP in 2013 by the ExCom, China has achieved significant progress in HCFCs phase-out and met compliance targets of 2013 freeze and 2015 10% reduction. At the first stage, the production sector phased out about 71,000 MT of HCFCs and closed down 5 production lines with a total production capacity of 88,000 MT. For the consumption sectors, 154 enterprises in the 5 manufacturing sectors conducted conversion projects with a total phase-out of 42,012 MT. Table 4 below are the numbers of conversion projects in 5 manufacturing sectors and associated amounts of phase-out under the Stage I HPMP. The refrigeration servicing sector contracted 18 training centers, trained about 5,000 technicians and made significant development in standard establishment, supervision of import and export, conducting public awareness and capacity building.

Table 4: Conversion projects for Stage I of HPMP

Sector	Number of lines/ enterprises	Phase-out Amount (MT)
PU foam	57	12,969
XPS foam	25	9,590
Solvent	9	610
RAC	29	10,814
ICR	34	8,029
Total	**154**	**42,012**

The HCFCs phase-out in the production sector achieved great climate benefit. The total climate impact from HCFCs reduction from the 2010 production level during 2013 to 2017, including the impact from HFC-23 emission reduction over those years, represents about 1,165 million tons of CO_2 eq.

At the 76th and 77th meetings, the ExCom approved Stage II of the HPMP for China for 6 consumption sectors for the period 2016 to 2026 in the amount of US$500.1 million, to reduce HCFCs consumption by 37.6% of the baseline by 2020 and to achieve complete phase-out of HCFCs in the PU foam, XPS foam and solvent sectors by 2026. With the first two tranches approved (except for the PU foam sector), conversion contracts with 61 enterprises resulting in a total phase-out amount of 10,251 MT have been signed. The 80th ExCom meeting approved on an exception basis US$23m to enable the maximum allowable level of HCFCs production for 2018 at 22,742 ODP tons. A production line closure contract was signed with Zhejiang Sanhuan to phase out 3,182 MT of HCFC production. 23 HCFC production quota reduction contracts were signed with 18 producers resulting in a phase-out of 13,028 MT.

China has made progress in implementation of Stage II of the HPMP. Market of the low GWP alternatives is growing through the joint efforts by the government, industries and stakeholders. Continued efforts through the implementation of HPMP and HPPMP are necessary to keep the momentum and ensure the compliance target and other objectives of the projects to be achieved.

Development of alternatives to HCFCs for sustainable phase-out. In line with the spirit of decision 19/6 of the meeting of parties, the government of China and relevant industries has made great efforts to promote ozone and climate friendly technologies to HCFCs to avoid the transition to high GWP HFCs as much as possible. Since 2010, eight innovative demonstration projects for the low GWP alternatives in PU foam, XPS, RAC, ICR and solvent sectors has been developed and implemented in China. To facilitate the transition to low GWP alternatives, a large amount of research and development, risk assessment, standard establishment and revision, ender user demonstration, and public awareness activities were carried out by MEE, line ministries, local governments, academic institutions and industries. Among all the conversion activities at Stage I, natural refrigerants or low-GWP alternatives account for about 76%, medium-GWP alternatives for 10%, and the percentage of high-GWP transitional substitutes at no more than 14%. The percentage of environment-friendly alternative technologies is higher than the goal of sector plans, especially for the foam and solvent sectors in which 100% of low-GWP technologies were adopted. With the adoption of the low-GWP alternatives, an estimated emission reduction of 86.3 million CO_2 eq. tons annually could be achieved. At the second stage, China raised its ambition of transition to green economy. All sectors selected ozone and climate friendly technologies to replace HCFCs. The temporary transition from HCFCs to high GWP HFCs will not be funded in the HPMP supported by the Multilateral Fund.

The technology choice for different sectors in the Stage-I HPMP is shown in the table below.

Table 5: Alternative technologies of each sector

Sector	Alternative technologies for Stage I	Alternative technologies for Stage II
PU foam	Hydrocarbon (86%), water (14%)	Hydrocarbon, water, HFO
XPS foam	CO_2 (100%)	Optimized CO2
RAC	R290 (71%), R 410 (29%)	R290, CO2
ICR	HFC-32 (53%), NH_3/CO_2 (12%), R 410 (29%) HFC-134a (6%)	CO2, NH3, NH3/CO2, HFO, HC, HFC-32
Solvent	Hydrocarbon (97%), HFO (3%)	KC-6, Hydrocarbon, HFE

Considering alternative technologies facing with many obstacles in development and application, a series of technical assistance activities were conducted to remove technical barriers, assist in a smooth transition to low-GWP alternative technologies and facilitate sustainable phase-out of HCFCs. These activities include technical and product standard revision/formulation, research and optimization of alternative technologies, safety standard and measures, provincial monitoring, training etc. Major TA activities on alternative technologies in each sector are as following:

XPS foam sector plan: TA activities include formulation and revision of standards on XPS foam board for thermal insulation, study on new flame retardants and optimization of CO_2 technology, and revision of a White Book for Safe production with CO_2 technology etc., which supported and promoted HCFCs phase-out in the XPS foam sector.

PU foam sector plan: Over 20 TA activities were designed to promote the application of alternative technologies and sustainable HCFC-141b phase-out in China. A safety standard for using HC alternatives in PU foam was drafted. A series of studies on optimizing alternative technologies in different subsectors were conducted. Provincial monitoring activities including random sampling detection were designed and implemented to monitor the compliance of the PU foam enterprises in key regions. Ban on the Manufacturing of Refrigerators, Freezers, Reefer Containers and Electric Water Heaters Using HCFC-141b as Blowing Agent was issued in 2018 and came into force since 2019.

Solvent Sector plan: Training and workshops were organized to communicate latest information about the alternative technologies and facilitate experience sharing among enterprises. HCFCs Phase-out Technical Conversion Guideline in the Medical Devices Sub-sector was prepared and disseminated to relevant enterprises.

RAC sector plan: Research on R-290 technology was conducted including experiments and risk assessment on leakage of R-290, performance optimization of R-290 compressor based on reduced lubricant use, refrigerant charge reduction through the use of microchannel technology, and existing efficiency codes and standards on refrigerant uses.

ICR sector plan: Studies on the application of low-GWP alternative technologies were conducted to assist in their adoption, including R-32 water chiller and unitary air-conditioning, water chillers using HFO/HFO blends, R-290 commercial heat pump, Ammonia/CO_2 in refrigeration and food storage, CO_2 heat pump and CO_2 technology in supermarkets. Revision of 11 technical and product standards were completed. Revision of the National Standard for Safety and Environmental Requirements for Refrigeration Systems and Heat Pumps (GB-9237) to allow for the use of flammable refrigerants has been completed and the revised standard went into effect on 1 July 2018. Market of the above low GWP alternatives in China is growing.

Refrigeration servicing sector: TA activities include establishment of training centers, training technicians/trainers on good servicing practices and handling R-290 refrigerant, distribution of training publications on good servicing practices for refrigeration and air conditioning equipment. Code for transportation and installation of room air conditioner and code for servicing and maintenance of commercial refrigeration were revised and approved.

3.1.2 HCFCs monitoring and reporting under the overarching strategy

According to Article 7 of the Montreal Protocol, parties shall provide to the Ozone Secretariat statistical data on its annual production, imports and exports of each of the controlled substances each year. In addition, A5 parties are required to submit annual Country Program data to the Secretariat of the Multilateral Fund each year. HCFCs data were collected from production enterprises quarterly and from consumption enterprises on yearly basis. The

annual import and export data for HCFCs are from the record of the GAC. According to the HPMP and HPPMP Agreement between China and the ExCom, the World Bank shall verify HCFCs production data and import and export data each relevant year. The World Bank has been carrying out yearly verification to all the production enterprises and verification on the import and export data since 2013. The detailed verification reports were submitted to the Secretariat of the MLF and the Executive Committee for its review. The verification reports were treated as the confidential documents only available to the MLF Secretariat and the ExCom members because it contained a large amount of corporate business information. The HCFCs data in the A7 and CP data submitted by China are consistent with the verification report and the recorded import and export data by the GAC. National HCFCs consumption was calculated in line with the definition of the Montreal Protocol. The consumptions at the sector level were determined according to the methodology in the HPMP agreement and data collected through the quota system, national statistics and other relevant information collected by the industrial associations. The A7 data and CP data submitted by China showed that China has met the HCFCs phase-out targets as schedules both at the national level and sector level from 2013 to 2017.

Table 6: HCFC Production and Consumption of China for 2013-2017 (ODP tons)

	2013	2014	2015	2016	2017
Production target	29,122	29,122	26,210	26,210	26,210
Actual production	26,599	27,180	21,899	21,514	21,671
Consumption target	18,865.4	18,865.4	16,978.9	16,978.9	16,978.9
Actual consumption	17,196	16,839	13,485	14,221	14,605

As China has large HCFC production, export and consumption, involving chemical production, PU foam, XPS foam, RAC, ICR, refrigeration servicing and solvent sectors, it requires effective and efficient coordination at the national level to ensure phase-out targets are achieved in a collective manner. Coordination meetings were held each year with participants from international implementing agencies, bilateral agencies, MEE, industrial associations, research institutes and other stakeholders. Coordination meetings enabled regular monitoring and review of the progress of seven sector plans and facilitated collective actions to ensure smooth implementation of the sector plans. With management and monitoring at the national level, review and submission of annual progress reports and implementation plans were timely submitted to the Executive Committee as required.

The 70th meeting of the ExCom requires the implementing agencies to submit an annual audited financial statement to be provided by FECO/MEE including funds received from implementing agencies, disbursement to final beneficiaries and interest earned on the balance of Stage I of HPMP. Similar decision was made when Stage I of HPPMP was approved. Financial audit reports were prepared by the qualified independent accounting firm and submitted to the Secretariat of the Multilateral Fund from 2012 to 2017. The accrued interest from HPMP and HPPMP in those projects was offset against the new tranche approvals according to relevant decisions of the ExCom.

3.2 Management and monitoring on HCFCs production

3.2.1 HPPMP Agreement provisions and obligations

At its 69th Meeting, the Executive Committee approved China's Stage I HPPMP to assist China in meeting the 2013 freeze and the 2015 10% reduction of China's Montreal Protocol HCFC production baseline (Decision 69/28).

More specifically, the requirements of the framework agreement for total phase-out of HCFC production for controlled uses includes the following:

a) The amount of HCFC production for controlled use to be phased out by the HPPMP is 445,888 tons based on verified 2010 ODS production data.
b) To retire an additional 24 percent (107,013 MT) of the production capacity based on the tonnage of 445,888 MT.
c) To close and dismantle the production lines producing HCFCs only for controlled uses in 2010.
d) To ensure that any compensated plant does not redirect any phased out HCFC production capacity towards feedstock.
e) Funding for Stage I and beyond should be used to prioritize total permanent closure and dismantling of production lines.
f) To optimize the implementation of HPPMP in order to minimize environmental and climate impacts as much as possible, including by giving priority to HCFC production closure to achieve HCFC reduction targets set forth in the MP Decision XIX/6.

3.2.2 Monitoring, reporting and verification under HPPMP

In order to achieve the compliance targets of HCFC production sector, the government of China issued specific policies to ensure the implementation of HPPMP, established a tradable production quota management system covering all producers and all HCFCs, issued annual total and domestic use production ceiling according to the targets set up in HPMP and HPPMP Agreement, developed registration mechanism for HCFC sales and feedstock uses, operated an on-line management information system (MIS) for quarterly data reporting of monthly production, and implemented the open bidding for production line closure and proportionally quota reduction. Besides that, China continuously strengthens its supervision of HCFC production through the independent verification by the implementing agency (the World Bank) and monitoring by local EEBs. The training and communication with all producers on the production line closure, quota allocation and implementation, policy implementation, issues identified in the verification report has been organized regularly with the presence of the representatives from the international implementing agency to improve the management. Following are some details of HCFC production management.

3.2.2.1 Policy Measures

a) **In 2008, MEE issued *Circular on Strict Control of HCFC Production Facilities (MEP Letter 2008-104)*, which forbids the new construction, reconstruction and expansion of HCFC production facilities for controlled use**. It also defines the requirements that the new construction of integrated HCFC production facilities and downstream feedstock use facilities should be approved by MEE before construction. Moreover, it is not allowed to exceed the capacity during the relocation or reconstruction of the existing HCFC production facilities. In view of the need for long-term management of HCFCs and the continued nature of the

negotiations on HFC phase-down, since the release of this circular, MEE suspended all applications for the establishment of new HCFC facilities for feedstock use till the year 2015 when more strict approval conditions and procedures for the feedstock use were introduced and agreed upon by the stakeholders. In the approval process for the feedstock use, a publicity procedure was introduced for greater transparency to enable social supervision. The issuance of the circular and the more rigorous approval procedure for feedstock use reduces the likelihood of overcapacity being created for of HCFC production, facilitated the long-term management of HCFCs, and decreased the emission of by-products (HFC-23) of HCFC-22.

In the year of 2018, MEE issued the *Circular on Management of Establishment of ODS Production and Consumption Facilities (MEP Letter 2018-5)* which is aimed to consolidate the construction management of all the substances. Meanwhile, the new circular replaced 9 circulars related to the construction of ODS production/consumption facilities issued before.

b) In order to meet the targets of HCFC production and consumption sectors for 2013 freeze and 2015 reduction, in line with the Regulations, ***Circular on Strengthening Management of HCFC Production, Sale and Consumption*** **was formulated and issued by MEE on 7 August 2013 (MEP letter 2013-179)**. According to the circular, MEE issues the HCFC production quota to each producer and HCFC consumption quota for the enterprises with annual consumption of more than 100 tons respectively. The circular also requires that all the HCFCs feedstock users and HCFC dealers with the annual sales volume of more than 1,000 tons (including) should register in MEE; HCFCs users for control use less than 100 tons per year and HCFC dealers less than 1,000 tons per year should register in local provincial EEBs. The Circular (MEP letter 2013-179) strengthened the management measurements on HCFCs compared to the previous policies.

3.2.2.2 Management Mechanism

a) Production Quota System for Controlled Uses

China uses production quotas to control the production of HCFCs in accordance with the control targets under the HPMP and HPPMP Agreements. Each HCFC producer is required to have a production quota license before it can produce and sell HCFCs for controlled use. Production quotas are only valid for the calendar year for which they were issued. MEE will provide each eligible HCFC producer with a two-tier quota for ODS production. The total production quota will be used to keep the ODS production within the HPPMP control targets, taking into account of imports that may take place during the calendar year. Within the total production quota, each eligible producer will receive production quota for domestic use. The purpose of the production quota for domestic use is to ensure China meets its consumption control targets under the HPMP Agreement. When applying the production quota, producers must submit the supporting documents in line with the requirements stipulated in the ODS regulation. The on-line publicity of quota allocation in the website of MEE and China Ozone Protection Actions before the approval has been ensured for information transparency and public supervision.

The production quota can be traded between eligible HCFC producers either for one year or on a permanent basis so as to facilitate the industrial rationalization of the production. Producers must request and receive approval for quota trading from MEE. Quota trading request can be applied twice each year. The information of quota adjusted will be published to the public. The quota notice will be sent to each producer and the local EEBs who are responsible for the regular monitoring of the production. The practice of tradable quota was welcomed by the industries as an economic and effective way to organize the production efficiently through co-ordination. Such mechanism also contributed to the effective monitoring of the production.

As mentioned in above, all the producers are required to report the monthly production data

to MEE on a quarterly basis. The reported data were analyzed by MEE during the year to ensure the compliance of the producers within allocated quota and to prevent potential careless mistakes of producers. The reporting data was verified by independent technical and finance experts after the year.

b) Registration Management for HCFC dealers

The enterprises that sell more than 1,000 tons (including) per year are required to register with MEE. Each year, the producers and large dealers should submit their application to MEE for the annual registration. After reviewing the application document, MEE will publish the registration information on-line, including the list of registered dealers and substances they are allowed to sell.

According to Circular (MEP Letter 2013-179), the enterprises that have an annual sale of less than 1,000 tons should register in local provincial EEBs. The sales information is helpful for MEE and local EEBs to monitor the market and consumptions.

c) Registration Management for HCFC feedstock users

Since the feedstock management is very important to ensure the sustainable phase-out of HCFC for controlled use, all HCFC feedstock users are required to register to MEE on a yearly basis. Each year, all feedstock users should apply for the registration for HCFC feedstock use. After reviewing the application document, MEE will publish all the registration information, including the list of registered feedstock users and substances they produce by using HCFCs.

Furthermore, it is required that only the registered feedstock users are allowed to purchase HCFCs from qualified HCFC producers and registered HCFC dealers. All the HCFC production for the feedstock usage by themselves and sold to domestic users and foreign users were carefully verified by the independent technical and financial experts based on the registration information of MEE, contracts and financial records.

3.2.2.3 Data Reporting

During the implementation of Stage I, a Management Information System (MIS) has been developed. Through this system, all the enterprises that are supervised directly by MEE could apply for production quota, sales registration and feedstock use registration on line and report the relevant data in a quarterly basis. The data to be reported is shown as follows,

a) HCFC producers: HCFC production, purchase, detailed sales information for different uses (including sales amount, the buyer and users), internal use, stockpile, as well as the raw material.

b) HCFC dealers: detailed purchase information (including purchase amount, the providers and users), detail sales information for different uses (including sales amount, the buyer and users).

c) HCFC feedstock users: detailed purchase information (including the providers and purchase amount), the amount and kinds of the chemicals they produced by using HCFC as the raw material.

Through the analysis and cross-check of the reported data and information, PMO could monitor the implementation of production quota for each producer, quantities of HCFC feedstock use and provide the information for the in-site monitoring and verification.

3.2.2.4 Monitoring

a) Monitoring of implementation of HCFC production quota

As mentioned above, a centralized data reporting system was established as the tool to track the implementation of HCFC production quota. Apart from date reporting system, FECO and

the international agency World Bank conducted site visits to HCFC producers each year to supervise the implementation of HCFC production quota through checking the status of HCFC production facilities and relevant production and sales records.

On the local level, EEBs are responsible for the monitoring to enterprises in line with the ODS regulations. In case the wrong-doing by enterprises are identified, local EEBs will investigate and dispose of illegal acts.

b) The supervision and verification of HCFC production closure

In order to close all the production lines only for controlled use and retire the additional 24% idle capacity as required by the HPPMP agreement, China has been giving priority to HCFC production closure and retirement. FECO along with the World Bank designed the bidding mechanism carefully to provide incentives for the closure and retirement of idle capacities. The bidding mechanism worked very well during the implementation of Stage-I HPPMP. Other measures are listed below:

i) The production line closure projects shall be strictly following the requirements of the World Bank's Environmental and Social Management Framework. The enterprises shall prepare and submit Environmental management plan, Resettlement plan, Site investigation report and Site environmental risk assessment report to World Bank for approval. If the remediation of contaminated sites is necessary, the enterprises shall also submit remediation plan of contaminated sites. The safeguard focal point of the World Bank is responsible for the review and supervision of social and environmental impact of the project.

ii) According to the project requirement, local EEBs shall supervise the procedure of production line closure and provide certificate for equipment dismantling. FECO will supervise the destruction of key equipment of the production line. The enterprises shall record such process by video or image.

iii) During the project implementation, the World Bank and FECO organized site-visits for the supervision of the project progress and achievement of agreement. In the Stage I, FECO and the World Bank organized 5 times joint site-visits for each enterprise contracted for the production line closure.

iv) After the project implementation, the World Bank will commission independent experts for the verification to confirm the achievement of dismantling and permanent destruction of production line.

3.2.2.5 Production, Import/Export verification and Feedstock verification

a) Production and Import/Export verification

As per the requirement of the agreement, China's HCFC production situation should be verified by following the Executive Committee's Guidelines and Standard Format for verification of ODS production Phase-out using the Montreal Protocol's definition of production. The annual verification is normally conducted from April to August each year. The World Bank will commission teams of independent technical and financial experts to verify the HCFC production situation, including production data for controlled and feedstock uses, facility capacity and operation status, stockpile, domestic uses, import and export, and HFC-23 byproduct emission on a voluntary basis. In addition, the verification also includes the review of production line closure project.

b) Feedstock verification

Significant HCFC quantities have been used in house by the producers themselves for the downstream production and were verified by the World Bank experts. For the registered

feedstock users purchasing HCFCs, China conducted the verification every two years to check the technical route of using HCFC and to verify the data of their purchasing records.

3.2.3 Lessons learned

The Stage I HPPMP has been successfully implemented by MEE with support from the implementing agency and ensured the compliance of China for the HCFC freeze target in 2013 and the 10% reduction target in 2015. A comprehensive and effective regulation and supporting policy framework, monitoring, verification, and reporting system for the HCFC production phase-out has been established and implemented. Lessons learned in this process could be summarized below:

- ODS regulation issued by the State Council on 2010 provided a comprehensive legal framework to regulate ODS in China. Circular (MEP Letter 2013-179) is explicit on the control measures for HCFCs management both on the national level and local level. The ban on the new establishment of HCFC facilities has been strictly implemented from 2008 to ensure the upstream control for the sustainable phase-out. The quota and licensing system for HCFC production, consumption, import and export, has been designed to suit the requirements and complexity of HCFC phase-out in China and were proven to be effective in achieving the phasing out target of HCFCs.

- An open bidding mechanism for production closure and quota reduction arrangement has been implemented successfully and demonstrated the feasibility to meeting the requirements in the overarching HPPMP agreement.

- A robust monitoring, verification and reporting system for HCFC production phase-out has been established in line with the HPPMP Agreement. This system includes the monitoring, verification and reporting both for the controlled use and feedstock use. The capacities of MEE, local EEBs and the implementing agency to manage the production sector of HCFCs have been strengthened through the implementation of the Stage-I HPPMP.

- Independent production verification to all producers are critical to ensure the compliance to the regulation. The recommendations of the verification report, the review and comments of the MLF Secretariat to the verification report also helped China and producers to improve the management constantly.

- The role of local EEBs for the smoothly implementation of HPPMP is very important. Apart from the specific HCFC regulation, the general environment management measures such as EIA, routine monitoring to the enterprises have been contributing to the effective HCFC production management. The safeguard policy of the World Bank ensured the properly implementation of production line closure to avoid the negative impacts to the social community and environment.

- Regular training and consultation with HCFC producers, dealers and feedstock users are necessary for the smooth and effective implementation of HPPMP. Publicity of the issuance of quota, registration of HCFC dealers and feedstock users, the review process of the establishment of the new HCFC fallibilities ensured the transparency of the relevant information, enhanced the motivation and confidence of the stakeholders in compliance, and strengthened the supervision by the public.

3.3 Management and monitoring of HCFCs consumption

3.3.1 HPMP Agreement provisions and obligations

At the 64th ExCom meeting, it adopted Decision 64/49 to approve in principle Stage I of the HPMP for China for the period 2011 to 2015 to reduce HCFC consumption by 10 per cent of the baseline. The meeting also approved the draft Agreement between the Government of China and the Executive Committee for the reduction in consumption of HCFCs (hereinafter referred to as "the Agreement"). Subsequently, the Agreement was revised and updated at the 67th ExCom meeting as Decision 67/20.

A national maximum HCFC consumption target and separate target for five manufacturing sectors has been set out in Appendix 2-A in the HPMP Agreement. The release of tranches for a sector plan will depend on the compliance of the national consumption target, sector consumption target, the implementation progress of the annual work plan and disbursement to the final beneficiaries in the previous tranche.

The Agreement also requires China should ensure that it conducts accurate monitoring of its activities under the Agreement, and should also establish and maintain a system to monitor the consumption in the different sectors, to ensure compliance with the sector consumption limits set out in Appendix 2-A. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") should monitor and report on implementation of the activities in the previous annual implementation plans in accordance with their roles and responsibilities set out in Appendix 5-A. This monitoring should also be subject to independent verification.

Appendix 5-A under the Agreement further stipulated the roles of monitoring institutions and verification methodology. The Foreign Economic Cooperation Office/Ministry of Environment (FECO/MEP) is responsible for the overall co-ordination of activities to be undertaken in the HPMP with assistance of the Lead IA and acts as the National Ozone Unit, responsible for carrying out national policies and legislations regarding the control of HCFC. **The national consumption should be monitored and determined based on production data and official import and export data for the Substances recorded by relevant government departments in line with the Agreement**. In addition to the national system of licensing and quotas for HCFC imports, production and exports, a quota system covering enterprises using large quantities of HCFC in the different consumption sectors, where applicable, should be established to control the consumption growth, achieve the consumption reduction in those enterprises and collect the consumption data. For those sectors with large amounts of small and medium enterprises, the consumption would be managed by limiting the quantities of the relevant substances to be sold to the domestic market. FECO/MEP would closely supervise those enterprises carrying out the conversion activities in Stage I of the HPMP to ensure the phase-out target in those enterprises had been achieved. FECO/MEP would co-ordinate with the Lead IA and Cooperating IAs to facilitate the verification of the targets set in the Agreement.

The Stage II HPMP for China along with six sector plans were approved at the 77th ExCom meeting. Subsequently, the Agreement (Stage II) was concluded at the 79th ExCom meeting. Since above monitoring, reporting and verification requirements stipulated in the Agreement have been proven effective during the implementation of Stage I, the Agreement (Stage II) follows the similar monitoring, reporting and verification requirements and approaches as those of Stage I.

3.3.2 Monitoring, reporting and verification under HPMP

3.3.2.1 HCFC consumption quota and registration management

As agreed between the Government of China and the ExCom and stipulated in the HPMP Agreement, in addition to the national system of licensing and quotas for HCFC imports, production and exports, a quota system covering enterprises using large quantities of HCFC in the different consumption sectors, where applicable, should be established to control the consumption growth, achieve the consumption reduction in those enterprises and collect the consumption data.

In response to above requirement to effectively control the consumption growth of HCFC and ensure its reduction as scheduled, MEE issued the *Circular on Strengthening Management of HCFC Production, Sale and Consumption* (MEP Letter No. 2013-179). According to the circular, all HCFC producers in China should hold quota permissions. HCFC consumers with no less than 100 MT of annual HCFC consumption for controlled uses should apply for and hold quota permissions, while those with less than 100 MT of annual HCFC consumption for controlled uses should register at the provincial environmental protection agencies. MEE is responsible for the formulation of the overall quota allocation scheme for each year. All HCFC distributors should register with respective environmental protection agencies at different levels upon their sales volumes.

Accordingly, since the year 2013, MEE, jointly with relevant government departments, have been applying the national system of licensing and quotas for HCFC imports, production and exports, and has been issuing quotas for large HCFC consumers (with annual consumption larger than 100 MT) in manufacturing sectors every year.

According to the ODS Management Regulation and the Circular, the HCFCs consuming enterprise of over 100 MT shall apply to MEE for a consumption quota for the next year before October 31 of each year, and submit supporting documentations proving that the unit is eligible for consuming HCFCs, has obtained places, facilities, equipment and professional technicians that can utilize HCFCs for manufacturing, and has approved environmental protection facilities and sound internal management system.

The MEE review the consumption quota application before December 20th. During the review process, the reduction targets by sectors set out in the HPMP Agreement, the actual consumptions of the companies in previous years, and the status of the conversion projects supported by the HPMP will be considered for specific sector and companies. Only when the applicants meet all requirements, MEE issues the consumption quota license for the next year. MEE also copies it to the relevant provincial EEBs where the enterprises locate for their monitoring. In case of the rejection of the application, MEE shall notify the applicant in writing with the reasons. The quota system for large consuming companies was proved to be a very effective tool for the sectors with majority or significant consumption at large size enterprises such as RAC, ICR, XPS and some subsectors of PU foam. This measure advanced the transformation first in large companies who are leading the market. Foreign ownership companies also need to apply for the quota same as the local companies and are required to reduce their consumption according to the phase-out schedule of the HPMP. The information collected through this quota system has been considered in finalizing the Country Program data report to the Multilateral Fund and in the project implementation of the sector plans. All the baseline consumption data in the large size companies has been verified in the preparation of the conversion projects in the sector plan. For the sector with large amounts of SMEs, the control measure in the sector level will basically depend on the domestic production quota,

import and export control through licensing system, sales registration and user registration system at local level.

The HCFC distributors, including system houses in PU foam sector, with sale volume of HCFC larger than 1,000 MT have been registered at MEE.

Case1： HCFCs registration practice in Shanghai

Shanghai has established the HCFCs registration system since the year 2013, in accordance with the Circular on Strengthening Management of HCFCs Production, Sale and Consumption (MEP Letter No. 2013-179) issued by MEE. In 2014, Shanghai issued the Circular on the Registration Management of HCFC production, consumption, sales and servicing at its municipality level. Each year, Shanghai also publishes the notification on the registration management and discloses the results of registration to the public.

Shanghai so far has developed online registration system, and the operation of the system is proven effective and efficient. The registration information includes basic information of enterprises, sectors/applications, type of HCFCs, the amount of HCFCs consumption/sales, etc.

HCFCs registration information in Shanghai from 2013-2018

Year		2013	2014	2015	2016	2017	2018
Sectors		Number of enterprises					
Feedstock use		6	7	6	5	3	2
Controlled uses	Solvent	15	15	13	13	10	11
	Foam	15	15	14	14	15	16
	Refrigeration	20	19	19	19	16	15
Sales		41	46	47	48	44	33
Total		**95**	**100**	**97**	**97**	**88**	**77**

3.3.2.2 Monitoring, reporting and verification on conversion sub-projects

Baseline verification prior to the signature of sub-contract

Since HPMP was approved, with the guidance from MEE and the national leading group, FECO shall implement the HPMP and comply with the phase-out targets. The phase-out impacts are achieved through policy implementation, conversion activities, and technical assistance activities.

In terms of conversion sub-projects, FECO disseminates and advertises the invitation of project proposals to the relevant sectors after the tranches of HPMP are approved by the ExCom and the implementation plan are agreed by the implementing agencies. Each enterprise that applies for MLF grants shall entertain the on-site baseline verifications organized by FECO. The verification team consists of the staff from the accounting firm and technical experts, which are selected by FECO through open and competitive selection. According to the TOR, the financial consultants go through the HCFCs purchase invoices and also check the enterprise's production data, bank transferring records, warehouse inventory, and other supporting

documentations to crosscheck the HCFCs baseline consumption. On the other hand, the technical expert is responsible for evaluating technical aspects, such as technical capacity, the status of equipment, the conditions of the manufacturing plants, etc., and providing technical advice that may arise during the verification. The technical expert also provides technical inputs to evaluate whether the HCFCs consumption matches with the production capacity and product data. The verification team takes photos of the production sites and verification activities. The information on the enterprise's eligibility, baseline consumption, HCFC-based equipment and other important information are collected. All the materials used during the verification should be copied and stamped by the enterprise.

The baseline consumption results are concluded in the verification report prepared by the accounting firm, including an integrated part of technical evaluation. The report is submitted to FECO for review. Based on the information in the verification report, the eligibility of the company for funding is determined. The funding level for the conversion projects is determined in accordance to the Multilateral Fund cost guideline, funding allocation criteria set up in the project implementation manual approved by the implementation agency, as well as the proposals from the beneficiaries.

Monitoring, reporting and verification during the implementation of conversion sub-projects

After the baseline consumption is determined, the beneficiary enterprise should prepare an implementation plan determining their selection of alternative technologies, conversion timeline, procurement plan, the equipment relevant to the use of HCFCs to be dismantled, budget plus counterpart funding, along with a commitment letter from the legal representative for the sustainable phase-out of HCFCs. The implementation plan should be subject to a decision of project evaluation panel organized by FECO. Upon the approval of the implementation plan by the panel, FECO would then sign the sub-grant agreement with the beneficiary enterprise.

In the sub-grant agreement, it is clearly stated that if the beneficiary enterprise fails to stop the use of HCFCs in accordance with the provisions of the sub-grant agreement, or continues to use HCFCs and other phased-out ODS, it will be regarded as breaching party. In the case of any breach-of-agreement situation, FECO has the right to take actions against beneficiary such as requiring beneficiary to immediately correct its breach and paying a breach penalty up to 10% of the value of the sub-grant agreement, suspending further disbursement to the enterprises, or unilaterally terminating the sub-grant agreement and requiring an immediate return of all project grants obtained by beneficiary.

Once the sub-grant agreement is signed with the beneficiary enterprise, the beneficiary should start conversion activities in line with the approved implementation plan, and apply for verifications for certain technical and financial milestones that are specified in the sub-grant agreement. After the beneficiary completes the installation of new equipment and completes the trial of using alternatives, then the implementation supporting agency (ISA) or independent technical experts will conduct the on-site verification. For the beneficiary that used MLF to procure equipment, ISA verification checks the installed equipment in line with the implementation plan, and the specifications in the procurement contract between the beneficiary and equipment supplier. If there may occur discrepancy during the verification, the ISA will have to require the beneficiary to submit explanations, and the ISA should also provide justification from the technical perspectives. The ISA also interviews with the enterprise and go through documentations such as production logs, raw material procurement invoices etc., to make sure that the beneficiary is operating well with the alternative technologies. After the verification, ISA should conclude the findings in a verification report and submit to FECO. The ISA verification report is one of the conditions to trigger further disbursement to the beneficiary in accordance to the sub-grant agreement.

An independent accounting firm will conduct on-site performance verification as well. The performance verification focuses more on the use of MLF fund and timely suspension on HCFCs. The scope of the verification includes collecting the information on the HCFCs consumption and procurement after the signature of sub-grant agreement, the date of the end point of purchasing HCFCs, and the data of using up the HCFCs stocks in the enterprise. The verification team also verifies the payment made to the equipment/raw material suppliers for purchasing HCFCs alternatives and/or new facilities, the financial records of disbursement, purchase invoice, and disposal of baseline equipment. The enterprise's financial records, including sales and production volume of final products, as well as the sales contracts and the products related to the HCFCs conversions are verified along with the documentations mentioned above. The performance verification will confirm that the MLF fund allocated to the beneficiary are all paid to the conversion activities in accordance with sub-grant agreement, and the enterprise has stopped purchasing and using HCFCs for production.

Sub-project completion and verification after conversions

After the beneficiary completes its conversion, adopts the alternative technologies, passes the ISA on-site verification and performance verification mentioned above, and gains the required approval from local EEB and relevant authorities, then the beneficiary could apply for sub-project acceptance. As part of the application, the beneficiary is required to provide a sub-project completion report that comprehensively describes the conversion process and the results of the conversion. FECO then organizes a commissioning team that is composed of technical experts, local EEB officials, staff from FECO and members from ISA. The representative of implementation agency has been invited to participate in the acceptance when they are available. The team usually conducts on-site acceptance.

During the acceptance, the commissioning team listens to the presentation on the sub-project implementation made by the beneficiary, and inquires how the beneficiary overcomes potential technical obstacles. The team also checks the production status using alternatives through on-site visit, and go through the verification reports, approvals from local authorities and other documents to make sure the beneficiary completed all conversion activities without breaching from sub-grant agreement. The commissioning team provides conclusion to FECO, and FECO finally issues the certificate of acceptance to the beneficiary.

Once the beneficiary receives the certificate of sub-project acceptance, it can no longer use HCFCs for production in the future according to the commitment, and local EEB will be in charge of the long-term monitoring on the enterprise's compliance. FECO provides the list of enterprises that has completed conversions to relevant provincial EEBs, and provincial EEBs will deliver the information to local level. According to the list, these enterprises can neither apply for HCFCs quota nor register HCFCs consumption at provincial level. The EEBs will include these enterprises in the monitoring list subject to the enforcement activities.

Besides the EEB's monitoring, all beneficiary enterprises are obliged to receive inspections and verifications conducted by the implementation agencies (IA) or their designated institutions. The IA verifications are usually conducted once a year to random beneficiary enterprises in line with the requirements stipulated in the Agreement between the ExCom and China. The IA verification collects information on the eligibility of the enterprise for MLF support, the baseline consumption and production facilities, the consumption of HCFCs and alternative technologies during the implementation, production data, destruction of HCFC-based equipment and other issues. The findings of the IA verification will be kept in IA's records and submitted to the Secretariat of the Multilateral Fund along with the progress report and tranche request.

3.3.3 Lessons learned

During the implementation of HPMP, not only had the HCFCs phase-out targets been achieved but extensive experiences had been accumulated, in particularly on the aspects of monitoring, reporting and verification. Key lessons learned are:

- The combination of financial support and specific policy measures employed by HPMP was an effective approach for achieving timely HCFCs phase-out. Conversion projects in Stage-I HPMP with supports from the Multilateral Fund enabled China to request larger enterprises to undertake conversions early and unlock the market for alternatives. The specific policy measures provided enabling environment for the transformation and essential guarantee of a level-playing field.

- The consolidated and coordinated HCFC quota and registration system for HCFC production, consumption, import and export, and the comprehensive monitoring and verification activities ensures the national targets set out in the HPMP Agreement could be achieved. ODS regulation and specific HCFC management circular provides a policy framework for the sustainable phase-out of HCFCs. The tools developed during the implementation such as the on-line production/sales reporting system, on-line import and export management system have provided necessary technical measures for the government for monitoring, verification and data reporting.

- Baseline verifications conducted by third party prior to the signature of sub-projects, performance and financial verifications of the progress milestones during the implementation period ensures the compliance of the beneficiaries to the Multilateral Fund guideline, as well as domestic policy. Qualified and independent accounting firm with support from technical experts as the third-party verification entity provides the transparency and quality guarantee for the verification results. The actual result from Stage I implementation confirms that the verifications conducted are effective, efficient and impartial.

- The registration system managed by the local EEBs plays a critical role for monitoring the use of HCFCs at the local level and particularly for SMEs. This system should be continually strengthened along with the phase-out of HCFCs. The sector with large amounts of SMEs such as the PU foam sector can be monitored with specific inspection tools provided to the local EEBs to strengthen their capacities of the monitoring and enforcement.

- Public awareness on the regulation and policy of HCFC phase-out, requirement of the Montreal Protocol, as well as the related environment and health benefits, are important activities to advance the implementation of HPMP and can facilitate the public supervision for the sustainable phase-out of HCFCs.

- In view of the technical and market challenges of the transformation to the low GWP alternatives, various technical assistance activities, particularly the training to enterprises, standards revision, risk assessment, technical research and studies for the common issues in the transition, public awareness, are very important and necessary to ensure a smooth implementation of HPMP. Special supports to the SMEs should be considered in the implementation of Stage-II HPMP to facilitate the complete transformation of the sectors.

3.4 Management and monitoring for sustainable HCFCs phase-out

3.4.1 HCFCs Import and Export management

ODS Import and Export licensing system serves as a crucial measure under the Montreal Protocol to ensure the consumption compliance of the country. China has promulgated *Management Measures of Import and Export on ODS* in 1999 and then revised in 2014, providing strict import and export approval management measures for ODS in China. The I/E Office is responsible for the approval management of ODS import and export through licensing, quota, and other activities. The I/E Office has also been acting as the coordination institution for ODS import and export control in China, and has played a key role in running license system, approving import and export quota, information exchange, capacity building, enforcement support and regional cooperation. Since 1999， three ministries jointly issued six batches of announcements of the import and export list of controlled ozone depleting substances. In 2004, 31 HCFCs were added to the list and licensed for the import and export. In 2009, 8 HCFCs blends were added to the list for the license management. The import and export management system has been strengthened constantly to meeting the updated requirement of the Montreal Protocol.

According to the Montreal Protocol and HPMP Agreement, the national consumption should be monitored and determined based on production data and official import and export data for the Substances recorded by relevant government departments. To ensure the compliance of the consumption, through coordination, MEE will issue the HCFCs annual production quota and domestic production quota for controlled use for each producer in the beginning of the year. I/E office will determine the import quota of HCFCs in the year. Those quotas will ensure the national consumption is below the target set out in the Agreement. During the year, producers will adjust their actual production plan according to the actual exports of HCFCs so as to avoid exceeding the domestic production quota if the export market declined. Therefore, I/E Office plays the critical role to provide accurate export data to the producers for decision-making. This is a very challenging requirement. However, I/E Office has successfully addressed this challenge by providing an on-line system to the stakeholders.

China is currently the largest HCFC producer in the world, exporting HCFCs to more than 130 countries. The workload of running a HCFC license system is very high. For example, I/E Office reviews HCFC import and export applications for more than 3,500 batches annually, weighing up to about 150,000 tons. The Office also issues import quota for HCFC-123 and HCFC-225 totally around 100 tons annually.

The ODS Import and Export Management Online Approval System was first developed in 2009 which has largely increased approval efficiency for the I/E Office. In 2011, the System was upgraded for the public and traders to review the approval process and supervise the trade information, such as the destination country, port, chemicals and quantities case by case. In 2013, the I/E Office developed the ODS Import and Export Management Fiber-optic Cable Data Transmission System so that the approval data can be tracked in real time by the traders, I/E Office, Ministry of Commerce and Chinese Customs. By doing this, HCFC permits and customs clearance of goods can be monitored in real time. Since 2018, the paperless online system has been developed (Figure 3), and the whole process of paperless approval will be realized in the first quarter of 2019. The implementation of the on-line system not only greatly improved the work efficiency, process publicity, data accuracy, but also facilitated the monitoring, reporting and verification. An independent verification to the import and export data has been done every year through cross checking the data in the on-line system and the records of the producers.

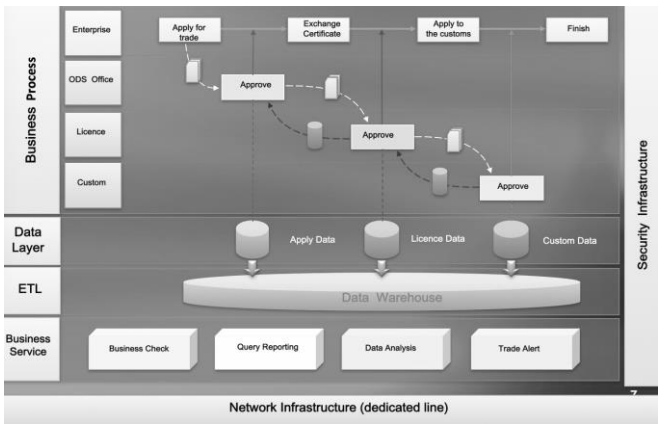

Figure 3. ODS Import and Export Management Online Approval System

To prevent illegal trade, the I/E Office carried out extensive international cooperation and worked closely with UNEP and other countries through iPIC mechanism in daily management. The I/E Office carried out iPIC with other counties approximately 350 times annually, among which 13 applications were denied in the year 2017 (weighing up to 608.6 tons), and 29 were denied in year 2018 (weighing up to 1,571.7 tons) according to the statistical data of iPIC rejection records. Although iPIC brought heavy work load for China import and export management beyond the requirement of the Montreal Protocol, the Government of China was very supportive to the operation of the mechanism in order to address the challenge of illegal trade.

Moreover, China has widely carried out South-South cooperation, exchanging import and export regulatory measures through regional network meetings, actively participating in the bilateral dialogues and responding to the information clarification requested by other countries for the A7 data facilitated by the Ozone Secretariat.

3.4.2 The implementation of MRV and enforcement for the sustainable phase-out

Actions on ODS monitoring and enforcement have been conducted both at the national level by MEE and at the local level by EEBs in the past years. MEE provided guidance for EEBs to conduct regular monitoring and enforcement on ODS. With the reported information on illegal behaviors, MEE usually took actions jointly with relevant local EEBs to crack down on them. MEE also initiated national-level inspections which focuses on key regions, key sectors or key enterprises.

The ODS monitoring program conducted by local EEBs usually consists of (a) regular monitoring and inspections related to general pollutions, and (b) special actions targeting ODS already phased out or still under control.

The regular monitoring and inspections on general pollutions

The regular monitoring and inspections on general pollutions are conducted by local (city/county/district level) EEBs on a regular basis. The local EEBs obtain the lists of enterprises in their regions primarily from the Environmental impact assessment (EIA) registered in the region. EIA is a regulatory requirement applied to all enterprises that want to start new business, which identifies what type of environmental management rules to be followed. The inspectors from the local EEBs focus on whether the production process is in line with the approved process, whether the raw materials used comply with the EIA and environmental regulations, and checks on essential facilities that control the gas emission, water effluent and waste management. The inspectors go through the production logs and other documentations, as well as conduct visual inspection of the production lines and warehouses. In this process,

the inspections also include to check an enterprise's HCFCs quotas or registration information when it is a HCFCs consuming manufacturer. The enterprise shall be punished if it neither applied for quota from MEE, nor did register at provincial EEB. The enterprise shall also be punished if its HCFCs consumption excesses the species or quantity in the issued quotas or information registered on provincial level.

Special actions targeting ODS already phased out or still under control

Special actions targeting ODS already phased out or still under control are usually the joint efforts of different branches under the local EEBs. The air environmental management branch or other branch who owns the ODS management mandates usually takes the lead role, develops work plans and coordinates with other agencies. EEB's monitoring branches are involved to collect samples and test the components in the samples. The enforcement team is in charge of the on-site inspections, and punishes the enterprise that violates the regulations in accordance with the penalties specified in the Regulations.

The special action would first come up with a work plan on targeted enterprises or sectors that will be covered. The enterprise list is compiled from registered HCFCs consumption enterprises, the enterprises with consumption quota issued by MEE, the list of MLF beneficiary enterprises provided by FECO, as well as the information collected from previous surveys and provided by industrial associations. Then the task is conducted by local inspection team organized as above described. The inspectors primarily look into the enterprise's compliance with issued quotas or registered information, visual inspection of production logs, purchase invoices and warehouse accounts. The inspectors may also take samples on-site from production lines, final products, and/or raw material warehouse. The samples are sealed with signature and sent to institutions to test the components. If the beneficiary has completed conversion and passed acceptance, there should be no HCFCs or phased-out ODS detected on-site. Otherwise, it will be imposed on punishment according to the Regulations.

Case 2：The implementation of MRV in Zhejiang Province

Organizational structure and legal basis

A provincial ODS management leadership team has been established in the EEB in Zhejiang Province and is made up of the air and environmental management division, policy and regulation division, enforcement team, the public awareness and education division, and the monitoring and environmental centers. There are about 100 people involved in ODS management in the Province. The air and environmental management division is the lead for ODS management, which is mirrored the same arrangement at the Ministry level.

The basis for all actions on ODS management, specifically HCFCs, is ODS management regulations and policies at the national level, including the MEE regulation on HCFC quota management. Provincial EEBs always in turn interpret and execute them based on their local circumstances. The Zhejiang Provincial EEB accordingly issued an ODS regulation in 2017 that strengthens HCFCs production and consumption management. A series of notices were issued to each city and county level EEB under the new rules.

Registry of HCFC producers and consumers

According to the regulation issued by Zhejiang EEB, all HCFC producers and users across all sectors should be subject to the registration. The registry includes consumption levels as determined by invoices, sales, the application and subsector. All consumers must register regardless of the amount of HCFCs consumption. Sellers and distributors with sales of above 1 MT must also register.

An online registry has been created and put into use whereby all enterprises must log-in to register production and consumption sales (with supporting documentation) by the end of

January of a given year. By 15 February the county level EEBs must complete the verification of uploaded documents and by the end of February, the city level EEBs will have registered enterprises. Information is subsequently publicly disclosed. If an enterprise has not registered in two years and is still producing or using HCFCs, it will be fined.

Under the first phase of the EEB capacity building activity in 2007, lists of HCFC enterprises were already collected, and updated and revised on an ongoing basis. Local EEBs were informed that they must inform new enterprises of this registration system. So far, there are 246 companies registered in Zhejiang Province registry system. FECO has regular communication with local EEBs on the status of conversion sub-projects and it informs EEBs when such sub-projects are completed, with the purpose to extending the list of enterprises to be monitored.

Regular ODS monitoring and enforcement system in Zhejiang

There are around 90 districts and county units and some regions have more enterprises than others so the average number of monitoring and enforcement officers is about five in less concentrated areas and 10-20 persons for more concentrated districts. These officials cover all environmental issues, not just HCFC producing/using companies. There are inspectors at multiple levels; higher levels (MEE, Provincial EEB) can also do spot checks but this usually is for the most urgent or serious issues and high-risk areas. And the regular monitoring and enforcement actions are usually taken place at city or county levels. The method of inspection includes checking production logs as well as financial records to cross check. Business licenses and other documents to prove the enterprise's legality will also be checked. Sample of products/raw materials are collected for testing when needed.

In the past year, all 246 enterprises in the registry and those completed conversion sub-projects were inspected. Zhejiang EEB incorporates ODS monitoring and supervision in the regular monitoring program. The local government provides budget (against a work plan) to regular ODS monitoring and supervision, because it's now a provincial regulation. The regulation states that inspection shall be done at least once a year.

In addition, China's industrial associations take part in monitoring and enforcement actions. The industrial associations play an important role in assisting governments in ODS management and monitoring. The industrial associations have a better understanding of relevant sectors and the market and they have provided information of the sectors and enterprises and technical suggestions for ecology and environment authorities in ODS monitoring and management. Ecology and environment authorities also invite industrial associations and individual experts to participate in enforcement actions to provide on-site technical support. The industrial associations share information with enterprises through various channels and carry out publicity and training. They also launch initiatives to encourage industry self-discipline and provide government departments with clues of illegal behaviors.

3.4.3 Lessons learned

- The capacity buildings carried out for customs officers and dealers in the past have made extensive impact, which effectively strengthened the capacity of ODS import and export management, article inspection, as well as combating ODS illegal trade.
- The iPIC mechanism has effectively prevented illegal trade in the past practice. China will continue to work closely with other countries through the mechanism to effectively combat ODS illegal trade, and further strengthen south-south cooperation and also provide assistance and support in capacity building and alternative technologies.

- Involvement of local EEBs in the management and monitoring of HCFCs phase-out has become extremely important. Local EEBs played key roles in ODS management, particularly in the enforcement area, in order to ensure the sustainability of phase-out impacts.

In the course of the management and monitoring activities conducted by local EEBs, there are some difficulties and challenges identified as well:

- The legal framework on ODS management will need to be further improved through issuing judicial interpretation and revision of the Regulations to provide explanations.
- There are only few qualified institutions that can provide certified testing reports, which are essential for executing enforcement on violating companies. It is expected that more testing centers will become qualified testing institutions soon.
- Even though trainings and work meetings were organized within each province, experience and practice exchanges across regions/provinces are insufficient.
- China will continue to organize training workshops for relevant enterprises and the customs, especially for the customs in the Middle and Western China, in order to continuously strengthen the capacity throughout the country.

4. Enforcement review and action plan

4.1 Enforcement review

4.1.1 Overall situation of Ecology and Environment Protection in China

In recent years, the Government of China made a series of significant strategic deployment on ecological and environmental protection, constructing ecological civilization and building a beautiful China. Ecological civilization and building a beautiful China was included in the amendment to the *Constitution of the People's Republic of China* in 2018. The National Conference on Ecological and Environmental Protection held in May 2018 marks milestone in its history. General Secretary Xi Jinping attended the meeting and delivered an important speech. His thought on ecological civilization is a landmark achievement of the meeting. China has achieved great progress in institution strengthening, law development, environmental inspection, supervision and law enforcement to promote ecological protection.

Institution strengthening through government restructuring. In the latest restructuring, the central government decided to establish the MEE and the law enforcement team for the protection of the ecology and environment protection at all levels. The internal structure of MEE has also been enhanced to achieve a "5 integrations"—integration of surface water and underground water, integration of basins and rivers, integration of land and sea, integration of urban and rural areas, integration of carbon monoxide and carbon dioxide. Central Supervision Office of Ecological and Environmental Protection was set up as an effort to ensure that the central government's decisions on ecological and environmental protection be followed at local levels. The reform on monitoring, supervision and law enforcement departments of the country is being conducted to a deeper level.

Improving legal system. The Government of China has promulgated or amended nearly twenty laws including the *Law on Environmental Protection of the People's Republic of China*,

Law on Prevention and Control of Atmospheric Pollution of the People's Republic of China, *Law on Water Pollution Control and Prevention*, *Environmental Protection Tax Law*, etc. in a bid to implement the strictest management on ecological and environmental protection. *The Law on Environmental Protection*, revised and issued by the National People's Congress in 2014 and came into effect in 2015, formed the basic system of environmental protection in China.(Please find more details in Section 2.2.1)

Intensifying environmental supervision. Central environmental supervision was undertaken in thirty-one provinces, autonomous regions and municipalities in China. In 2018, Central Supervision Office of Ecological and Environmental Protection have carried out operations known as "look back" in altogether 20 provinces. In 2017, 5,600 people participated in the one-year air pollution inspection covering "2+26"cities in Beijing-Tianjin-Hebei region and its vicinity. 231,000 factories and agencies were inspected and 62,000 poorly managed, small and polluting enterprises were rectified or closed down.

Enhancing law enforcement. China has enhanced law enforcement in a more comprehensive way. Since the enforcement of the *Law on Environmental Protectio*n, the number of environmental cases brought to justice by environmental protection authorities in the whole country has witnessed a surge. 186,000 cases of environmental violations were investigated in 2018, with fine worth 15.28 billion yuan, up by 32% from one year earlier or 4.8 times as much as that in 2014 before the new law came into force. Through strict law enforcement, China tackled prominent ecological and environmental issues and cracked down many environmental violations. Pressure to protect environment has been effectively transmitted and the concept of ecological civilization was greatly promoted.

Remarkable progress achieved in overall ecological and environmental protection. Environment quality in China has been substantially improved thus far. Air, water and soil pollution control action plans have made remarkable progress. The targets of the action plan on air protection were fulfilled at the end of 2017 and the action plans on water protection and soil protection are being implemented smoothly. In 2018, PM2.5 concentration in 338 cities at or above prefectural level reduced by 9.3% comparing with previous year. Percentage of surface water better than grade III in the country increased by 3.1% and that of worse than grade V decreased 1.6%.

4.1.2 ODS management and enforcement actions

As a big and responsible developing country, the Government of China has always attached great importance to the implementation of international environmental agreements and taken strict law enforcement to maintain and strengthen our achievements. Since China joined the Montreal Protocol, the MEE and local EEBs have always carried out strict law enforcement, and illegal production, use or sale of ODS have been punished severely. The Government of China has always taken a consistent "zero tolerance" position towards illegal ODS related activities.

MEE continuously strikes illegal ODS behaviors. MEE conducted professional training regularly for law enforcement personnel from local EEBs, focusing on knowledge of ODS as well as introduction of relevant laws, regulations and policies on ODS. Over 50 training sessions were held with a total of about 6,000 personnel trained since 2002. Furthermore, workshops are organized annually to promote communication and experience sharing on ODS management and enforcement among local EEBs, which enhanced local EEB's capacity on supervision and law enforcement for compliance.

With the support of two phases of capacity building projects conducted in 31 provinces and municipalities and 5 cities across China since 2007, the local EEBs carried out a series of

activities and made achievements in terms of establishment of compliance mechanisms, industry and enterprises survey, formulation and implementation of local ODS management policies, supervision and law enforcement, training and public awareness due to the implementation of the projects.

All the provinces and municipalities have established compliance coordination mechanism for ozone layer protection at local government level, most of which are inter-departmental coordination organizations. All the provincial and municipal governments carried out data survey on ODS production and consumption, some also on ODS sales, import and export. The list of enterprises receiving Multilateral Fund assistance was provided by FECO to local EEBs. Besides this, local EEBs has acquired information of more ODS enterprises in their jurisdiction area through survey and registry management system.

New construction projects were strictly controlled through environmental impact assessment approval at local level to ensure that no new ODS production and consumption facilities are approved in China except for feedstock use.

Provincial governments organized training workshops on ODS management and compliance targeting city or county level officers and enterprises. The amount of officers of local EEBs and other relevant authorities which received training exceeded 35,000 and management of enterprises exceeded 13,000. There are various awareness-raising activities on ozone layer protection across the country through internet, television, schools or communities.

Based on the information on illegal ODS behaviors received through the reporting platform and other sources, the ministry and local EEBs took actions jointly to crack down ODS illegal behaviors. To strengthen monitoring of ODS consumption and sales enterprises in the PU foam sector, monitoring projects were initiated in 11 key provinces and cities since 2014. Instant detectors were equipped to local authorities to support monitoring capacity building.

From 2010 to the first half of 2018, 24 cases of illegal production, 44 cases of illegal use, and 5 cases of illegal sale of ODS were investigated and given penalty in China. Among them, there were 14 cases involving illegal production of CFC-11. About 84 tons of illegal CFC-11 were destroyed and production facilities were dismantled. Fines were imposed on four enterprises for illegal use of CFC-11.

Case 3: Cracking down on illegal ODS production

In 2014, according to information received from public, an enforcement team organized by Shandong EEB inspected Xushuo Chemical Company located in Lijin county Dongying city. With investigation conducted, someone rented a workshop of Xushuo Chemical Company and produced ODS illegally. After detection of materials on-site, CTC, CFC-11 and CFC-12 were proved to be contained in the products, which was confirmed as illegal ODS production. There were 18 barrels of CFC-11 (1.2 MT) and 96 barrels of CTC (13.9 MT) on-site. The production facility was destroyed by local government. Materials, products and waste water on-site had been disposed by qualified institutions. The owner of the illegal facility was transferred to the Lijin County Court for trial, which resulted in a fine of 1 million Yuan.

National-wide ODS Law Enforcement Inspection in 2018. Since August 2018, on the basis of regular ODS supervision and law enforcement, MEE organized environmental authorities at provincial and municipal levels across the country to launch a specialized ODS law enforcement inspection. MEE emphasized its “zero tolerance” position towards illegal ODS related activities on various occasions. This specialized inspection, on the one hand, targeted the source by extensively collecting information and tracking down illegal production. Based on clues collected, two illegal CFC-11 production factories located respectively in Liaoning

Province and Henan Province were demolished. On the spot 177.6 tons of production raw materials and 29.9 tons of illegally produced CFC-11 were seized. The raw materials and product were properly sealed up for storage, awaiting accredited entity for treatment. Suspects were transferred to judicial organ for criminal responsibilities. The inspection, on the other hand, targeted the side of ODS use by severely cracking down illegal ODS use and tracking its source. 1,172 related companies were investigated in China, as a result, in some batches of materials in 10 system houses, CFC-11 were identified after detection. Local environmental authorities filed charges and exercised punishment to the involved according to law.

4.1.3 Import and Export management and enforcement actions

The Government of China has attached great attention in combating ODS illegal trade and relevant agencies (MEE, MOFCOM and GAC) collaborated closely to clamp down the illegal import and export activities. China effectively cracked down ODS illegal trade through several special enforcement actions, including “Sky-patching”, “Goddess of the Earth”, “Shield of the Nation”, and “Green Fence Action”. International cooperation has been an important part in the above initiatives to enhance the effectiveness. Through these actions, a batch of illegal trade cases were seized, illegal trades were punished, and licensing system was strengthened. The I/E Office has also set up communication mechanism with Anti-Smuggling Bureau of China Custom, and provided technical support on risk profiling and investigation. To enhance law enforcement capacity of custom officers, the I/E Office and GAC launched the ODS import and export enforcement capacity enhancement project Stage I and Stage II with 14 pilot local customs were selected from 2012 to 2018. Activities under the project include investigation and surveys, training, public awareness and measures to enhance law enforcement etc. 24 training workshops were organized and more than 2,000 customs officers in key customs districts in China were trained. 150 ODS identifiers were provided to local Customs and distributed in main ports in China, which helped Chinese customs officers in detecting illegal ODS shipments effectively. In addition, local customs increased sampling inspection percentage of ODS and its related products, made research on features of illegal ODS trade and strengthened monitoring on key enterprises and products. The projects enhanced ODS knowledge and enforcement capacity of custom officers. With regard to illegal ODS import and export, the 17 illegal cases seized are punished as smuggling offences. Generally, they are sentenced to 1 to 3 years' imprisonment and fined 1 to 3 times of the value of the smuggled goods.

Case4：Huangpu Customs ODS Smuggling Case

On April 15, 2017, Zhuhai Jinying Trading Co., Ltd. entrusted Guangzhou Xuhong Customs Service Co., Ltd. with the customs declaration No. 520120160516128198 to declare a batch of stainless-steel pipes and other goods at Huangpu Laogang Customs. After investigation, the first item of the declared goods was 7,760 kg, while the actual arrival was 2,515 kg (over-reported 5,245 kg); the second item was 5,760 kg, while the actual arrival was 3,760 kg (over-reported 2,000 kg), and 6.12 tons of ARKEMA brand FORANE/R22 was found, which belongs to the ODS regulated under "China Import and Export Controlled Ozone Depleting Substances List". The found ARKEMA brand FORANE/R22 was not declared to the customs and was inconsistent with the declaration.

The party involved in this case has evaded the restrictive provisions on import and export regulation, failing to report the right name of the product. The party exported goods without license and it shall constitute an act of smuggling. The

party involved in this case was sentenced to confiscate the goods and fined three times the value of the goods it smuggled.

4.1.4 Challenges

China has a large area of land with many sectors involving ODS and a long industry chain. Although China has established a comprehensive compliance mechanism and ODS management system, the country is still facing many difficulties and challenges on ODS phase-out.

China has established a sound legal framework on ODS management, however, the punishment of illegal activities is yet to be strengthened for deterrent force. Enhanced measures shall be taken to intensify punishment to the illegal activities.

Ecology and environment authorities faced with some difficulties on ODS enforcement and monitoring. After strengthened monitoring and enforcement activities over years, illegal acts were conducted in a concealed manner, without approval or registration by the government and it is becoming challenging to capture. Simple production process of the specific chemical (CFC-11) and high mobility of the illegal acts, brought difficulties for the enforcement agency to carry out a fixed enforcement plan. Effective enforcement for the hidden small illegal production relied on the precise intelligence and reporting. Internet and logistics provided convenience for illegal trading, which made trading of illegal ODS easier and difficult to trace back. Price fluctuation of the chemicals could induce the activities to violate the regulation. Due to defects of alternative technologies, remote small users who didn't receive technical and financial support to use the alternatives are vulnerable for the illegal supply of the chemicals. In terms of enforcement team, local EEBs undertaken heavy load of work on ecology and environment enforcement and could not be dedicated only for the ODS monitoring.

Due to its particularity, there are only 3 certified ODS testing laboratories in China and most of the environmental monitoring institutions do not have specific ODS monitoring instruments in their own laboratories, which cannot provide adequate support for law enforcement. Monitoring capacity including detectors and detecting institutions need to be strengthened. For the atmospheric measuring, China has developed a comprehensive air quality monitoring network for the normal air pollutants, but the atmospheric measuring on ODS is yet to be established and improved. Evaluation and assessment on ODS phase-out from the emission aspect are difficult to carry out due to lack of historical atmospheric measuring data on ODS emission.

4.2 Action plan to strengthen legislation and its implementation

4.2.1 Further strengthening management on chloromethane enterprises

MEE will continue to strengthen monitoring on chloromethane enterprises with CTC by-production. More systematic and strict monitoring will be implemented and it will be incorporated into the pollution permit management system. Local EEBs will strengthen monitoring and increase inspection frequency on ODS enterprises within their jurisdictional area. A whole process real-time monitoring mechanism will be established at all chloromethane enterprises. Mass flow meters for CTC by-product will be installed, covering CTC measurement in its production, storage, conversion, sales, residual liquid etc. The

mechanism aims to achieve data dynamic balance under the computerized information management of CTC as well as on-line monitoring. MEE has started this work already. In addition, MEE will upgrade MIS system to incorporate feedstock production enterprises to report production data on-line.

4.2.2 Revision of the ODS Law and regulation

MEE will start revision of the Regulations to further enhance its legal effect and improve basis for enforcement. MEE will strengthen cooperation with judicial departments to connect serious illegal ODS behaviors with the criminal law, further intensify punishment on various illegal ODS behaviors and enhance deterrence force.

4.2.3 Strengthening ODS management at all levels

China will continue to strengthen routine monitoring and enforcement on ODS. ODS enforcement is listed in the 2019 work plan of ecology and environment enforcement of MEE and local EEBs that will further strengthen routine monitoring and enforcement on ODS. The government will exert strict monitoring on key industries and enterprises and strengthen inspection on quota implementation and sales of relevant enterprises. Intelligence on illegal behaviors will be widely collected. Reports on any ODS illegal behaviors by the industry or the public are encouraged and illegal behaviors will be cracked down seriously. MEE will strengthen the connection and linkage of the national and local level ODS management to integrate them systematically. Implementation of the Regulations will be improved at the local level including data reporting, registry system and law enforcement etc. MEE will increase training for enforcement personnel at local level on related regulations and policies, ODS professional knowledge, law enforcement and alternative technologies etc. to enhance enforcement capacity.

4.2.4 Measures to strengthening I&E management

Based on two phases of the ODS import and export enforcement capacity building project, Phase III will be launched to conduct cooperative work and enhancing enforcement capacity of the customs. The project will provide synergy law enforcement, technical guidance and information exchange to fight the illegal trade. Training will continue to be conducted, especially targeting form examination and inspection officers and anti-smuggling police on knowledge of goods, international conventions, domestic policies and regulations and common tricks of smuggling to increase the capacity of risk control, inspection and detection and treatment. Handy and safe instant identifiers shall be equipped to make rapid judgment whether it is ODS or not in preliminary detection. Communication with logistic companies will be strengthened to obtain direction of the goods flow and abnormal practices such as change of destinations and goods names. The I/E Office will cooperate with Shanghai Customs Academy to conduct a series of studies on the application of the criminal penalty laws in the processing ODS illegal trade in China. GAC and I/E Office will actively carry out international cooperation including IPIC mechanism, communication and experience sharing, to combat illegal behaviors effectively.

4.2.5 Enhancing ODS monitoring capacity and promote scientific research

In order to enhance monitoring capacity and meet the requirement of intensifying

enforcement, MEE released *the Notice on Constructing Monitoring Laboratory for ODS in industrial products* in 2019 on construction of ODS testing laboratories and establishment of relevant standards and specifications. MEE will establish 6 testing laboratories by the end of 2019 and selected China National Environmental Monitoring Centre, National Research Center for Environmental Analysis and Measurement, Guangdong Environmental Monitoring Center, Shandong Provincial Environment Monitoring Center, Zhejiang Environmental Monitoring Center, Ecological and Environmental Monitoring Center of Chongqing as the 6 laboratories. The laboratories will be equipped with pre-processing and testing facilities and will get certified after construction is completed. Their testing objects are currently considered to be foam products and blowing agents. The detection range of ODS products will be expanded gradually along with the need of the enforcement. In 2020, all the six new laboratories will be put into use to provide judgment basis for enforcement. Meanwhile, MEE will research and develop standards and specifications of ODS testing. Laboratory testing standard and specifications for ODS in industrial products will be formulated and get certified by the end of 2019; on-site rapid testing standard and specifications for ODS in industrial products will be formulated and get certified by the end of 2020. In addition, detection equipment will be provided to local EEBs to improve its enforcement capacities.

MEE will incorporate ODS and HFCs into its monitoring and measuring network of environmental quality to obtain, analyze and evaluate background situation and changing trends of ODS and HFCs, which will provide measuring data and technical support for management and monitoring. MEE will work with China Meteorological Administration and other organizations to jointly develop and share measuring network. Based on the principal of regional representation, minimum mesoscale meteorological cycle, long-term stability and with established necessary infrastructure, establishment of measuring stations will be carried out gradually and comprehensively based on the construction of pilot stations. China will conduct planning and study on the construction of ODS atmospheric measuring network, develop a construction programme based on the results, establish a long-term ODS measuring network step by step (including atmospheric ODS measuring stations in key cities and atmospheric ODS background value measuring stations), with the aims to strengthening the capacity of early alerting and evaluation. Specific construction schedule is as follows: starting from 2020, we will select several key cities to carry out ODS scientific research measuring, aiming for routine measuring within 2 to 3 years. The measuring data would be made available to the scientific research community. Planning and construction of atmospheric ODS background concentration measuring stations will be initiated in 2021.

Ministry of Science and Technology will provide more support for scientific research related to ODS and gradually incorporate it into key science and technology program. Meanwhile, line ministries will also provide more support on science and technology research related to ODS in their respective role.

5. Conclusion

The 82nd ExCom meeting deferred consideration of the funding request of the third tranche of the four sector plans of China's Stage II HPMP. However, based on careful review of the progress report and funding request of the four sector plans before the 82nd ExCom meeting, the MLF Secretariat believed conditions were met for approval of the next tranche according to the Agreement between ExCom and China and recommended approval of the third tranche of the four sector plans. Meanwhile, Stage II of the HPPMP is yet to be fully deliberated since first submitted to the 79th ExCom meeting. Although the bridging funds will serve to address immediate control measures, China is seriously concerned about the great risks for achieving

the 2020 target for HCFC phase-out caused by the deferred approval of annual tranches of the Stage II HPMP and HPPMP.

According to the 2017 A7 data, the total production and consumption of China are respectively 21,671 ODP tons and 14,605 ODP tons, accounting for 74% and 77% of the baseline. None of these sectors has reached the 2020 target. For the consumption sectors, the Agreement of the Stage II of HPMP stipulates that China needs to achieve the 37.6% phase-out of the baseline by 2020. However, the issued quota for domestic use in 2019 is 15,037 ODP tons, and China needs to phase out about 3,265 ODP tons or about 50,000 MT of HCFCs consumption in 2019. For the production sector, the HCFCs production issued in 2019 is 22,742 ODP tons. To achieve the 2020 phase-out target proposed in the Stage II HPPMP, the production sector should phase out 3,800 ODP tons or 76,700 MT in 2019. China is faced with undeniable challenges in achieving this substantial amount of HCFC phase-out without the timely approval and release of the annual tranches.

In addition, all the tranches approved and released under the Stage II HPMP have been committed. Some sectors such as XPS foam sector and solvent sector, have recruited additional enterprises awaiting for signing new conversion contract. Deferring approval of the tranches of the Stage II HPMP seriously affects the momentum of the HCFC phase-out in the sectors. Through this report, China has demonstrated that the monitoring, reporting, verification and enforcement systems have been established since China initialed its ODS phase-out activities, built up and improved overtime, and have been functioning effectively. This report also identifies areas where improvement can be undertaken, and action plans have been presented to strengthen MRV and enforcement, to assure the long-term sustainability of China's phase-out achievements. Considering the current situation, China would like to request that the ExCom approves the annual tranches for Stage II HPMP and Stage II HPPMP at the 83rd meeting to complement and build on China's demonstrated ODS management and enforcement efforts while preventing any potential compliance risk related to HCFC phase-out in 2020.

Regulations on Administration of Ozone Depleting Substances

(Adopted at the 104th Executive Meeting of the State Council on March 24, 2010, promulgated by Decree No. 573 of the State Council of the People's Republic of China on April 8, 2010, and effective as of June 1, 2010)

Chapter I General Provisions

Article 1 These Regulations are formulated in accordance with the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution for the purpose of strengthening administration of ozone depleting substances, fulfilling the obligations specified in the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer, protecting the ozone layer and the ecological environment, and safeguarding human health.

Article 2 The term "ozone depleting substances" in these Regulations means the chemicals that damage the ozone layer and are included in the Catalogue of Controlled Ozone Depleting Substances in China.

The Catalogue of Controlled Ozone Depleting Substances in China shall be compiled, adjusted and published by the competent environmental protection department of the State Council in conjunction with the relevant departments of the State Council.

Article 3 These Regulations apply to such activities as production, sale, use, import and export of ozone depleting substances within the territory of the People's Republic of China.

The term "production" in the preceding paragraph means the activities of manufacturing ozone depleting substances. The term "use" in the preceding paragraph means the production and business activities conducted by using ozone depleting substances, excluding the use of products that contain ozone depleting substances.

Article 4 The competent environmental protection department of the State

Council shall be responsible for unified supervision and administration of ozone depleting substances throughout the country.

The competent commerce department of the State Council, the General Administration of Customs and other relevant departments shall, in accordance with the provisions of these Regulations and in compliance with their functions and duties, be responsible for relevant supervision and administration of ozone depleting substances.

The competent environmental protection departments, the competent commerce departments and other relevant departments of local people's governments at or above the county level shall, in accordance with the provisions of these Regulations and in compliance with their functions and duties, be responsible for relevant supervision and administration of ozone depleting substances within their respective administrative areas.

Article 5 The State shall gradually reduce and finally phase out ozone depleting substances used as refrigerants, blowing agents, extinguishing agents, solvents, cleaning agents, process agents, pesticides, aerosols, expansion agents, etc.

The competent environmental protection department of the State Council shall, in conjunction with the relevant departments of the State Council, draft the China's Country Program for Ozone Depleting Substances Phase-out (hereinafter referred to as the Country Program) and submit the same to the State Council for approval before implementation.

Article 6 The competent environmental protection department of the State Council shall, based on the Country Program and the progress in the phase-out of ozone depleting substances and in conjunction with the relevant departments of the State Council, decide on and make public the types of construction, alteration or expansion projects for producing or using ozone depleting substances, which are subject to restriction or prohibition, and shall compile and make public the catalogue of ozone depleting substances the production, use, import or export of which is subject to restriction or prohibition.

Where, for special purposes, there is a real need to produce or use ozone

depleting substances the production or use of which is subject to restriction or prohibition as specified in the preceding paragraph, the matter shall be subject to approval by the competent environmental protection department of the State Council in conjunction with the relevant departments of the State Council in accordance with the provisions of the Montreal Protocol on Substances that Deplete the Ozone Layer on permitting the use of ozone depleting substances for special purposes.

Article 7 The State exercises control over the total amounts and quotas in respect of ozone depleting substances to be produced, used, imported and exported. Based on the Country Program and the progress in the phase-out of ozone depleting substances, the competent environmental protection department of the State Council shall, in consultation with the relevant departments of the State Council, decide on and make public the national total annual amounts of quotas for production, use, import and export of ozone depleting substances.

Article 8 The State encourages and supports scientific research, technological development, and wide use of alternatives to ozone depleting substances and alternative technologies.

The competent environmental protection department of the State Council shall, in conjunction with the relevant departments of the State Council, compile, adjust and make public the Catalogue of Recommended Alternatives to Ozone Depleting Substances in China.

Development, production and use of alternatives to ozone depleting substances shall comply with industrial policies of the State and enjoy preferential policies in accordance with the relevant provisions of the State. The State shall reward the units and individuals that have made outstanding achievements in phasing out ozone depleting substances.

Article 9 All units and individuals have the right to report violations of these Regulations to the competent environmental protection departments or other relevant departments of people's governments at or above the county level. The department receiving the report shall investigate and handle such a violation in a timely manner and maintain the confidentiality of the reporting person, and shall reward him if the

reported violation is ascertained through investigation.

Chapter II Production, Sale and Use

Article 10 A unit that is to produce or use ozone depleting substances shall, in accordance with the provisions of these Regulations, apply for a quota permit for the production or use. However, any of the following units that use ozone depleting substances is not required to apply for a quota permit for the use:

(1) maintenance shops that use ozone depleting substances for maintenance and repair of refrigeration equipment or a refrigeration system or fire extinguishing system;

(2) laboratories that use a small amount of ozone depleting substances for experimental analysis;

(3) entry-exit inspection and quarantine agencies that use ozone depleting substances for quarantine purposes to prevent the in- or out-flow of harmful organisms; or

(4) other units that are not required to apply for a quota permit for the use, as is specified by the competent environmental protection department of the State Council.

Article 11 A unit that produces or uses ozone depleting substances shall meet the following requirements, apart from those specified by laws and administrative regulations:

(1) having a record of lawful production or use of the relevant ozone depleting substances;

(2) having the premises, facilities, equipment and professional technicians for production or use of the relevant ozone depleting substances;

(3) having the environmental protection facilities that pass the acceptance check by the competent environmental protection department; and

(4) having a sound management system for production and business operations.

The provisions of subparagraph (1) of the preceding paragraph shall not apply to units that use ozone depleting substances for special purposes specified in Article 6 of

these Regulations.

Article 12 A unit that produces or uses ozone depleting substances shall, prior to October 31 of each year, apply in writing to the competent environmental protection department of the State Council for a production or use quota for the following year, and submit documentary evidence of its compliance with the requirements specified in Article 11 of these Regulations.

The competent environmental protection department of the State Council shall, based on the national total annual quotas for production and use of ozone depleting substances and the applicant's record of production or use of the relevant ozone depleting substances, determine the production or use quota to be allocated to the applicant for the following year and complete the examination of the application prior to December 20 of each year. The said department shall issue a quota permit for production or use for the following year to an applicant that complies with the requirements, which shall be announced and copies of which shall be sent to the relevant departments of the State Council and to the competent environmental protection department of the people's government of the province, autonomous region or municipality directly under the Central Government where the applicant is located; if an applicant fails to comply with the requirements, the said department shall inform the applicant of the fact and the reasons in writing.

Article 13 A quota permit for production or use of ozone depleting substances shall specify the following particulars:

(1) name, address, and legal representative or responsible person of the unit that produces or uses ozone depleting substances;

(2) type, purpose and amount of ozone depleting substances permitted to be produced or used;

(3) term of validity; and

(4) permit-issuing authority, date of issue and serial number of the permit.

Article 14 Where a unit that produces or uses ozone depleting substances needs adjustment in its quota, it shall apply to the competent environmental protection department of the State Council for quota alteration.

The competent environmental protection department of the State Council shall examine the application in accordance with the requirements and on the basis specified in Articles 11 and 12 of these Regulations and complete the examination within 20 working days from the date of acceptance of the application. If the applicant complies with the requirements, the said department shall make adjustment to its quota and announce such adjustment; if the applicant fails to comply with the requirements, the said department shall inform the applicant of the fact and the reasons in writing.

Article 15 A unit that produces ozone depleting substances shall not produce ozone depleting substances beyond the type, amount or term of validity specified in its quota permit for the production, and shall not produce or sell ozone depleting substances beyond the purpose specified in the said permit.

Producing ozone depleting substances without a quota permit for the production is prohibited.

Article 16 A unit that has obtained a quota permit for use in accordance with the provisions of these Regulations shall not use ozone depleting substances beyond the type, purpose, amount or term of validity specified in the said permit.

Using ozone depleting substances without a quota permit for the use is prohibited, with the exception of the units that are not required to apply for a quota permit for use, as specified in Article 10 of these Regulations.

Article 17 A unit that sells ozone depleting substances shall go through the formalities for the record as prescribed by the competent environmental protection department of the State Council.

The competent environmental protection department of the State Council shall announce the name list of the units that have been kept on record for selling ozone depleting substances.

Article 18 Purchasing and selling of ozone depleting substances shall only be conducted between the units that meet the requirements of these Regulations for producing, selling or using ozone depleting substances, with the exception of import and export of ozone depleting substances in accordance with the provisions of these

Regulations.

Article 19 A unit engaged in such business activities as maintenance, repair or scrapping treatment of refrigeration equipment or a refrigeration system or fire extinguishing system that contains ozone depleting substances shall apply for the record with the competent environmental protection department of the people's government at the county level of the place where it is located.

A unit specially engaged in such business activities as recovery, reclamation or destruction of ozone depleting substances shall apply for the record with the competent environmental protection department of the people's government of the province, autonomous region or municipality directly under the Central Government where it is located.

Article 20 A unit that produces or uses ozone depleting substances shall take the necessary measures to prevent or reduce the leakage and discharge of ozone depleting substances as prescribed by the competent environmental protection department of the State Council.

A unit engaged in such business activities as maintenance, repair or scrapping treatment of refrigeration equipment or a refrigeration system or fire extinguishing system that contains ozone depleting substances shall, as prescribed by the competent environmental protection department of the State Council, recover or recycle ozone depleting substances or hand them over to a unit engaged in such business activities as recovery, reclamation or destruction of ozone depleting substances for environmentally sound disposal.

A unit engaged in such business activities as recovery, reclamation or destruction of ozone depleting substances shall carry out environmentally sound disposal of ozone depleting substances as prescribed by the competent environmental protection department of the State Council and shall not discharge them directly.

Article 21 A unit engaged in such business activities as production, sale, use, recovery, reclamation or destruction of ozone depleting substances, or maintenance, repair or scrapping treatment of refrigeration equipment or a refrigeration system or fire extinguishing system that contains ozone depleting substances shall keep intact

the original materials about its production and business activities for at least three years and submit the relevant data as prescribed by the competent environmental protection department of the State Council.

Chapter III Import and Export

Article 22 The State exercises control over import and export of ozone depleting substances and carry out catalogue management. The competent environmental protection department of the State Council shall, in conjunction with the competent commerce department of the State Council and the General Administration of Customs, formulate, adjust and make public the Catalogue of Ozone Depleting Substances Under Import and Export Control in China.

A unit that imports or exports ozone depleting substances included in the Catalogue of Ozone Depleting Substances Under Import and Export Control in China shall, in accordance with the provisions of these Regulations, apply to the national authority in charge of import and export of ozone depleting substances for quotas and the approval certificate for import or export of ozone depleting substances, and submit the materials about the type, amount, source and purpose of ozone depleting substances to be imported or exported.

Article 23 The national authority in charge of import and export of ozone depleting substances shall complete the examination of an application within 20 working days from the date of acceptance of the application and make a decision to approve or not to approve the application. If it decides to approve the application, it shall issue to the applicant an approval certificate for import or export; if it decides not to approve the application, it shall inform the applicant of the fact and the reasons in writing.

An approval certificate for import or export shall be valid for a term of not longer than 90 days, and shall not be used after the expiry date or carried over to the following year.

Article 24 A unit that has obtained an approval certificate for import or

export of ozone depleting substances shall, as prescribed by the competent commerce department of the State Council, apply for an import or export license and go through customs clearance formalities on the basis of the license. Ozone depleting substances included in the Catalogue of Entry-Exit Goods Under Inspection and Quarantine by Entry-Exit Inspection and Quarantine Agencies shall be subject to inspection conducted by the entry-exit inspection and quarantine agency in accordance with law.

Where ozone depleting substances are to be brought in from abroad to special customs surveillance zones or bonded facilities under surveillance within the territory of the People's Republic of China or vice versa, the import and export unit shall, in accordance with the provisions of these Regulations, apply for an approval certificate for import or export and an import or export license; where ozone depleting substances are to be brought in to special customs surveillance zones or bonded facilities under surveillance within the territory of the People's Republic of China from other places within the Chinese territory or vice versa, or move between the said zones and facilities, an approval certificate for import or export and an import or export license are not required.

Chapter IV Supervision and Inspection

Article 25 The competent environmental protection departments and other relevant departments of people's governments at or above the county level shall, in accordance with the provisions of these Regulations and in compliance with their functions and duties, supervise and inspect such activities as production, sale, use, import and export of ozone depleting substances.

Article 26 When conducting supervision and inspection, the competent environmental protection departments and other relevant departments of people's governments at or above the county level have the power to take the following measures:

(1) to require the unit under inspection to provide relevant materials;

(2) to require the unit under inspection to give an account of its implementation

of these Regulations;

(3) to enter the production, operation and storage premises of the unit under inspection to conduct investigation and collect evidence;

(4) to order the unit under inspection to cease and desist from violating these Regulations and fulfill its statutory obligations; and

(5) to impound or seal up ozone depleting substances that are illegally produced, sold, used, imported or exported, as well as the production equipment, facilities, raw materials and products.

The unit under inspection shall render cooperation, give truthful information and provide the necessary materials, and shall not reject or obstruct the inspection.

Article 27 When conducting supervision and inspection, the competent environmental protection departments and other relevant departments of people's governments at or above the county level shall send not less than two inspectors, who shall show their valid law enforcement credentials.

Staff members of the competent environmental protection departments and other relevant departments of people's governments at or above the county level are obligated to keep confidential the commercial secrets that they come to know in the course of supervision and inspection.

Article 28 The competent environmental protection department of the State Council shall establish a sound management system for data and information concerning ozone depleting substances, in order to collect, pool and make public the data and information about production, use, import and export of ozone depleting substances.

The competent environmental protection departments of local people's governments at or above the county level shall report on violations of these Regulations discovered in the course of supervision and inspection and their handling of the same, level by level, up to the competent environmental protection department of the State Council.

Other relevant departments of local people's governments at or above the county level shall report on violations of these Regulations discovered in the course of

supervision and inspection and their handling of the same, level by level, up to the relevant departments of the State Council, which shall send a copy of the reports to the competent environmental protection department of the State Council in a timely manner.

Article 29 Where the competent environmental protection department or any other relevant department of a local people's government at or above the county level fails to investigate and handle a violation of these Regulations, the competent department at a higher level has the power to order the former department to investigate and handle the violation in accordance with law, or directly investigate and handle the violation itself.

Chapter V Legal Liability

Article 30 Where a department responsible for supervision and administration of ozone depleting substances or a staff member thereof commits one of the following acts, the person in charge with competent accountability and other persons with competent accountability shall be given a sanction in accordance with law, and if their acts constitute crimes, they shall be investigated for criminal liability in accordance with law:

(1) issuing a quota permit for production or use of ozone depleting substances in violation of the provisions of these Regulations;

(2) issuing an approval certificate or license for import or export of ozone depleting substances in violation of the provisions of these Regulations;

(3) failing to investigate and handle discovered violations of these Regulations in accordance with law;

(4) extorting or accepting money or things of value from another person or seeking other benefits when handling procedures for granting administrative licensing for production, use, import or export of ozone depleting substances or when conducting supervision and inspection; or

(5) otherwise committing illegalities for personal gain, abusing its/his power or

neglecting its/his duty.

Article 31 Where a unit produces ozone depleting substances without a quota permit for the production, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to cease and desist from such illegal production, confiscate the raw materials used therefor, ozone depleting substances illegally produced and the illegal income thereof, dismantle and destroy the equipment and facilities for illegal production, and concurrently impose on it a fine of 1,000,000 yuan.

Article 32 Where a unit that is required to apply for a quota permit for use in accordance with the provisions of these Regulations uses ozone depleting substances without such a permit, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to cease and desist from such illegal use, confiscate ozone depleting substances in illegal use, the products resulting from such illegal use and the illegal income thereof, and concurrently impose on it a fine of 200,000 yuan; if the circumstances are serious, a fine of 500,000 yuan shall be imposed concurrently and the equipment and facilities for illegal use shall be dismantled or destroyed.

Article 33 Where a unit that produces or uses ozone depleting substances commits one of the following acts, the competent environmental protection department of the people's government of the province, autonomous region or municipality directly under the Central Government where it is located shall order it to cease and desist from such illegal act, confiscate ozone depleting substances illegally produced or in illegal use, the products resulting from such illegal use and the illegal income thereof, concurrently impose on it a fine of not less than 20,000 yuan but not more than 100,000 yuan, and report the matter to the competent environmental protection department of the State Council, which shall reduce the unit's production or use quota; if the circumstances are serious, a fine of not less than 100,000 yuan but not more than 200,000 yuan shall be imposed concurrently and the matter shall be reported to the competent environmental protection department of the State Council, which shall revoke the unit's quota permit for the production or use:

(1) producing ozone depleting substances beyond the type, amount or term of validity specified in its quota permit for the production;

(2) producing or selling ozone depleting substances beyond the purpose specified in its quota permit for the production; or

(3) using ozone depleting substances beyond the type, amount, purpose or term of validity specified in its quota permit for the use.

Article 34 Where a unit that produces, sells or uses ozone depleting substances sells or purchases ozone depleting substances to or from a unit that does not comply with the requirements of these Regulations, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to make corrections, confiscate ozone depleting substances for illegal sale or illegally purchased and the illegal income thereof, and impose on it a fine three times the total market value of ozone depleting substances sold or purchased; in the case of a unit that has obtained a quota permit for the production or use, the matter shall be reported to the competent environmental protection department of the State Council, which shall reduce its production or use quota.

Article 35 Where a unit that produces or uses ozone depleting substances fails to take the necessary measures to prevent or reduce the leakage or discharge of ozone depleting substances as required, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to make corrections within a specified time limit and impose on it a fine of 50,000 yuan; if the unit fails to make corrections within the specified time limit, a fine of 100,000 yuan shall be imposed, and the matter shall be reported to the competent environmental protection department of the State Council, which shall reduce its production or use quota.

Article 36 Where a unit engaged in such business activities as maintenance, repair or scrapping treatment of refrigeration equipment or a refrigeration system or fire extinguishing system that contains ozone depleting substances fails to recover or recycle ozone depleting substances or hand them over to a unit engaged in such

business activities as recovery, reclamation or destruction of ozone depleting substances for environmentally sound disposal as required, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to make corrections and impose on it a fine three times the costs of environmentally sound disposal.

Article 37 Where a unit engaged in such business activities as recovery, reclamation or destruction of ozone depleting substances fails to conduct environmentally sound disposal of ozone depleting substances as required but discharges them directly into the air, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to make corrections and impose on it a fine three times the costs of environmentally sound disposal.

Article 38 Where a unit engaged in such business activities as production, sale, use, import, export, recovery, reclamation or destruction of ozone depleting substances, or maintenance, repair or scrapping treatment of refrigeration equipment or a refrigeration system or fire extinguishing system that contains ozone depleting substances, commits one of the following acts, the competent environmental protection department of the local people's government at or above the county level of the place where it is located shall order it to make corrections and impose on it a fine of not less than 5,000 yuan but not more than 20,000 yuan:

(1) failing to apply for the record with the competent environmental protection department as required by these Regulations;

(2) failing to keep intact the original materials about its production and business activities as required;

(3) failing to submit in time the data about its business activities, or making a false report or concealing the facts thereon; or

(4) failing to provide the necessary materials as required by supervisors and inspectors.

Article 39 Where a unit rejects or obstructs supervision and inspection conducted by the competent environmental protection department or other relevant

departments, or practices fraud when under supervision and inspection, the supervision and inspection department shall order it to make corrections and impose on it a fine of not less than 10,000 yuan but not more than 20,000 yuan; if such act constitutes a violation against public security administration, the public security organ shall impose a public security administration penalty in accordance with law; if such act constitutes a crime, criminal liability shall be investigated for in accordance with law.

Article 40 Where an import or export unit imports or exports ozone depleting substances without an import or export license or does so beyond the requirements specified in the import or export license, the customs shall impose on it a penalty in accordance with the provisions of the relevant laws and administrative regulations; if a crime is constituted, criminal liability shall be investigated for in accordance with law.

Chapter VI Supplementary Provision

Article 41 These Regulations shall be effective as of June 1, 2010.

Annex X

UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF CHINA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS

1. This Agreement represents the understanding of the Government of China (the "Country") and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A ("The Substances") to a sustained level of 16,978.9 ODP tonnes by 1 January 2015 in compliance with Montreal Protocol schedules.

2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 ("Maximum allowable total consumption of Annex C, Group I substances") of Appendix 2-A ("The Targets, and Funding") in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3. 4.5.3, and 4.6.3 (remaining eligible consumption).

3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A ("The Targets, and Funding") to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

4. The Country agrees to implement this Agreement in accordance with the HCFC phase-out sector plans submitted and the commitments specified in Appendix 8-A. In accordance with sub-paragraphs 5(a)(ii) and 5(b)(i) of this Agreement, the Country will accept independent verification of completion of the conversion of manufacturing capacity as well as achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement.

5. The Executive Committee will not provide the Funding in accordance with the Funding Approval Schedule unless the Country satisfies the following conditions at least eight weeks[1] in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) For the release of any tranche:

(i) That the Country had met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which no obligation for reporting of country programme data exists at the date of the Executive Committee meeting at which the funding request is being presented are exempted;

(ii) That the meeting of these Targets has been independently verified, unless the Executive Committee decided that such verification would not be required; and

(iii) That, for all submissions from the 68th Meeting onwards, confirmation has been

[1] Tranches with requested level of funding of more than US $5 million should be submitted in full 12 weeks in advance to the applicable Executive Committee meeting in line with decision 20/7.

received from the Government that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and that the system is capable of ensuring the Country's compliance with the Montreal Protocol HCFC phase-out schedule for the duration of this Agreement;

(b) Conditions to be met as a precondition for the release of tranches for a sector plan:

(i) For sector plans with activities that include the conversion of manufacturing capacity, the Country has submitted a verification report of a random sample of at least 5 per cent of the manufacturing lines which had completed their conversion in the year to be verified, on the understanding that the total aggregated HCFC consumption of the random sample of the manufacturing lines represents at least 10 per cent of the sector consumption phased out in that year;

(ii) That the Country had submitted annual implementation reports in the form of Appendix 4-A ("Format of Implementation Reports and Plans") covering each previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

(iii) That the Country has submitted an annual implementation plan for the respective sector in the form of Appendix 4-A ("Format of Implementation Reports and Plans") covering each calendar year until and including the year for which the funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement, and will also establish and maintain a system to monitor the consumption in the different sectors, to ensure compliance with the sector consumption limits set out in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4 and 1.3.5 of Appendix 2-A. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous annual implementation plans in accordance with their roles and responsibilities set out in Appendix 5-A. This monitoring will also be subject to independent verification as described in paragraph 4 above.

7. The Executive Committee agrees that the Country may have the flexibility to reallocate the approved funds, or part of the funds, within the funding foreseen for each sector according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances specified in Appendix 1-A:

(a) Should the Country decide during implementation of this Agreement to introduce alternative technologies other than those proposed in the sector plans submitted, or implement differently as proposed in those sector plans, this would require approval of those changes as part of an annual implementation plan. The documentation can also be provided as part of a revision to an existing annual implementation plan, to be submitted eight weeks prior to any meeting of the Executive Committee. Such a request would include a description of the changes in activities to implement the new alternative technology, the calculation of the associated incremental costs and the impact on the climate. The Country agrees that potential savings in incremental costs related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(b) Reallocations categorized as major changes must be documented in advance in an Annual Implementation Plan and approved by the Executive Committee as described in sub-paragraph 5(b)(iii) above. The documentation can also be provided as part of a revision to an existing annual implementation plan, to be submitted eight weeks prior to any meeting of the Executive Committee. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Modifications to any clause in this Agreement;

(iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches on a sector level;

(iv) Provision of funding for programmes or activities not included in the current endorsed annual implementation plan with a cost greater than 20 per cent of the total cost of the last approved tranche or US $2.5 million, whichever is lower; and

(v) Removal of activities in the annual implementation plan with a cost greater than 20 per cent of the total cost of the last approved tranche or US $2.5 million, whichever is lower;

(c) Reallocations not categorized as major changes may be incorporated in the approved annual implementation plan, under implementation at the time, and reported to the Executive Committee in the subsequent annual implementation report; and

(d) Any remaining funds will be returned to the Multilateral Fund upon completion of the last tranche of the Agreement.

8. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the "Lead IA"), and the Government of Germany, the Government of Japan, UNIDO, UNEP and the World Bank have agreed to be cooperating agencies ("Cooperating IAs) in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of any of the agencies taking part in this Agreement.

9. The Lead IA will be responsible for ensuring co-ordinated planning, implementation and reporting of all activities under this Agreement across all relevant sectors, including but not limited to independent verification as per sub-paragraph 5(b)(i), and implementing the activities related to the role as the Lead IA described in Appendix 6-A and the activities as a sector Lead IA described in Appendix 6-B. UNIDO and UNEP will be responsible for carrying out the activities in the respective Sector Plans described in Appendices 6-C and 6-F, respectively, and their subsequent revisions as per sub-paragraph 5(b)(iii) and paragraph 7. The World Bank will be responsible for carrying out the independent verification as per sub-paragraph 5(a)(ii), and implementing additional activities regarding its role as a sector Lead IA described in Appendix 6-E. The Governments of Germany and Japan as the "Cooperating IAs" will be responsible for carrying out the activities described in Appendices 6-D and 6-G. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IAs with the fees set out in rows 2.1.2, 2.2.2, 2.2.4, 2.3.2, 2.4.2, 2.5.2, 2.5.4, 2.6.2 and 2.7.2 of Appendix 2-A.

10. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A in respect of each ODP kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement, and take related decisions. Once these decisions are taken, this specific case will not be an impediment for future tranches as per paragraph 5 above.

11. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the funding of any other consumption sector projects or any other related activities in the Country.

12. The Country will comply with any reasonable request of the Executive Committee, the Lead IA, the sector Lead IAs and the Cooperating IAs to facilitate implementation of this Agreement. In particular, it will provide the Lead IA, the sector Lead IAs and the Cooperating IAs with access to the information necessary to verify compliance with this Agreement.

13. The completion of stage I of the HPMP and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should there at that time still be activities that are outstanding, and which were foreseen in the Sector Plan, and its subsequent revisions as per sub-paragraph 5(b)(iii) and paragraph 7, the completion will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per sub-paragraphs 1(a), (b), (d), (e) and (g) of Appendix 4-A will continue until the time of the completion unless otherwise specified by the Executive Committee.

14. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

15. This updated Agreement supersedes the Agreement reached between the Government of China and the Executive Committee at the 65th meeting and its revised Appendix 5-A approved at the 66th meeting of the Executive Committee.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-22	C	I	11,495.31
HCFC-123	C	I	10.13
HCFC-124	C	I	3.07
HCFC-141b	C	I	5,885.18
HCFC-142b	C	I	1,470.53
HCFC-225	C	I	1.22
Total			18,865.44

APPENDIX 2-A: THE TARGETS, AND FUNDING

		2011	2012	2013	2014	2015	Total
Consumption targets							
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	n/a	n/a	19,269.0	19,269.0	17,342.1	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	n/a	n/a	18,865.4	18,865.4	16,978.9	n/a
1.3.1	Maximum allowable consumption of Annex C, Group I substances in the ICR sector (ODP tonnes)	n/a	n/a	2,402.8	2,402.8	2,162.5	n/a
1.3.2	Maximum allowable consumption of Annex C, Group I substances in the XPS foam sector (ODP tonnes)	n/a	n/a	2,540.0	2,540.0	2,286.0	n/a
1.3.3	Maximum allowable consumption of Annex C, Group I substances in the PU foam sector (ODP tonnes)	n/a	n/a	5,392.2	5,392.2	4,449.6	n/a
1.3.4	Maximum allowable consumption of Annex C, Group I substances in the RAC sector (ODP tonnes)	n/a	n/a	4,108.5	4,108.5	3,697.7	n/a
1.3.5	Maximum allowable consumption of Annex C, Group I substances in the solvent sector	n/a	n/a	494.2	494.2	455.2	n/a
Funding industrial and commercial refrigeration and air conditioning (ICR) sector plan							
2.1.1	Sector Lead IA (UNDP) agreed funding (US $)	25,380,000	6,900,000	8,495,000	11,075,000	9,150,000	61,000,000
2.1.2	Support costs for UNDP (US $)	1,903,500	483,000	594,650	775,250	640,500	4,396,900
Funding extruded polystyrene (XPS) foam sector plan							
2.2.1	Sector Lead IA (UNIDO) agreed funding (US $)	21,372,000	10,217,000	3,998,000	6,330,000	6,733,000	48,650,000
2.2.2	Support costs for UNIDO (US $)	1,602,900	715,190	279,860	443,100	471,310	3,512,360
2.2.3	Sector cooperating agency (Germany) agreed funding (US $)	459,023	390,977	-	-	500,000	1,350,000
2.2.4	Support costs for Germany (US $)	51,260	47,059	-	-	60,181	158,500
Funding polyurethane rigid (PU) foam sector plan							
2.3.1	Sector Lead IA (World Bank) agreed funding (US $)	38,859,000	5,520,000	13,592,000	4,079,000	10,950,000	73,000,000
2.3.2	Support costs for World Bank (US $)	2,914,000	386,400	951,440	285,530	766,500	5,303,870
Funding room air conditioning (RAC) sector plan							
2.4.1	Sector Lead IA (UNIDO) agreed funding (US $)	36,430,000	9,200,000	8,495,000	9,625,000	11,250,000	75,000,000
2.4.2	Support costs for UNIDO (US $)	2,732,250	644,000	594,650	673,750	787,500	5,432,150
Funding service sector plan, including enabling programme							
2.5.1	Sector Lead IA (UNEP) agreed funding (US $)	1,579,000	598,000	1,104,000	1,173,000	786,000	5,240,000
2.5.2	Support costs for UNEP (US $)	176,703	66,921	123,547	131,269	87,960	586,400
2.5.3	Sector cooperating agency (Japan) agreed funding (US $)	80,000	80,000	80,000	80,000	80,000	400,000
2.5.4	Support costs for Japan (US $)	10,400	10,400	10,400	10,400	10,400	52,000
Funding national co-ordination							
2.6.1	Overall Lead IA (UNDP) agreed funding (US $)	360,000	-	-	-	-	360,000
2.6.2	Support costs for UNDP (US $)	27,000	-	-	-	-	27,000
Funding solvent sector plan							
2.7.1	Overall Lead IA (UNDP) agreed funding (US $)	2,500,000	0	2,000,000	0	500,000	5,000,000
2.7.2	Support costs for UNDP (US $)	187,500	0	140,000	0	35,000	362,500
Overall funding							
3.1	Total agreed funding (US $)	127,019,023	32,905,977	37,764,000	32,362,000	39,949,000	270,000,000
3.2	Total support cost (US $)	9,605,513	2,352,970	2,694,547	2,319,299	2,859,351	19,831,680
3.3	Total agreed costs (US $)	136,624,536	35,258,947	40,458,547	34,681,299	42,808,351	289,831,680

APPENDIX 2-A: THE TARGETS, AND FUNDING - continuation

Phase-out and remaining eligible consumption		
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)	1,443.73
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)*	35.99
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)	10,015.59
4.2.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)	0.00
4.2.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)	0.00
4.2.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)	10.13
4.3.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)	0.00
4.3.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)	0.00
4.3.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)	3.07
4.4.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)	1,681.29
4.4.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)**	16.71
4.4.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)	4,187.18
4.5.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)	260.81
4.5.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)***	6.66
4.5.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)	1,203.06
4.6.1	Total phase-out of HCFC-225 agreed to be achieved under this Agreement (ODP tonnes)	0.00
4.6.2	Phase-out of HCFC-225 to be achieved in previously approved projects (ODP tonnes)	0.00
4.6.3	Remaining eligible consumption for HCFC-225 (ODP tonnes)	1.22

* Associated with previously approved funding not included in row 3 of US $ 12,081,951, including a compressor manufacturing conversion project and 50 per cent of the funding for an XPS project with consumption in HCFC-22 and HCFC-142b

** Associated with previously approved funding not included in row 3 of US $ 2,753,079

*** Associated with previously approved funding not included in row 3 of US $ 986,650, including 50 per cent of the funding for an XPS project with consumption in HCFC-22 and HCFC-142b

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. The Funding Approval Schedule consists of several tranches. Under this Agreement, a tranche is defined as the funding set out in each year for each sector plan or the national co-ordination, respectively, as specified in Appendix 2-A.

2. Funding for the future tranches will be considered for approval at the last meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF IMPLEMENTATION REPORTS AND PLANS

1. The Lead IA, on behalf of the Country, will submit at least eight weeks[2] prior to the third meeting of the Executive Committee in any given year, for consideration at that meeting, the following reports to the Multilateral Fund Secretariat:

(a) A verification report of the consumption of each of the Substances mentioned in Appendix 1-A, as per sub-paragraph 5(a)(ii) of the Agreement. If not otherwise decided by the Executive Committee, such a verification has to be provided together with each tranche request and will include verification of the consumption for all relevant years as specified in sub-paragraph 5(a)(i) of the Agreement for which a verification report has not yet been acknowledged by the Committee;

(b) For each sector plan a narrative report, with data provided by calendar year, regarding the progress since the year prior to the previous report, reflecting, for each sector, the situation of the Country in regard to phase-out of the Substances, how the different activities contribute to it, and how they relate to each other. The report should include ODS phase-out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives, to allow the Secretariat to provide to the Executive Committee information about the resulting change in climate relevant emissions. The report should further highlight successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Annual Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes. The narrative report will cover all relevant years specified in sub-paragraph 5(a)(i) of the Agreement and can in addition also include information on activities in the current year;

(c) For each sector plan, a written description of the activities to be undertaken until and including the year of the planned submission of the next tranche request as per sub-paragraph 5(b)(iii). The description should highlight the interdependence of the activities, and take into account experiences made and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall plan and progress achieved, as well as any possible changes to the overall plan that are foreseen. The description should further specify and explain in detail such changes to the overall sector plan. This description of future activities can be submitted as a part of the same document as the narrative report under sub-paragraph (b) above;

(d) For each sector plan with activities that include the conversion of manufacturing capacity, a verification report related to completed conversion as per sub-paragraph 5(b)(i) of the Agreement;

(e) For each sector, quantitative information for all annual implementation reports and annual implementation plans, submitted through an online database. This quantitative information, to be submitted by calendar year with each tranche request, will be amending the narratives and description for the report (see sub-paragraph 1(b) and (c)

[2] Tranches with requested level of funding of more than US $5 million should be submitted in full 12 weeks in advance to the applicable Executive Committee meeting in line with decision 20/7.

above), the annual implementation plan and any changes to the overall plan, and will cover the same time periods and activities; and

(f) An Executive Summary of about five paragraphs, summarizing the information of the above sub-paragraphs 1(a) to 1(e).

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The Foreign Economic Cooperation Office/Ministry of Environment (FECO/MEP) is responsible for the overall co-ordination of activities to be undertaken in the HPMP with assistance of the Lead IA and acts as the National Ozone Unit, responsible for carrying out national policies and legislations regarding the control of ODS.

2. The national consumption will be monitored and determined based on production data and official import and export data for the Substances recorded by relevant government departments in line with paragraph 5(a)(ii) of this Agreement.

3. In addition to the a national system of licensing and quotas for HCFC imports, production and exports referred to in paragraph 5(a)(iii), a quota system covering enterprises using large quantities of HCFC in the different consumption sectors, where applicable, will be established to control the consumption growth, achieve the consumption reduction in those enterprises and collect the consumption data.

4. For those sectors with large amounts of small and medium enterprises, like PU foam sector, solvent sector, XPS foam sector and ICR sector, the consumption would be managed by limiting the quantities of the relevant substances to be sold to the domestic market.

5. FECO/MEP will closely supervise those enterprises carrying out the conversion activities in stage I of the HPMP to ensure the phase-out target in those enterprises had been achieved.

6. FECO/MEP will co-ordinate with the Lead IA and Cooperating IAs to facilitate the verification of the targets set in the Agreement.

7. FECO/MEP will cooperate with the Lead IA and Cooperating IAs in the preparation of reports according to paragraph 5(b)(ii) and Appendix 4-A of this Agreement.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA for stage I of the HPMP is UNDP. It will be responsible for a range of activities, including at least the following:

(a) Activities related to national co-ordination;

(b) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country’s HPMP;

(c) Assisting the Country in preparation of the Implementation Plans and subsequent reports as per Appendix 4-A;

(d) Providing independent verification to the Executive Committee that the Targets have been met (except for overall consumption targets specified in row 1.2 of Appendix 2-A)

and associated annual activities have been completed as indicated in the Implementation Plan consistent with Appendix 4-A. This independent verification can consist of a compilation of sector-specific independent verification carried out by the respective sector Lead IAs;

(e) Ensuring that the experiences and progress is reflected in updates of the overall sector plan and in future annual implementation plans consistent with Appendix 4-A;

(f) Fulfilling the reporting requirements for the annual implementation reports, annual implementation plans and the overall plan as specified in Appendix 4-A for submission to the Executive Committee;

(g) Ensuring that appropriate independent technical experts carry out the technical reviews;

(h) Carrying out required supervision missions;

(i) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Implementation Plan and accurate data reporting;

(j) Ensuring that disbursements made to the Country are based on the use of the indicators; and

(k) Providing assistance with policy, management and technical support when required.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the HPMP results as per sub-paragraph 5(b)(i) of the Agreement and sub-paragraph 1(d) of Appendix 4-A. The Lead IA can delegate the task described in this paragraph to the respective sector Lead IA on the understanding that such delegation will not interfere with the Lead IA's responsibility to carry out the verification of the HPMP results.

APPENDIX 6-B: ROLE OF UNDP

1. UNDP, as the sector Lead IA for the industrial and commercial refrigeration (ICR) sector and the solvent sector, will be responsible for a range of activities described in those sector plans, including at least the following:

(a) Providing assistance for policy development, planning and management of sector programming as set out in these sectors, when required;

(b) Ensuring verification of performance and progress of disbursement in accordance with this Agreement and with its specific internal procedures and requirements as set out in these sectors and assisting the Country in the implementation and assessment of the activities;

(c) Assisting the Country in the preparation of the ICR sector annual Implementation Plans as per Appendix 4-A;

(d) Preparing reports to the Lead IA on these activities as per Appendix 4-A; and

(e) Ensuring financial verification of the activities implemented.

2. UNDP will also act as sector Lead IA for any sector related obligations arising from any HCFC consumption sectors not specifically mentioned in this Agreement, with responsibilities closely resembling those under paragraph 1 above.

APPENDIX 6-C: ROLE OF UNIDO

1. UNIDO, as the Lead IA for the refrigeration and air conditioning (RAC) sector as well as for the extruded polystyrene (XPS) foam sector, will be responsible for a range of activities described in those sector plans, including at least the following:

(a) Providing assistance for policy development, planning and management of sector programming as set out in the RAC and XPS foam sector plans, when required;

(b) Ensuring verification of performance in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's RAC and XPS foam sector plans and assisting the Country in the implementation and assessment of the activities;

(c) Ensuring progress of disbursement in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's RAC and XPS foam sector plans;

(d) Assisting the Country in the preparation of respective RAC and XPS foam sector annual implementation plans as per Appendix 4-A;

(e) Providing reports to the Lead IA on these activities as per Appendix 4-A; and

(f) Ensuring financial verification of the activities implemented.

APPENDIX 6-D: ROLE OF THE GOVERNMENT OF GERMANY

1. The Government of Germany, as a Cooperating IA for the XPS foam sector, will be responsible for a range of activities described in that sector plan, including at least the following:

(a) Providing assistance for policy development, planning and management of sector programming as set out in the XPS foam sector plan, when required;

(b) Assisting the Country in the implementation and assessment of the activities;

(c) Providing reports to the sector Lead IA on these activities as per Appendix 4-A; and

(d) Ensuring financial verification of the activities implemented.

APPENDIX 6-E: ROLE OF THE WORLD BANK

1. After consultation with the Country and taking into account any views expressed, the World Bank will select and mandate an independent entity to carry out the verification of the consumption of the Country as specified in row 1.2 of Appendix 2-A, as per sub-paragraph 5(a)(ii) of this Agreement and sub-paragraph 1(a)(i) of Appendix 4-A.

2. The World Bank, as the sector Lead IA for the polyurethane foam (PU) sector, will be responsible for a range of activities described in that sector plan, including at least the following:

(a) Providing assistance for policy development, planning and management of sector programming as set out in the PU sector plan, when required;

(b) Ensuring verification of performance and progress of disbursement in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's PU sector plan and assisting the Country in the implementation and assessment of the activities;

(c) Assisting the Country in the preparation of PU sector annual implementation plans as per Appendix 4-A;

(d) Providing reports to the Lead IA on these activities as per Appendix 4-A; and

(e) Ensuring financial verification of the activities implemented.

APPENDIX 6-F: ROLE OF UNEP

1. UNEP, as the sector Lead IA for the refrigeration servicing sector, will be responsible for a range of activities described in that sector plan, including at least the following:

(a) Providing policy development assistance when required;

(b) Assisting the Country in the implementation and assessment of the activities under its responsibility and refer to the Lead IA of the HPMP to ensure a co-ordinated sequence in the activities;

(c) Assisting the Country in the preparation of service sector annual implementation plans as per Appendix 4-A;

(d) Providing reports to the Lead IA on these activities as per Appendix 4-A; and

(e) Ensuring financial verification of the activities implemented.

APPENDIX 6-G: ROLE OF THE GOVERNMENT OF JAPAN

1. The Government of Japan, as a Cooperating IA for the refrigeration servicing sector, will be responsible for a range of activities described in that sector plan, including at least the following:

(a) Providing policy development assistance when required;

(b) Assisting the Country in the implementation and assessment of the activities funded by the Cooperating IA, and refer to the sector Lead IA to ensure a co-ordinated sequence in the activities;

(c) Providing reports to the sector Lead IA on these activities as per Appendix 4-A; and

(d) Ensuring financial verification of the activities implemented.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY

1. In accordance with paragraph 10 of the Agreement, the amount of funding provided may be reduced by US $160 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met.

APPENDIX 8-A: COMMITMENTS UNDERTAKEN BY THE COUNTRY WITH RESPECT TO CONVERSION IN THE RAC SECTOR

1. During stage I of the HPMP, the Country agrees to convert at least 18 manufacturing lines for the production of RAC equipment to hydrocarbon technology as part of the RAC sector plan.

Annex XV

AGREEMENT BETWEEN THE GOVERNMENT OF CHINA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

Purpose

1. This Agreement represents the understanding of the Government of China (the "Country") and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A ("The Substances") to a sustained level of 11,772 ODP tonnes by 1 January 2020 in compliance with Montreal Protocol schedule, including the total phase-out of HCFCs in the extruded polystyrene (XPS) foam, polyurethane (PU) foam, and solvent sectors by 2026, and noting that the national HCFC consumption target, as well as the targets for the industrial and commercial refrigeration and air conditioning (ICR) sector and the room air-conditioning manufacturing and heat pump water heaters (HPWH) (RAC) sector for the period 2021 to 2026 would be determined when stage III of the HCFC phase-out management plan (HPMP) is submitted.

2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A ("The Targets, and Funding") in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3 (remaining consumption eligible for funding).

3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

4. The Country agrees to implement this Agreement in accordance with the stage II of the HPMP approved ("the Plan") and its sector plans. In accordance with sub-paragraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

Conditions for funding release

5. The Executive Committee will only provide the Funding in accordance with the Funding Approval Schedule when the Country satisfies the following conditions at least twelve weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) That the Country has met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved;

(b) That the meeting of these Targets has been independently verified for all relevant years, unless the Executive Committee decided that such verification would not be required;

(c) That, for sector plans with activities that include the conversion of manufacturing capacity, the Country had submitted an independent verification report of a random sample of at least five per cent of the manufacturing lines which had completed their conversion in the year to be verified, on the understanding that the total aggregated HCFC consumption of the random sample of the manufacturing lines represents at least 10 per cent of the sector consumption phased out in that year;

(d) That the Country had submitted a Tranche Implementation Report in the form of Appendix 4-A ("Format of Tranche Implementation Reports and Plans") covering each previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

(e) That the Country has submitted a Tranche Implementation Plan in the form of Appendix 4-A ("Format for Tranche Implementation Reports and Plans") covering each calendar year until and including the year for which the funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

Monitoring

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement, and will also continue to maintain and operate a system to monitor the consumption in the different sectors to ensure compliance with the sector consumption limits set out in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4 and 1.3.5 of Appendix 2-A. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous Tranche Implementation Plans in accordance with their roles and responsibilities set out in the same appendix. This monitoring will also be subject to independent verification as described in sub-paragraph 5(c) above.

Flexibility in the reallocation of funds

7. The Executive Committee agrees that the Country may have the flexibility to reallocate part or all of the approved funds according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances specified in Appendix 1-A:

(a) Reallocations categorized as major changes must be documented in advance either in a Tranche Implementation Plan as foreseen in sub-paragraph 5(e) above, or as a revision to an existing Tranche Implementation Plan to be submitted at least *twelve weeks* in advance to any meeting of the Executive Committee, for its approval. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Changes which would modify any clause of this Agreement;

(iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches;

(iv) Provision of funding for activities not included in the current approved Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 20 per cent of the total cost of the last approved tranche, or US $2.5 million, whichever is lower; and

(v) Changes in alternative technologies already selected, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;

(c) Any enterprise to be converted to non-HCFC technology included in the Plan and that would be found to be ineligible under the policies of the Multilateral Fund (i.e., due to foreign ownership or establishment post the 21 September 2007 cut-off date), would not receive financial assistance. This information would be reported as part of the Tranche Implementation Plan;

(d) The Country commits to examining the possibility of using pre-blended systems with low-global warming potential (GWP) blowing agents instead of blending them in-house, for those foam enterprises covered under the Plan, should this be technically viable, economically feasible and acceptable to the enterprises;

(e) The Country agrees, in cases where HFC technologies have been chosen as an alternative to HCFCs, and taking into account national circumstances related to health and safety: to monitor the availability of substitutes and alternatives that further minimize impacts on the climate; to consider, in the review of regulations, standards and incentives adequate provisions that encourage introduction of such alternatives; and to consider the potential for adoption of cost-effective alternatives that minimize the climate impact in the implementation of the HPMP, as appropriate, and inform the Executive Committee on the progress accordingly in tranche implementation reports; and

(f) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

Considerations for the refrigeration servicing sector

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sector included in the Plan, in particular:

(a) The Country would use the flexibility available under this Agreement to address specific needs that might arise during project implementation; and

(b) The Country and relevant bilateral and/or implementing agencies would take into consideration relevant decisions on the refrigeration servicing sector during the implementation of the Plan.

Bilateral and implementing agencies

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the “Lead IA”); UNDP, UNIDO,

United Nations Environment Programme (UN Environment) and the World Bank have agreed to be the sector lead implementing agencies ("Sector Lead IAs") under the overall lead of the Lead IA for ICR and solvent, XPS foam and RAC, service sector and enabling programme, and the PU foam sectors, respectively; and the Government of Germany, the Government of Italy, the Government of Japan have agreed to be cooperating implementing agencies (the "Cooperating IAs") under the lead of the Sector Lead and Lead IA in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of the Lead IA, Sector Lead IAs, and/or Cooperating IAs.

10. The Lead IA will be responsible for ensuring co-ordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification as per sub-paragraph 5(b). The roles of the Lead IA, Sector Lead IAs, and Cooperating IAs are contained in Appendix 6-A, Appendix 6-B and Appendix 6-D, respectively. The Executive Committee agrees, in principle, to provide the Lead IA, Sector Lead IAs, and the Cooperating IAs with the fees set out in rows 2.1.2, 2.2.2, 2.2.4, 2.3.2, 2.4.2, 2.4.4, 2.5.2, 2.5.4, 2.5.6, and 2.6.2 of Appendix 2-A.

Non-compliance with the Agreement

11. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 and, starting in 2019, rows 1.3.1, 1.3.2, 1.3.3, 1.3.4, or 1.3.5 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. The Country would not be double-penalized through both an aggregate and a sector-specific penalty. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A ("Reductions in Funding for Failure to Comply") in respect of each ODP kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement, and take related decisions. Once decisions are taken, the specific case of non-compliance with this Agreement will not be an impediment for the provision of funding for future tranches as per paragraph 5 above.

12. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decisions that may affect the funding of any other consumption sector projects or any other related activities in the Country.

13. The Country will comply with any reasonable request of the Executive Committee, the Lead IA, Sector Lead IAs, and the Cooperating IAs to facilitate implementation of this Agreement. In particular, it will provide the Lead IA, Sector Lead IAs, and the Cooperating IAs with access to the information necessary to verify compliance with this Agreement.

Date of completion

14. The completion of the Plan and the associated Agreement will take place at the end of 2027. The completion of each sector plan will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified for the sector in Appendix 2-A. Should at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per sub-paragraph 5(e) and paragraph 7, the completion of the Plan or sector plan will be delayed until the end of the year following the implementation of the remaining activities upon approval by the Executive Committee. The reporting

requirements as per sub-paragraphs 1(a) to 1(f) of Appendix 4-A will continue until the time of the completion of the Plan unless otherwise specified by the Executive Committee.

Validity

15. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

16. This Agreement may be modified or terminated only by mutual written agreement of the Country and the Executive Committee of the Multilateral Fund.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-22	C	I	11,495.31
HCFC-123	C	I	10.13
HCFC-124	C	I	3.07
HCFC-141b	C	I	5,885.18
HCFC-142b	C	I	1,470.53
HCFC-225	C	I	1.22
Total	**C**	**I**	**18,865.44**

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Consumption targets													
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	16,978.9	16,978.9	15,048.1	15,048.1	11,772.0	*	*	*	*	*	*	n/a
1.3.1	Maximum allowable consumption of Annex C, Group I substances in the ICR sector (ODP tonnes)	2,162.5	2,162.5	2,042.4	2,042.4	1,609.9	1,609.9	**	**	**	**	**	n/a
1.3.2	Maximum allowable consumption of Annex C, Group I substances in the XPS foam sector (ODP tonnes)	2,286.0	2,286.0	2,032.0	2,032.0	1,397.0	1,397.0	1,397.0	762.0	762.0	165.0	0.0	n/a
1.3.3	Maximum allowable consumption of Annex C, Group I substances in the PU foam sector (ODP tonnes)	4,449.6	4,449.6	3,774.5	3,774.5	2,965.7	2,965.7	2,965.7	1,078.4	1,078.4	330.0	0.0	n/a
1.3.4	Maximum allowable consumption of Annex C, Group I substances in the RAC sector (ODP tonnes)	3,697.7	3,697.7	2,876.0	2,876.0	2,259.7	2,259.7	***	***	***	***	***	n/a

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
1.3.5	Maximum allowable consumption of Annex C, Group I substances in the solvent sector	455.2	455.2	395.4	395.4	321.2	321.2	321.2	148.3	148.3	55.0	0.0	n/a
Funding industrial and commercial refrigeration and air conditioning (ICR) sector plan													
2.1.1	Sector Lead IA (UNDP) agreed funding (US $)	13,368,756	20,000,000	12,000,000	16,000,000	16,000,000	11,776,041	-	-	-	-	-	89,144,797
2.1.2	Support costs for UNDP (US $)	935,813	1,300,000	780,000	1,040,000	1,040,000	765,443	-	-	-	-	-	5,861,256
Funding extruded polystyrene (XPS) foam sector plan													
2.2.1	Sector Lead IA (UNIDO) agreed funding (US $)	7,514,867	8,732,614	8,000,000	9,243,486	9,600,000	14,788,765	11,400,000	11,300,000	9,550,000	9,600,000	11,971,763	111,701,495
2.2.2	Support costs for UNIDO (US $)	526,041	567,620	520,000	600,827	624,000	961,270	741,000	734,500	620,750	624,000	778,165	7,298,172
2.2.3	Sector cooperating agency (Germany) agreed funding (US $)	-	267,386		356,514		211,235			250,000	-	-	1,085,135
2.2.4	Support costs for Germany (US $)	-	31,877	-	42,502	-	25,183	-	-	29,804	-	-	129,365
Funding polyurethane (PU) foam sector plan													
2.3.1	Sector Lead IA (World Bank) agreed funding (US $)	7,045,027	10,600,000	9,500,000	12,700,000	12,700,000	20,000,000	15,700,000	15,600,000	10,500,000	13,100,000	14,026,183	141,471,210
2.3.2	Support costs for World Bank (US $)	493,152	689,000	617,500	825,500	825,500	1,300,000	1,020,500	1,014,000	682,500	851,500	911,702	9,230,854
Funding room air conditioning (RAC) sector plan													
2.4.1	Sector Lead IA (UNIDO) agreed funding (US $)	14,671,089	16,000,000	18,000,000	14,000,000	14,000,000	11,581,816	-	-	-	-	-	88,252,905
2.4.2	Support costs for UNIDO (US $)	1,026,976	1,040,000	1,170,000	910,000	910,000	752,818	-	-	-	-	-	5,809,794
2.4.3	Sector cooperating agency (Italy) agreed funding (US $)	891,892	-	-	-	-	-	-	-	-	-	-	891,892
2.4.4	Support costs for Italy (US $)	108,108	-	-	-	-	-	-	-	-	-	-	108,108

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Funding service sector plan, including enabling programme													
2.5.1	Sector Lead IA (UN Environment) agreed funding (US $)	3,299,132	2,570,000	3,270,000	3,370,000	3,570,000	2,810,868	-	-	-	-	-	18,890,000
2.5.2	Support costs for UN Environment (US $)	364,651	284,061	361,431	372,484	394,590	310,684	-	-	-	-	-	2,087,900
2.5.3	Sector cooperating agency (Germany) agreed funding (US $)	300,000	-	300,000	200,000	-	200,000	-	-	-	-	-	1,000,000
2.5.4	Support costs for Germany (US $)	36,000	-	36,000	24,000	-	24,000	-	-	-	-	-	120,000
2.5.5	Sector cooperating agency (Japan) agreed funding (US $)	80,000	80,000	80,000	80,000	80,000	-	-	-	-	-	-	400,000
2.5.6	Support costs for Japan (US $)	10,400	10,400	10,400	10,400	10,400	-	-	-	-	-	-	52,000
Funding solvent sector plan													
2.6.1	Overall Lead IA (UNDP) agreed funding (US $)	2,821,937	3,777,190	2,959,930	3,229,030	3,601,083	7,888,921	7,128,589	3,664,360	5,481,592	2,707,880	4,002,054	47,262,566
2.6.2	Support costs for UNDP (US $)	197,536	245,517	192,396	209,887	234,070	512,780	463,358	238,183	356,304	176,012	260,134	3,086,177
Overall funding													
3.1	Total agreed funding (US $)	49,992,700	62,027,190	54,109,930	59,179,030	59,551,083	69,257,646	34,228,589	30,564,360	25,781,592	25,407,880	30,000,000	500,100,000
3.2	Total support cost (US $)	3,698,676	4,168,474	3,687,727	4,035,600	4,038,560	4,652,176	2,224,858	1,986,683	1,689,357	1,651,512	1,950,000	33,783,625
3.3	Total agreed costs (US $)	53,691,376	66,195,664	57,797,657	63,214,630	63,589,643	73,909,822	36,453,447	32,551,043	27,470,949	27,059,392	31,950,000	533,883,625

Row	Particulars	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Phase-out and remaining eligible consumption													
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)												3,878.80
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)												1,479.72
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)												6,136.79
4.2.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)												2.70
4.2.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)												0.00
4.2.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)												7.43
4.3.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)												0.00
4.3.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)												0.00
4.3.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)												3.07
4.4.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)												4,187.18****
4.4.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)												1,698.00
4.4.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)												0.00
4.5.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)												646.02
4.5.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)												267.47
4.5.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)												557.04
4.6.1	Total phase-out of HCFC-225 agreed to be achieved under this Agreement (ODP tonnes)												1.13
4.6.2	Phase-out of HCFC-225 to be achieved in previously approved projects (ODP tonnes)												0.00
4.6.3	Remaining eligible consumption for HCFC-225 (ODP tonnes)												0.09

* Maximum allowable total consumption of Annex C, Group I substances for the period 2021 to 2026 would be determined at a later date, but would in no case be greater than 11,772 ODP tonnes prior to 2025, and no greater than 6,131 ODP tonnes thereafter.

** Maximum allowable total consumption of Annex C, Group I substances in the ICR sector for the period 2021 to 2026 would be determined later, but would in no case be greater than 1,609.9 ODP tonnes prior to 2025, and no greater than 781 ODP tonnes thereafter.

*** Maximum allowable total consumption of Annex C, Group I substances in the RAC sector for the period 2021 to 2026 would be determined later, but would in no case be greater than 2,259.7 ODP tonnes prior to 2025, and no greater than 1,335 ODP tonnes thereafter.

**** In accordance with decision 68/42(b), includes 137.83 ODP tonnes of HCFC-141b contained in exported pre-blended polyols.

Note: Date of completion of stage I as per stage I Agreement: 31 December 2019.

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the *last* meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plans for each sector tranche request will consist of the following parts:

(a) A narrative report, with data provided by tranche, describing the progress achieved since the previous report, reflecting the situation of the Country in regard to phase out of the Substances, how the different activities contribute to it, and how they relate to each other; the amount of ODS phased out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives; the amount of co-funding provided by the Country for the HCFC reductions; successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information; information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes;

(b) An independent verification report of the consumption of the Substances, as per sub-paragraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification has to be provided together with each tranche request and will have to provide verification of the consumption for all relevant years as specified in sub-paragraph 5(a) of the Agreement for which a verification report has not yet been acknowledged by the Committee;

(c) For sector plans with activities that include the conversion of manufacturing capacity, an independent verification report as per sub-paragraph 5(c) of the Agreement, including a random sample of at least five per cent of the manufacturing lines which had completed their conversion in the year to be verified, and specifying at a minimum the following information: name of the enterprises; level of the Substance consumption prior to conversion; the alternative technology that has been introduced including the alternative Substance consumption level; the manufacturing capacity and actual production level before and after conversion; and the detailed incremental cost of the conversion;

(d) A written description of the activities to be undertaken during the period covered by the requested tranche, highlighting implementation milestones, the time of completion and the interdependence of the activities, any possible changes to the overall Plan that are foreseen, taking into account experiences made and progress achieved in the implementation of earlier tranches;

(e) A set of quantitative information for all Tranche Implementation Reports and Plans, submitted through an online database; and

(f) An Executive Summary of about five paragraphs, summarizing the information of the above sub-paragraphs 1(a) to 1(e).

2. In the event that in a particular year two stages of the HPMP are being implemented in parallel, the following considerations should be taken in preparing the Tranche Implementation Reports and Plans:

(a) The Tranche Implementation Reports and Plans referred to as part of this Agreement, will exclusively refer to activities and funds covered by this Agreement; and

(b) If the stages under implementation have different HCFC consumption targets under Appendix 2-A of each Agreement in a particular year, the lower HCFC consumption target will be used as reference for compliance with these Agreements and will be the basis for the independent verification.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The Foreign Economic Cooperation Office/Ministry of Environmental Protection (FECO/MEP), as the National Ozone Unit, is responsible for the following:

(a) Co-ordinating the overall implementation of activities to be undertaken with assistance of the Lead IA, Sector Lead IAs and other Cooperating IAs;

(b) Developing and implementing national policies and legislations on the control of ODS;

(c) Monitoring national consumption based on production data and official import and export data for the Substances recorded by relevant government departments in line with sub-paragraph 5(b) of this Agreement;

(d) Supervising implementation of the national system of licensing and quotas for HCFC imports, production and exports, the quota system covering enterprises using large quantities of HCFC in the different consumption sectors, where applicable, and collect the consumption data to control the consumption growth and achieve reduction of HCFC consumption in those enterprises, where applicable;

(e) Managing consumption in those sectors with large amounts of small and medium-sized (SMEs) enterprises (e.g., XPS and PU foam, ICR, and solvent sectors), by limiting the quantities of the relevant substances to be sold to the domestic market;

(f) Supervising enterprises carrying out the conversion activities to ensure the phase-out target in those enterprises had been achieved; and

(g) Co-ordinate with Lead IA, Sector Lead IAs, and Cooperating IAs to facilitate the verification of the sector targets set in the Agreement and in the preparation of reports according to sub-paragraph 5(d) and Appendix 4-A of this Agreement.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:

(a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's HPMP;

(b) Assisting the Country in preparation and submission of the Tranche Implementation Reports and Plans as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche Implementation Plan consistent with Appendix 4-A;

(d) Fulfilling the reporting requirements for the overall plan as specified in Appendix 4-A for submission to the Executive Committee;

(e) Ensuring that the experiences and progress is reflected in updates of the overall plan and in future Tranche Implementation Plans consistent with sub-paragraphs 1(d) and 1(e) of Appendix 4-A;

(f) In the event that the last funding tranche is requested one or more years prior to the last year for which a consumption target had been established, co-ordinate with the responsible Sector Lead IA to ensure that annual tranche implementation reports and, where applicable, verification reports on the current stage of the Plan are submitted until all activities foreseen had been completed and HCFC consumption targets had been met;

(g) Ensuring that appropriate independent technical experts carry out the technical reviews;

(h) Carrying out the required supervision missions;

(i) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Tranche Implementation Plan and accurate data reporting;

(j) With the Country, co-ordinating the activities of the Sector Lead IAs and Cooperating IAs, and ensuring appropriate sequence of activities;

(k) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country, the Sector Lead IAs and the Cooperating IAs, the allocation of the reductions to the different sectors and budget items and to the funding of the Sector Lead IAs and each Cooperating IA;

(l) Providing assistance with policy, management and technical support when required;

(m) Reaching consensus with the Sector Lead IAs and Cooperating IAs on any planning, co-ordination and reporting arrangements required to facilitate the implementation of the Plan; and

(n) Co-ordinating the annual financial audit of the income received from the implementing agencies, the disbursements by FECO/MEP to final beneficiaries, and the interest amount earned by FECO/MEP on the balances held by FECO/MEP.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the HPMP results as per sub-paragraphs 5(c) of the Agreement and sub-paragraph 1(c) of Appendix 4-A. The Lead IA can delegate the task described in this paragraph to the respective Sector Lead IA on the understanding that such delegation will not interfere with the Lead IA's responsibility to carry out the verification of the HPMP results.

APPENDIX 6-B: ROLE OF THE SECTOR LEAD IAs

1. The Sector Lead IAs will be responsible for a range of activities described in their corresponding sector plan, including at least the following:

(a) Providing assistance for policy development, planning and management of sector programming as set out in the sector plans, when required;

(b) Ensuring verification of sector performance targets in line with paragraph 5(c) and progress of disbursement in accordance with this Agreement and with its specific internal procedures and requirements as set out in the relevant sectors and assisting the Country in the implementation and assessment of the activities;

(c) Fulfilling the reporting requirements for the sector Tranche Implementation Reports and Plans as specified in Appendix 4-A for submission to the Executive Committee and, where relevant, including the activities implemented by the Cooperating IAs;

(d) Ensuring that appropriate independent technical experts carry out the technical reviews;

(e) Carrying out required supervision missions;

(f) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Tranche Implementation Plan and accurate data reporting;

(g) Ensuring that disbursements made to the Country are based on the use of the indicators;

(h) Where relevant, reaching consensus with the Cooperating IAs on any planning, co-ordination and reporting arrangements required to facilitate the implementation of the Plan;

(i) Timely releasing funds to the Country/participating enterprises for completing the activities related to the sector; and

(j) Ensuring financial verification of the activities implemented.

APPENDIX 6-C: ROLE OF THE WORLD BANK IN THE VERIFICATION OF CONSUMPTION

1. In addition to its role as the Implementing Agency of the China HCFC Production Phase-out Management Plan, after consultation with the Country and taking into account any views expressed, the World Bank will select and mandate an independent entity to carry out the verification of the consumption of the Country as specified in row 1.2 of Appendix 2-A, as per sub-paragraph 5(b) of this Agreement and sub-paragraph 1(b) of Appendix 4-A.

APPENDIX 6-D: ROLE OF THE COOPERATING IAs

1. The Cooperating IAs will be responsible for a range of activities described in each sector plan, including at least the following:

(a) Providing assistance for policy development, planning and management of the sector programming as set out in the respective sector plan, when required;

(b) Assisting the Country in the implementation and assessment of the activities, and referring to the Sector Lead IA to ensure a co-ordinated sequence in the activities;

(c) Providing reports to the Sector Lead IA on these activities as per Appendix 4-A;

(d) Reaching consensus with the Sector Lead IA on any planning, co-ordination and reporting arrangements required to facilitate the implementation of the Plan; and

(e) Ensuring financial verification of the activities implemented.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US $115 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years.

2. Starting for the consumption in 2019, the amount of funding provided may be reduced by US $115 per ODP kg of consumption beyond the level defined in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4, or 1.3.5 of Appendix 2-A for each year in which the target specified in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4, or 1.3.5 of Appendix 2-A has not been met, on the understanding that compliance with the targets defined in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4, and 1.3.5 would be assessed based on existing sectoral reporting arrangements under the progress report on the implementation of the country programme and Tranche Implementation Report and Plans, and would not be independently verified.

3. In the event that the penalty needs to be applied for a year in which there are two Agreements in force (two stages of the HPMP being implemented in parallel) with different penalty levels, the application of the penalty will be determined on a case-by-case basis taking into consideration the specific sectors that lead to the non-compliance. If it is not possible to determine a sector, or both stages are addressing the same sector, the penalty level to be applied would be the largest.

APPENDIX 8-A: SECTOR SPECIFIC ARRANGEMENTS

1. During stage II of the HPMP for the RAC sector, the Country agrees to convert at least:

(a) Twenty manufacturing lines for the production of RAC equipment to HC-290;

(b) Three compressor manufacturing lines to HC-290;

(c) Three residential HPWH manufacturing lines to HC-290; and

(d) Two residential HPWH manufacturing lines to R-744;

2. During stage II of the HPMP for the ICR sector, the Country agrees:

(a) That a maximum quantity of 3,150 metric tonnes (mt) in the unitary air-conditioning (UAC) sub-sector could be converted to HFC-32;

(b) That the Country would have flexibility in the UAC sub-sector to convert to alternatives with a lower GWP than HFC-32 as long as the cost and tonnage to be phased out remained the same;

(c) That the Country would have flexibility to convert industrial and commercial HPWH lines to HFC-32 on the understanding that UAC and industrial and commercial HPWH conversions to HFC-32 combined would not exceed 3,150 mt;

(d) That at least 20 per cent of the total phase-out of HCFC-22 in the ICR sector would be from the conversion of SMEs (i.e. those consuming 50 mt or less); and

(e) That, in sectors other than the UAC sub-sector, the Country would have flexibility to select from among the six low-GWP technologies identified in Table 8 of the ICR sector of document UNEP/OzL.Pro/ExCom/76/25, excluding HFC-32, and would make best efforts to ensure that the tonnage remained within 30 per cent of the amount specified for each technology in that table, at no additional cost to the Multilateral Fund, and that any deviation from that range would be reported to the Executive Committee for its consideration.

Annex XXVI

AGREEMENT BETWEEN THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL AND THE GOVERNMENT OF CHINA FOR THE PHASE-OUT OF PRODUCTION OF HYDROCHLOROFLUOROCARBONS REQUIRED BY THE MONTREAL PROTOCOL

1. This Agreement represents the understanding of the Government of China (the "Country") and the Executive Committee with respect to the total phase-out of production of the hydrochlorofluorocarbons (HCFCs) for controlled uses, as set out in Appendix 1-A ("The Substances") to this Agreement, and the freeze and 10 per cent baseline reduction foreseen for stage I of the HCFC Production Sector Phase-out Management Plan (HPPMP).

Framework agreement for total phase-out

2. The total compensation for the entire China HCFC production sector for phasing out HCFC production for controlled uses in accordance with the Montreal Protocol phase-out schedule shall not exceed US $385 million, inclusive of all project costs, excluding agency fees, with the allocation of payments beyond Stage I to be addressed in future stages.

3. The total amount of phase-out to be achieved under the HPPMP is 445,888 metric tonnes (MT), based on the verified 2010 ODS production data of: 310,000 MT of HCFC-22, 98,711 MT of HCFC-141b, 33,957 MT of HCFC-142b, 2,819 MT of HCFC-123 and 401 MT of HCFC-124.

4. Appendix 1-A to this Agreement establishes a starting point for aggregate reduction in HCFC production eligible for funding of 30,180 ODP tonnes (445,888 MT).

5. The Country agrees that funding for Stage I and beyond should be used to prioritize total permanent closure and dismantling of production lines.

6. The Country agrees:

(a) To retire an additional 24 per cent of the production capacity that was established as of 2010 beyond the total tonnage of 445,888 MT as mentioned in paragraph 3 above (i.e., 552,901 MT) to take into account average utilization of HCFC production capacity;

(b) The 552,901 MT includes all production lines based on the list of HCFC production plants, as specified in the addendum to the HPPMP referred to in paragraph 1 of Appendix 4-A of this Agreement, namely: (i) those production lines producing HCFCs for controlled uses that will be closed and dismantled; (ii) other production lines producing for both controlled uses and feedstock that will be retired as needed to achieve the target in paragraph 6(a); and

(c) Capacity closure and retirement strategies are to be further defined, monitored and updated in future tranche implementation work plans and progress reports.

7. The Country agrees to ensure that any funds in the possession of the Foreign Economic Cooperation Office/Ministry of the Environment (FECO/MEP) will return a reasonable rate of interest and that any interest will be offset in future tranches with the reporting requirements of FECO/MEP and the World Bank pursuant to decision 70/20(c) on the reporting on disbursement.

8. The Country will not provide funding in Stage I or beyond for the production line which produced CFCs in Zhejiang Juhua Fluoro-chemical Co. Ltd. in 2010.

9. The Country agrees to ensure that any compensated plant does not redirect any phased out HCFC production capacity toward feedstock, subject to a penalty to be specified in the agreement for each stage of the HPPMP.

10. The Country agrees to coordinate with its stakeholders and authorities to make best efforts to manage HCFC production and associated by-product production in HCFC plants in accordance with best practices to minimize associated climate impacts. The budget and activities for such coordination will be included in the tranche implementation work plan and progress report.

11. The Country agrees to optimize the implementation of the HPPMP and its addendum in order to minimize environmental and climate impacts as much as possible, including by giving priority to HCFC production closure to achieve the HCFC reduction targets set forth in Decision XIX/6 of the Nineteenth Meeting of the Parties to the Montreal Protocol.

12. The penalty is US$ 1.73 per kg/year of production in excess of the level required in this Agreement. The Country agrees that any compensated HCFC production plant that redirects any phased out HCFC production capacity to feedstock will be subject to the penalty to be specified in the agreement for each stage of the HPPMP.

Stage I of the HPPMP

13. Stage I of the HPPMP for the Country is approved in principle at a total of US $95 million to meet the freeze and 10 per cent reduction of the HCFC production baseline for compliance, inclusive of all project costs, excluding agency support costs, recognizing the Country's need to front-load payments, according to the following payment schedule: US $24 million for the 2013 tranche; US $23 million for the 2014 tranche; US $24 million for the 2015 tranche, and US $24 million for the 2016 tranche. The total funds for the 2014-2016 tranches will be released to the Country only after a verification report of prior year data confirming achievement of the previous production limits target has been approved by the Executive Committee.

14. Stage I of the HPPMP will result in a sustained level of 29,122 ODP tonnes by 2013 and 10 per cent reduction target of 26,210 ODP tonnes by 2015 in compliance with Montreal Protocol schedules**.**

15. The Country agrees to meet the annual production limits for the substances set out in row 1.2 ("Maximum Allowable Production of Annex C, Group I Substances") of Appendix 2-A ("The Targets, and Funding") to this Agreement, as well as in the reduction schedule for all substances mentioned in row 1.1 of Appendix 2-A.

16. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A ("The Targets, and Funding") to the Country. The Executive Committee will provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

17. The Country accepts that, by its acceptance of this Agreement and fulfilment by the Executive Committee of its funding obligations for stage I described in paragraph 16 above, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect of any production of each of the substances that exceeds the levels defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3 and 4.5.3 of Appendix 2-A.

18. The Country agrees to implement this Agreement in accordance with stage I of the HPPMP submitted, and as modified by this Agreement with respect to funding levels and other conditions of approval specified in Executive Committee decision 69/28(e) , the addendum to the HPPMP referred to in paragraph 1 of Appendix 4-A, and the application of the flexibility clause as specified in paragraph 20 below as informed or requested in annual implementation work plans and progress reports. In accordance with paragraph 19(b), the Country will accept independent verification of achievement of the annual production limits set out in row 1.2 of Appendix 2-A. The aforementioned verification will be commissioned by the relevant implementing agency.

19. The Executive Committee will not provide the funding in accordance with the Funding Approval Schedule unless the Country satisfies the following conditions at least twelve weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) The Country has met the targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years including the year in which this Agreement was approved;

(b) The achievement of these targets has been independently verified and the verification report will be submitted at least eight weeks in advance to the Secretariat of the relevant Executive Committee meeting, unless the Executive Committee decides that such verification is not required;

(c) The Country has submitted: annual implementation reports in the format in Appendix 4-A ("Format of Implementation Reports and Plans") covering each previous calendar year and confirming that the conditions set out in paragraphs 6 to 12 of this Agreement have been met where applicable; has achieved a significant level of implementation of activities initiated with previously approved tranches; and the rate of disbursement of funding available from the previously approved tranche exceeded 20 per cent; and

(d) The Country has submitted an annual implementation plan in the format in Appendix 4-A covering each calendar year up to and including the year for which the funding schedule foresees the submission of the next tranche or, in the case of the final tranche, until completion of all activities foreseen.

20. 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 production and phase-out of the substances specified in Appendix 1-A.

(a) Reallocations categorized as major changes must be documented in advance in an annual implementation plan and approved by the Executive Committee, as described in sub-paragraph 19(d) above. The documentation can also be provided as part of a revision to an existing annual implementation plan, to be submitted eight weeks prior to any meeting of the Executive Committee. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Modifications to any clause in this Agreement;

(iii) Provision of funding for programmes or activities not included in the current endorsed annual implementation plan involving costs exceeding 30 per cent of the total cost of the previous approved tranche;

(iv) Removal of activities in the annual implementation plan involving costs exceeding 30 per cent of the total cost of the previous approved tranche;

(v) Reallocations not categorized as major changes may be incorporated into the approved annual implementation plan being implemented at that time, and reported to the Executive Committee in the subsequent annual implementation report; and

(vi) Any funds remaining from Stage I of the HPPMP will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement with the understanding that the funds returned would not be deducted from the maximum level of funding for the overall phase-out.

21. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous annual implementation plans in accordance with their roles and responsibilities set out in Appendix 5-A. This monitoring will also be subject to independent verification, as described in paragraph 19(b) above.

22. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. The World Bank has agreed to be the lead implementing agency (the "Lead IA") in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which may be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of the Lead IA.

23. The Lead IA will be responsible for ensuring coordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification, as per paragraph 19(b) above. The Executive Committee agrees, in principle, to provide the Lead IA with the fees set out in row 2.2 of Appendix 2-A.

24. Should the Country, for any reason, not meet the targets for the phase-out of the substances set out in row 1.2 of Appendix 2-A or otherwise not comply with this Agreement, the Country agrees that it will not be entitled to the funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all its obligations that should have been met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the funding by the amount set out in Appendix 7-A (Reductions in Funding for Failure to Comply for Stage I) in respect of each kg of reduction in production not achieved in any one year and, in respect of any redirection of phased-out HCFC production capacity to feedstock uses by compensated HCFC production plant, as indicated in the addendum to the HPPMP. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement, and take related decisions. Once these decisions have been taken, this specific case will not be an impediment to receiving future tranches, as per paragraph 16 above.

25. Funding under this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the funding of any other HCFC production sector projects.

26. The Country will comply with any reasonable request by the Executive Committee or the Lead IA to facilitate implementation of this Agreement. In particular, it will provide the Lead IA with access to the information necessary to verify compliance with this Agreement.

27. Stage I of the reduction in production of HCFCs and the associated Agreement will be completed at the end of the year following the last year for which a maximum allowable total production level has been specified in Appendix 2-A. At that time, should there still be outstanding activities foreseen in the Plan and its subsequent revisions, as per paragraphs 19(d) and 20, the completion will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per sub-paragraphs 2(a), 2(b), 2(d), and 2(e) of Appendix 4-A will continue until the time of completion of Stage I, unless otherwise specified by the Executive Committee.

28. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point (2010) for aggregate reductions in production (ODP tonnes)
HCFC-22	C	I	17,050
HCFC-141b	C	I	10,858
HCFC-142b	C	I	2,207
HCFC-123	C	I	56
HCFC-124	C	I	9
Total			30,180

APPENDIX 2-A: THE TARGETS, AND FUNDING FOR STAGE I OF THE AGREEMENT

Row	Particulars	2013	2014	2015	2016	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	1,058	0	2,912	0	3,970
1.2	Maximum allowable total production of Annex C, Group I substances (ODP tonnes)	29,122	29,122	26,210	26,210	n/a
2.1	Lead IA (World Bank) agreed funding (US $million)	24	23	24	24	95
2.2	Support costs for Lead IA (US $million)	1.344	1.288	1.344	1.344	5.320
3.1	Total agreed funding (US $million)	24	23	24	24	95
3.2	Total support costs (US $million)	1.344	1.288	1.344	1.344	5.320
3.3	Total agreed costs (US $million)	25.344	24.288	25.344	25.344	100.32
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under stage I of this Agreement (ODP tonnes)					923
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)					0
4.1.3	Remaining eligible production for HCFC-22 (ODP tonnes)					16,127
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under stage I of this Agreement (ODP tonnes)					2,606
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)					0
4.2.3	Remaining eligible production for HCFC-141b (ODP tonnes)					8,252
4.3.1	Total phase-out of HCFC-142b agreed to be achieved under stage I of this Agreement (ODP tonnes)					441
4.3.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)					0
4.3.3	Remaining eligible production for HCFC-142b (ODP tonnes)					1,766
4.4.1	Total phase-out of HCFC-123 agreed to be achieved under stage I of this Agreement (ODP tonnes)					0
4.4.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)					0
4.4.3	Remaining eligible production for HCFC-123 (ODP tonnes)					56
4.5.1	Total phase-out of HCFC-124 agreed to be achieved under this stage I of Agreement (ODP tonnes)					0
4.5.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)					0
4.5.3	Remaining eligible production for HCFC-124 (ODP tonnes)					9

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE FOR STAGE I

1. Funding for future work plan will be considered for approval at the last meeting of the Executive Committee in the year prior to the year of the work plan.

2. For example, the work plan for 2014 and the progress report for the first tranche of the HPPMP will be submitted to the last meeting in 2013. Funding will be transferred to the implementing agency upon approval of the work plan and not more than 30 per cent of this amount could be released to the Country before the approval of the verification report by the Executive Committee.

3. A final verification report for Stage I will be submitted in 2017 to verify 2016 production. The last tranche of Stage I will be disbursed in full upon the approval of the 2015 verification report by the Executive Committee.

APPENDIX 4-A: FORMAT OF IMPLEMENTATION REPORTS AND PLANS FOR STAGE I

1. The first implementation report and plan for stage I of the HPPMP will contain an addendum that takes into account the final level of funding for the total phase-out, and that approved for stage I, including the conditions of approval in decision 69/28(e). The addendum would further define the conditions of approval in particular with respect to how decision 69/28(e) would be implemented.

2. The submission of the implementation report and plan for each tranche request will consist of five parts:

(a) A narrative report, with data provided by calendar year, regarding the progress since the year prior to the previous report, reflecting the situation of the Country in regard to phase-out of the substances, how the different activities contribute to it, and how they relate to each other in Appendix 1-A. The report should include ODS phase-out as a direct result of the implementation of activities, by substance, to allow the Secretariat to provide the Executive Committee with information on the resulting change in climate-relevant emissions. It will address how the conditions of approval in decision 69/28(e) (paragraphs 4-12 of this Agreement) have been addressed, the actions/activities taken to achieve these conditions and their budgets both in the plan and the progress report. It will identify any redirection of phased-out production capacity, as specified in paragraph 3 of the Agreement that is compensated by the Agreement to production for feedstock use by plant and by plant line where applicable. The report and plan will indicate what capacities are closed and dismantled and the target for the next year. Controlled and feedstock production by plant line, if applicable, should be provided. The report should further highlight successes, experiences, and challenges related to the different activities included in the plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted annual implementation plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided in paragraph 20 of this Agreement, or other changes. The narrative report will cover all relevant years specified in sub-paragraph 19(a) of this Agreement and may, in addition, include information on activities in the current year;

(b) A verification report on the results of the HPPMP and the production of the substances listed in Appendix 1-A, as per sub-paragraph 19(b) of this Agreement. Unless otherwise decided by the Executive Committee, such a verification shall be provided together with each tranche request and, as specified in sub-paragraph 19(a) of this Agreement, will provide verification of production for all relevant years for which a verification report has not yet been noted by the Executive Committee;

(c) A written description of the activities to be undertaken up to and including the year of the planned submission of the next tranche request, highlighting the interdependence of the activities, and taking into account experience gained and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall plan and progress achieved, as well as any possible changes to the overall plan that are foreseen. The description should cover the years specified in sub-paragraph 19(d) of this Agreement and also specify and explain in detail such changes to the overall plan. This description of future activities may be submitted as a part of the same document as the narrative report under sub-paragraph (a) above;

(d) A set of quantitative information for all annual implementation reports and annual implementation plans is to be submitted through an online database. This quantitative information, to be submitted by calendar year with each tranche request, will amend the narratives and description for the report (in accordance with sub-paragraph (a) above) and the plan (in accordance with sub-paragraph (c) above), the annual implementation plan and any changes to the overall plan, and will cover the same time periods and activities; and

(e) An executive summary of around five paragraphs is to be submitted in order to summarize the information required by sub-paragraphs (a) to (d) above.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES FOR STAGE I

1. The overall monitoring will be the responsibility of the National Ozone Unit (NOU). The production will be monitored based on semi-annual reports provided by HCFC producers and confirmation by the NOU.

2. The NOU will also be responsible for reporting and shall submit the following reports in a timely manner:

(a) Annual reports on production of each substance for controlled and feedstock uses to be submitted to the Ozone Secretariat;

(b) Annual reports on progress in implementation of the country programme, to be submitted to the Executive Committee; and

(c) Project-related reports to be submitted to the Lead IA.

3. The Lead IA will carry out independent annual verifications at all producers for which tonnage was included in paragraph 3 of the Agreement for the years 2013-2016 to confirm that the HCFC production phase-out targets at the country level have been met. Annual HCFC production will be verified by following the Executive Committee's Guidelines and Standard Format for Verification of ODS Production Phase-out using the Montreal Protocol's definition of production i.e. (a) HCFC production is equal to the total annual HCFC production minus the total amount of HCFCs used in feedstock applications. The verification reports will be submitted to the Executive Committee in accordance with paragraph 19 of this Agreement.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY FOR STAGE I

1. The Lead IA will be responsible for the overall supervision of the implementation of the stage I of the reduction in production of HCFCs under this Agreement. The Lead IA supervision will include at least the following:

(a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements, as set out in the Country's HPPMP and addendum;

(b) Assisting the Country in preparation of the implementation plans and subsequent reports, as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the targets have been met and associated annual activities have been completed, as indicated in the implementation plan consistent with Appendix 4-A;

(d) Ensuring that experience and progress is reflected in updates of the overall plan and in future annual implementation plans, consistent with sub-paragraphs 2(c) and 2(d) of Appendix 4-A;

(e) Fulfilling the reporting requirements for the annual implementation reports, annual implementation plans and the overall plans, as specified in Appendix 4-A, for submission to the Executive Committee;

(f) Ensuring that appropriate independent technical experts carry out the technical reviews;

(g) Carrying out required supervision missions;

(h) Tracking implementation and use of funds to ensure that they are consistent with all the Lead IA policies and procedures, including safeguard policies, as well as Executive Committee policies and procedures and provisions of this Agreement;

(i) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the implementation plan and accurate data reporting;

(j) In case of reductions in funding for failure to comply in accordance with paragraph 1 of this Agreement, to determine, in consultation with the Country, the allocation of the reductions to the different budget items and to the agency support cost of the Lead IA;

(k) Ensuring that disbursements made to the Country are based on the use of the indicators; and

(l) Providing assistance with policy, management and technical support, when required.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the results and the production of the substances mentioned in Appendix 1-A, as per sub-paragraph 19(b) of this Agreement and sub-paragraph 2(b) of Appendix 4-A.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY FOR STAGE I

1. In accordance with paragraphs 12 and 24 of this Agreement, the amount of funding provided may be reduced by US$1.73 per kg/year of production beyond the level defined in row 1.2 of Appendix 2-A for each year from future funding tranches in which the target specified in row 1.2 of Appendix 2-A has not been met.

2. If any independent annual verification, as stipulated in paragraph 3 of Appendix 5-A to this Agreement, reveals that the phased out HCFC production capacity previously used for ODS production in 2010, as specified in paragraph 3 of the Agreement, in any HCFC production plants that are compensated by this Agreement is redirected to feedstock uses in a given year, the amount of funding may be reduced by US$0.15 per kg/year of redirected production from future funding.

Desk Study on the Current System of Monitoring Consumption of Foam Blowing Agent at Stage I HPMP Beneficiary Enterprises and Verification Methodology

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Contents

Desk Study on the Current System of Monitoring Consumption of Foam Blowing Agent at Stage I HPMP Beneficiary Enterprises and Verification Methodology

I. Introduction

A. ExCom Decision and Objective

1. At its 82nd meeting, the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol adopted Decision 82/67 on China's annual progress report for the polyurethane (PU) rigid foam sector plan under the Stage I HCFCs phase-out management plan (HPMP).

2. In line with Decision 82/67(c), the Government of China and the World Bank are requested to prepare for the 83rd meeting a desk study on the current system of monitoring consumption of foam blowing agents at enterprises assisted under the Stage I HPMP and a verification methodology that includes random sampling in order to ascertain whether ozone depleting substances (ODS) that has already been phased out have been or are being consumed at those enterprises.

B. Structure of the Report

3. In order to respond to Decision 82/67(c), the Government of China worked with the World Bank on the structure of the report. This report is organized into an introduction and four main chapters.

4. Chapter 2 deals with contextual information surrounding HCFCs phase-out in the PU foam sector and more generally ODS control in China, explaining the legal basis, policy framework and institutional structures, and capacity for ODS management at both national and local levels. Chapter 2 also introduces the experience and practices carried over from the previous PU foam sector phase-out plan, as well as an overview of current monitoring requirements and policy measures for the PU foam sector plan under China's Stage I HPMP.

5. Chapter 3 details the established HCFCs consumption monitoring system for PU foam in China, including consumption verification practice during the preparation of the HPMP, the overall arrangements for the implementation of the sector plan under the HPMP, the monitoring system through the subproject cycle, and the monitoring and enforcement measures after conversions. The contributions to the monitoring system through relevant technical assistance activities carried out under the Stage I HPMP sector plan are summarized under this chapter as well.

6. Chapter 4 summarizes the proven/best practices in monitoring and verification of consumption and phase-out in the PU foam sector in China, and also assesses gaps and identifies areas for strengthening.

7. Chapter 5 responds to Decision 82/67(c), that proposes a "verification methodology in order to ascertain whether ODS that had already been phased out had been or were being consumed at those enterprises assisted under the stage I of the HPMP." In this chapter, a proposed methodology, largely based on the current monitoring and verification mechanism applied under the Stage I HPMP, is presented. Additional measures, such as random sampling of foam products/pre-blended polyol and cross-regional checks, are considered as well, with the purpose to further strengthen monitoring and enforcement actions to ensure the sustainable phase-out of ODS in PU foam sector.

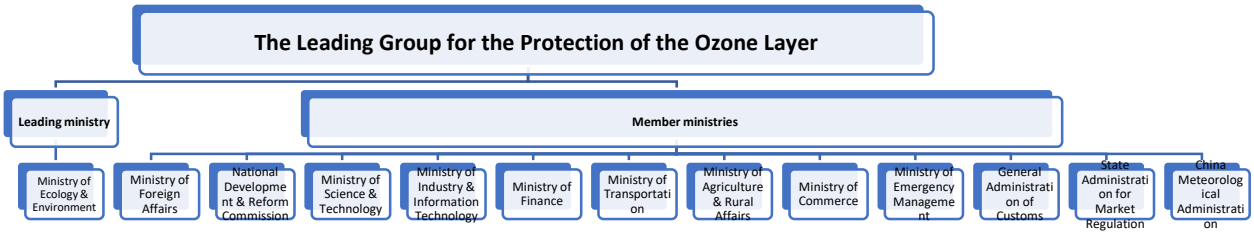
II. HCFCs Phase-out in China's PU Foam Sector – In Context

8. The Montreal Protocol mandates gradual HCFCs phase-out starting from 2013 until full phase-out of HCFCs consumption and production by 2030 for "Article 5" countries. Guided by a series of national strategies and strong political commitment, China has nearly completed implementation of the first stage of HCFCs phase-out, having met all major phase-out milestones and phased out 71,000 MT of HCFC production as well as 45,000 MT of HCFC consumption. China's HCFC phase-out efforts are rooted in a well-established institutional and regulatory framework on environmental protection and historical ODS phase-out plans. That relevant to sustainable HCFCs phase-out and monitoring in the PU foam sector is described below.

A. Institutional Structure for ODS Control in China

i. National-level institutional structure

9. *National Leading Group for the Protection of the Ozone Layer and its Office.* The National Leading Group for the Protection of the Ozone Layer (hereinafter referred to as the Leading Group) was set up in 1991 by the Government of China. The Leading Group is responsible for the coordination of critical matters related to the compliance with the Montreal Protocol, review of guiding principles and policies for compliance, review of the compliance programme and work plans and oversight of the implementation of the work plans, and dealing with emerging issues which require the considerations of the Leading Group. As the coordination mechanism for ozone layer protection at the central level consisting of 18 ministries at its beginning, the Leading Group has been adjusting its members with the institutional reforms of the Government of China in the past years. With the most recent restructuring of government agencies undertaken in 2018, the Leading Group is now composed of thirteen ministries. Ministry of Ecology and Environment (MEE, formerly known as MEP), as the leading ministry of the Leading Group, is responsible for the supervision and examination of the implementation of the Montreal Protocol, organization of compliance activities and formulation of policies and measures. Its specific work is undertaken by the Office of the leading group.



10. *National Office for Management of ODS Import and Export.* As another key body for ensuring compliance, National Office for Management of ODS Import and Export was co-established by three ministries, including MEE, Ministry of Commerce (MOC) and General Administration of Customs (GAC) in 2000. Its main responsibilities are the management of import and export of controlled substances, appliances and products in China through licensing, quotas and other measures. China is currently the largest ODS producer and exporter accounting for 80% of world exports, destined to more than 130 countries. The National Office has been acting as the lead coordination agency in ODS trade control in China, and has played a proactive role in information exchange, capacity building, law enforcement support and inter-agency cooperation.

11. *Coordination Group for the Compliance with the Montreal Protocol within MEE and its Office (National Ozone Unit).* Coordination Group for the Compliance with the Montreal Protocol within MEE (hereinafter referred to as the Coordination Group) consists of 9 departments and affiliated agencies of

MEE, whose specific work is undertaken by its Office. The Office of the Coordination Group, which undertakes the daily work of the Office of the Leading Group internally, functions as the National Ozone Unit (NOU) of China. As the national focal point of the Protocol and the MLF ExCom, the Office is responsible for daily liaison with the Ozone Secretariat, MLF Secretariat and the international implementing agencies. The Office of the Coordination Group is set up under the Department of Atmospheric Environment, MEE, with Department of Atmospheric Environment, Department of International Cooperation and FECO as members.

12. *Role of industrial association and research institutions*. The Government of China works closely with relevant industrial associations and research institutions, which include China Household Electrical Appliances Associations, China Refrigeration and Air-conditioning Industry Association, China Plastics Processing Industry Association (CPPIA, focusing on foam), China Association of Fluorine And Silicone Industry and Peking University. These technical support agencies contribute in large to data collection in sectors and of potential beneficiaries, as well as to the selection of conversion technologies, compilation of sector phase-out strategies, and development and preparation of phase-out project documents. Some provide consultancy services and assistance to relevant departments in the course of policy implementation for the compliance with the Montreal Protocol.

ii. Local Ecology and Environment Bureau (EEB) and other authorities

13. China is the world's most populated country and has a large geographic area. It takes efforts of both the central government and local governments to ensure sustainable compliance in the country. The Government of China, therefore, relies on local government to monitor and supervise ODS phase-out. Thirty-one provinces, autonomous regions and municipalities have each established analogous leading groups for ozone layer protection at the provincial level. These groups are responsible for: 1) interpreting, formulating and implementing related regulations and policies at local levels; 2) monitoring the production, consumption, import and export of controlled substances at local levels; 3) collecting ODS production and consumption data by pollutant emission registration and reporting systems; 4) controlling the construction and/or expansion of ODS producing or using facilities through a "construction projects management system" and environmental impact assessment; and, 5) enforcing local and state-level regulation and policy.

14. Departments of the EEBs, Development and Reform Commissions, Industrial and Commercial Bureaus, Public Security Bureaus and other competent authorities are also members of local leading groups in some provinces. It is mandated that local groups shall organize regular work meetings to coordinate the protection of the ozone layer within administrative regions. Local government at or above the county level, in accordance with the 2010 Regulations on Administration of Ozone Depleting Substances (hereinafter referred to as the Regulations), is responsible for the supervision and management of ODS production, use and phase-out within its jurisdiction. EEBs monitor ODS use, production, stockpiles, disposal and registration of all relevant companies, conduct inspections, enforce juridical authority to combat illegal use, production, disposal, and levy fines. Aside the responsibilities prescribed by the Regulations, local EEBs also volunteer to provide assistance for the implementation of sector plans under the HPMP, including mobilizing potential beneficiaries, cross checking production and consumption data, conducting environmental assessments and promoting alternative technologies.

iii. Interaction between State and local level competent authorities.

15. The interaction of State level competent authorities with local authorities revolves around the implementation and execution of overarching environmental and ODS laws and regulations (described in the next section). On the legislation side, the People's Congress issues laws, the State Council issues regulations, the line ministries issues orders or normative documents, and in turn the local levels will issue local policy documents with detailed implementation guidance. On the administrative side, the relationship

between the state and local level is more interactive. This is particularly the case on policy implementation, monitoring and enforcement.

B. Legal Basis and Policy Framework for HCFCs Management and Control in the Foam Sector

i. Relevant environmental laws

16. In recent years, the Government of China has taken a series of significant decisions and actions on promoting an "ecological civilization" and protecting the environment. To implement the strictest laws on ecological and environmental protection, China has promulgated or amended nearly twenty laws including the Law on Environmental Protection, the Law on Air Pollution Control and Prevention, and others. The Law on Environmental Protection, revised and issued by the National People's Congress in 2014 and effective in 2015, has recrafted the basic system of environmental protection in China. The most significant change with the amendment is reinforcement of the responsibility of the local government to ensure environmental quality. The law empowers local government to enforce rules and to crack down on illegal behavior, specifically through devolution of power and resources to environmental law enforcement departments for strengthened enforcement.

17. Article 85 of the 2015 revised Law on Air Pollution Control and Prevention stipulates: "The State encourages and supports the production and use of ODS alternatives, and the gradual reduction of the production and use of ODS until complete phase-out." "The State implements the total control amount and manages the quota for the production, use, import and export of ODS." The specific measures will be prescribed by the State Council In addition, Article 101 now stipulates the types of penalties and the punishment of maximum three times of the value of the goods for the production, import, sale or use of banned substances/equipment in violation of the provisions of relevant laws and regulations. If the offender refuses to make corrections, the local government is entitled to suspend its operation or close it down. Article 125 also stipulates those who discharge air pollutants causing damage shall bear the consequences according to relevant laws and regulations. The amendment interlinked ODS management with the overall air pollution control that enables the ODS monitoring and enforcement to be part of the holistic combat of air pollution for both national level and local levels. The amendment also provided strict enforcement tools for ODS violators that would face more severe punishment and penalties than before.

18. The amended Laws on Environmental Protection and on Air Pollution Control and Prevention therefore intensify punishment of illegal behaviors. And, given that they are superior to the ODS Regulations and relevant secondary rules and policy, they provide the legal authority for strengthened ODS supervision and management in the future.

ii. ODS Regulations, rule and policies

19. The ODS management regulations (Decree No. 573), approved at the 104th standing meeting of the State Council and effective since June 1, 2010, provide a systematic legal framework for ODS management in China. They reinforce the role of State-level departments in supervision and administration of ODS through-out China and stipulate that local EEBs and relevant departments at or above the county level shall be responsible for management and oversight of ODS within their regional jurisdictions. Most notably the regulations introduce a type of permitting/quota system for all ODS producers and users whereby enterprises must apply for and report on production and use under the competent environmental protection department of the State Council (MEE in this case). The 2010 Regulations also lay out the responsibilities of competent authorities and ODS producers/users in supervision and inspection, requirements for a sound ODS management data system and ranges, and describes the penal system including fines. For example, a

user of ODS without a permit is subject to a fine up to 500,000 yuan, along with the penalty of dismantling and destruction of the facilities using ODS.

20. More than 100 ODS supporting rules and policies have been formulated and issued at multiple levels throughout China in order to detail how to implement and to further strengthen ODS control. About fifteen of these relate directly to the foam sector. Most have been introduced in conjunction with the Stage I HPMP and HPPMP preparation and implementation (policies relevant to the HCFCs phase-out in the foam sector are found below in Table 1 under Section D). They consist primarily of orders (from the State Council) or "management letters" (from line ministries) to subordinate departments within the government or to outside entities in the private sector. For orders/letters within government institutions, their implementation is closely linked to annual performance reviews and promotions. In the case of the private sector, violation of management letters is governed by administrative laws. Punishment for such violation ranges from warnings to fines, administrative detention and business license revocation.

21. Now with the changes to the environmental and air pollution laws, local EEBs have more authority such as to conduct on-site visits and collect sample in enterprises, seal up illegal production facilities, and establish local standards in matters of regional environment monitoring and enforcement.

C. Experience and Practice from the Previous PU Foam Sector Phase-out Plan

i. Development of the system of verifying and monitoring consumption

22. Since the approval of the PU foam sector CFCs phase-out plan in 2001, China has employed some type of mechanism to verify consumption at conversion subprojects. In the earlier years of the sector plan, FECO had designated individual technical experts to conduct on-site verification prior to the signature of subgrant agreements (SGAs) with beneficiary enterprises, with the aim to identify the eligibility and baseline ODS consumption level of these enterprises.

23. As implementation of the sector plan evolved, more and more enterprises became involved in conversion activities. Due to this growing complexity as well as various financial and technical capacities of the enterprises, FECO decided to utilize an independent accounting firm to conduct baseline ODS consumption verification at enterprises. Focused primarily on reviewing records (purchase receipts, invoices, production logs, etc.), this third-party review offered FECO more neutrality while elevating the verification vis-à-vis the enterprises to a more official level.

24. Nonetheless, it was necessary to supplement the work of the accounting firm with foam manufacturing technical expertise and support, in order to corroborate the eligibility and baseline ODS consumption, with inspection of production facilities, storage areas and baseline equipment. This was especially the case at enterprises with less capacity for bookkeeping. The combined technical and performance verification became the foundation for effective subproject monitoring and reporting by FECO and its designated implementing support agency (ISA). In addition, random checks and inspections to examine the eligibility of the enterprises and identify any issues during the implementation by the World Bank as the MLF Implementing Agency were integrated into the monitoring framework developed under the CFCs phase-out plan in the foam sector.

25. As more subprojects completed and moved to "subproject acceptance," whereby local authorities officially declared converted operations were up to par with environmental and safety regulations, FECO recognized the potential of local EEBs to expand their roles to more targeted monitoring and supervision of ODS-consuming enterprises in the foam sector. FECO cooperated in particular with the four key provinces with the highest concentration of PU foam enterprises, namely Shan Dong, Jiang Su, Zhe Jiang and Guang Dong. With technical assistance funding, tasks for these provinces included training and

awareness raising regarding foam manufacturing in the region, active identification of additional eligible enterprises beyond those first covered by FECO, and most notably, undertaking regular monitoring and enforcement action in the sector.

26. By the end of the sector plan when China issued the ban on the use of CFCs as blowing agent in 2007, the key foam-producing provinces had been well-informed with the issues surrounding ODS phase-out and had the legal basis for taking over regular monitoring and supervision of CFCs phase-out in this sector. Moreover, through the subproject acceptance/handover process and ongoing TA to the EEBs, networks between regulatory authorities and major foam manufacturers could be established although there was no systematic procedure in place to register and track ODS-using enterprises.

ii. Lessons Learned

27. With the implementation of the CFCs phase-out plan for the PU foam sector, not only were ODS phase-out targets achieved but extensive experience was accumulated, in particular on verification and monitoring. This significantly contributed to the development of future HCFCs phase-out activities in this sector. Key lessons learned were:

- The combination of financial support and specific policy measures employed by the sector plan was not only an effective strategy for achieving timely ODS phase-out, it provided the underpinning for more regular monitoring by local authorities beyond the project
- The PU foam sector plan, including TA support to the EEBs to build relationships with the regulated community, as well as sector policy, also benefitted the beneficiaries that successfully converted to alternatives by creating a level playing field for them.
- Establishment of an effective policy system is critical to sustainable ODS phase-out but requires understanding of who is the regulated community for appropriate monitoring, enforcement and outreach over time.
- Involvement of local EEBs in the management and monitoring of ODS phase-out is key to long-term sustainability of sector and subsector conversions. Local EEBs played a key role in ODS management, particularly in the enforcement after awareness, technical and policy capacity building provided by the project.
- Baseline consumption verification conducted by independent accounting firms prior to the signature of SGAs and performance and financial verification during the implementation is important to ensure the smooth execution of subprojects as well as verifiable achievement of phase-out targets.
- Public awareness on ODS phase-out and participation of individuals and industry in carrying out activities to protect the ozone layer needs to be continuously promoted beyond the confines of a project, especially where there are differences in timing and ODS targeted for phase-out.
- Various technical assistance activities carried out under the sector plan, particularly foam enterprise training and technical research and studies, were a notable complement to ODS phase-out subprojects. They facilitated access to and promoted adoption of alternative technologies at a large number of foam enterprises.

D. The PU Foam Sector Plan under China's Stage I HPMP

28. The PU foam sector plan under China's Stage I HPMP was prepared by FECO in affiliation with MEE and with the assistance of the World Bank. It was submitted to the 62nd ExCom meeting for approval in August 2010. A total of US$73,000,000 was approved by the 64th ExCom meeting in 2011 to support HCFC-141b phase-out activities in the PU foam sector in China, in order to achieve the national baseline consumption freeze target by 2013 and the 10% reduction target by 2015.

i. Approval Decision and China-Executive Committee Agreement

29. At its 64th meeting, the Executive Committee adopted Decision 64/49 approving China's Stage I HPMP. A draft agreement between the Government of China and the Executive Committee for the reduction in consumption of HCFCs (hereinafter referred to as "the Agreement") was also approved. Subsequently, the agreement was revised twice at the 66th and 67th ExCom meetings through Decisions 66/15(h) and 67/20 to primarily update Appendix 5-A on "monitoring institutions and roles," and to include China's Article 7 reported HCFCs baseline. Appendix 2-A of the Agreement defines the Montreal Protocol HCFCs reduction schedule, the maximum allowable HCFCs consumption and the maximum allowable HCFCs consumption in the PU foam sector in China, respectively. China committed to phase-out 942.6 ODP tons of HCFC-141b by 2015 as indicated in the following table. Decision text related to the Stage I PU foam sector plan is found in Annex 1.

		2011	2012	2013	2014	2015	Total
1.1	**Montreal Protocol reduction schedule of HCFCs (ODP tonnes)**	n/a	n/a	19,269.0	19,269.0	17,342.1	n/a
1.2	**Maximum allowable total consumption of HCFCs (ODP tonnes)**	n/a	n/a	18,865.4	18,865.4	16,978.9	n/a
1.3.3	**Maximum allowable consumption in the PU foam sector (ODP tonnes)**	n/a	n/a	5,392.2	5,392.2	4,449.6	n/a

ii. Monitoring and verification requirements and other related provisions per the Agreement

30. The Agreement sets forth monitoring and verification requirements in order to ensure sustained achievement of agreed HPMP consumption reduction commitments as captured above. Compliance with the Agreement is assured through two mechanisms. First, in accordance with the Agreement, China must accept independent verification of completion of the conversion of manufacturing capacity as well as achievement of annual HCFCs consumption limits as set out in row 1.2 of Appendix 2-A of the Agreement. Independent verification is one of the preconditions for the release of tranches for the sector plan after China meets the target set out in row 1.2 of Appendix 2-A of a given year. Specifically, in line with Article 5 (b) (i) of the Agreement, a verification report of a random sample of at least 5% of the manufacturing lines which have completed conversion in the year to be verified must be submitted to the ExCom, on the understanding that the total aggregated HCFCs consumption of the random sample of the manufacturing lines represents at least 10% of the sector consumption phased out in that year.

31. Second, the Agreement requires that China conducts accurate monitoring of its activities under the Agreement, while establishing and maintaining a system to monitor HCFCs consumption in different sectors. The institutions identified in Appendix 5-A, namely FECO and MEE, should monitor and report on the implementation of the activities in previous annual implementation plans as set out in appendix. Activities monitored are also subject to independent verification and comprise, per Appendix 5-A, the following:

- FECO/MEP is responsible for the overall co-ordination of activities to be undertaken in the HPMP with assistance of the Lead IA and acts as the National Ozone Unit, responsible for carrying out national policies and legislation on ODS control.
- National consumption will be monitored and determined based on production data and official import and export data for substances recorded by relevant government departments in line with the Agreement.

- In addition to the national system of licensing and quotas for HCFCs imports, production, and exports, a quota system covering enterprises using large quantities of HCFCs in the different consumption sectors, will be established to control consumption growth, achieve the consumption reduction in these enterprises and collect consumption data.
- For sectors with large amounts of small and medium enterprises (SMEs), like in the PU foam sector, the consumption is managed by limiting quantities of HCFC-141b to be sold to the domestic market.
- FECO/MEP will closely supervise enterprises carrying out Stage I HPMP conversion activities to ensure the phase-out target in these enterprises has been achieved.
- FECO/MEP will co-ordinate with the Lead IA and Cooperating IAs to facilitate the verification of the targets set in the Agreement.

32. In case for any reason China did not meet the reduction targets or otherwise comply with the Agreement despite monitoring measures, it would not be entitled to future funding per the approval schedule. In addition, Appendix 7-A imposes a penalty provision whereby funding provided might be reduced by US$160 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target had not been met.

iii. HPMP and HCFCs foam sector policy measures

33. In line with Appendix 5-A of the Agreement and in addition to the national system of licensing and quotas for HCFCs imports, production and exports, a quota system covering enterprises using large quantities of HCFCs in the different consumption sectors, should be established to control the consumption growth, achieve the consumption reduction in those enterprises and collect consumption data.

34. In response to above requirement to effectively control the consumption growth of HCFCs, on August 7, 2013, MEE issued the Circular on the Management of HCFCs production, sales and consumption under the 2010 ODS Regulations. The circular presented a division of labor according to consumption levels whereby HCFCs consumers with more than 100 MT of annual HCFCs consumption for controlled uses should apply for and hold quota permits with MEE, while those with less than 100 MT of annual HCFCs consumption for controlled uses should register with provincial environmental protection agencies. MEE is responsible for the formulation of the overall quota allocation scheme for each year. HCFCs distributors, including system houses in the PU foam sector, with sales volume of HCFCs over 1000 MT must register with MEE whereas all HCFCs distributors under this threshold must register with local competent environmental protection agencies.

35. In terms of process, the Regulations and the Circular require that HCFC-consuming enterprises over 100 MT apply to MEE for a quota for the next year before October 31 of each year, and submit supporting documentation proving that the enterprise is eligible for consuming HCFCs, has obtained places, facilities, equipment and professional technicians that can utilize HCFCs for manufacturing, and has approved environmental protection facilities and a sound internal management system.

36. The MEE then evaluates the annual allowable production limits of HCFCs and the market's need for HCFCs among different sectors and reviews the consumption quotas from the applicants for the next year. MEE shall complete the review before December 20. Only when the applicants meet the requirements, MEE issues the consumption quota license for the next year. MEE also copies the relevant provincial EEBs where the enterprises are located on this issuance. In case of the rejection of the application, MEE notifies the applicant in writing with the reasons.

HCFCs registration practice in Shanghai

Shanghai has established the HCFCs registration system since 2013, in accordance with 2010 ODS Regulations and *the Circular on the Management of HCFCs production, sales and consumption* issued by MEE. In 2014, Shanghai issued *the Circular on the Registration Management of HCFCs production, consumption, sales and servicing at its municipality level*. Each year, Shanghai published the notification on the registration management and disclosed the results of registration to public.

Shanghai so far has developed online registration system, and the operation of the system is proven effective and efficient. The registration information includes the basic information of enterprises, sectors/applications, species of HCFCs, the amount of HCFCs consumption/sales, etc.

Summary of HCFC registration information in Shanghai from 2013-2018

Year		2013	2014	2015	2016	2017	2018
Sectors		Number of enterprises					
Feedstock use		6	7	6	5	3	2
Controlled uses	Solvent	15	15	13	13	10	11
	Foam	15	15	14	14	15	16
	Refrigeration	20	19	19	19	16	15
Sales		41	46	47	48	44	33
Total		95	100	97	97	88	77

37. Aside the policy measures required in the Agreement, the PU foam sector plan under the Stage I HPMP also proposed targeted policy and regulatory measures to promote HCFCs phase-out at the subsector level to ensure sustainable phase-out and a level playing field. The PU foam sector plan prioritized the refrigerated container and reefer, refrigerator and freezer, and electrical water-heater subsectors. In October 2018, MEE issued *the Ban on the Use of HCFC-141b as Blowing Agent in Manufacturing of Products in Refrigerated Container and Reefer Sub-sector, Refrigerator and Freezer Sub-sector and Electrical Water-heater Subsector*. Since January 1st, 2019, no enterprise is permitted to use HCFC-141b as blowing agent for these types of products. Any violation will result in financial penalties of up to 500,000 yuan, possibly along with the penalty of dismantling and destruction of the facilities using ODS.

Table 1. National Level ODS Supporting Policies Currently Relevant to the PU Foam Sector

Classification	Policy	Time of Issuance	Effective Date	Issuer
Production control	Management notice on construction projects of ODS production and use (No.[2018] 5)	2018.1.24	2018.1.24	MEP
	Management notice on the strengthening of HCFCs production, sale and use (No. [2013] 179)	2013.8.7	2013.8.7	MEP
Import and export control	Management Measures of Import and Export on ODS (revised)	2014.1.21	2014.3.1	MEP, MOC, Custom
	China import and export list of controlled ODS (six batches)	2000/2001/2004/ 2006/2009/2012	2000/2001/2004/ 2006/2009/2012	MEP, MOC, Custom

Consumption control	The ban on the use of CFCs as blowing agents in foam sector (No.2007 [45])	2007	2008.1.1	MEP
	The ban on the production, sale, import and export of electrical household appliances using CFCs as refrigerants or blowing agents (No.2007 [200])	2007	2007.7.1	MEP, NDRC, MOC, GAC, etc.
	Announcement on the ban on the production of refrigerator freezer products, refrigerated container products and electric water heater products with HCFC-141b as blowing agent (No.2018 [49])	2018.10.18	2019.1.1	MEE
	Management notice on the strengthening of HCFCs production, sale and use (No. [2013] 179)	2013.8.7	2013.8.7	MEP
Sales management	Management notice on the strengthening of HCFCs production, sale and use (No. [2013] 179)	2013.8.7	2013.8.7	MEP

III. Established HCFCs Consumption Monitoring System for PU Foam

38. Now entering into the third comprehensive ODS phase-out sector plan for the foam sector, FECO is continuing to use and in some cases fine tune its system of monitoring and verification of HCFCs consumption and HCFCs phase-out through the overall project, and subproject cycles. Foam beneficiaries, once applying to participate in the project through completion and "subproject acceptance," are visited in total a minimum of 7 times by FECO, the World Bank, the ISA, the accounting/verification firm, technical consultants and local environmental and public security officials. Beneficiaries in turn must report their HCFCs consumption, among other data, on an annual basis to FECO up to subproject acceptance while registering with local EEBs during HCFC consumption. The established system is detailed below along the subproject cycle through hand-over to the provinces and other local authorities that are responsible for monitoring all ODS producers and users in parallel to the cohort of enterprises that take part in the foam sector plan. Along with the technical assistance (TA) for creating the enabling environment and supporting sustainable conversions, the overall sector plan is the underpinning to, as well as catalyst for longer term, sustained HCFCs phase-out.

A. Understanding the Scope of HCFCs Use in the PU Foam Sector

39. The basis for not only determining priority subproject conversions for support under the HPMP, but also for monitoring HCFCs use in the foam sector, is an understanding of the market and enterprises that exist across subsectors. A bottom-up sector survey with on-site corroboration of a certain sample size of PU foam manufacturers, system houses companies was the primary resource that reflected HCFC-141b consumption levels and distribution of different applications.

40. However, FECO, along with industrial associations and independent consultants devised an additional methodology to quickly validate the overall findings of the survey of the scale of foam manufacturers, namely a mass balance of raw materials. By obtaining MDI consumption levels from market research companies and with the known ratio between MDI and polyols, the consumption of PU foam polyol was calculated. Subsequently, HCFC-141b consumption in each subsector was calculated using a common product ratio between polyols and HCFC-141b blowing agent. The figures of non-HCFC-141b blowing agents used in some subsectors were determined by the information obtained from chemical suppliers, the main consumers in the concerned subsectors, and cross-checked by the associations and sector experts, and then subsequently deducted. The results of the mass balance calculation were cross-checked with China's annual HCFCs production as well as discussed with sector experts and industrial

representatives from foam manufacturers and system house companies. Use of this tool provided FECO and stakeholders (associations, local EEBs etc.) better confidence in the overall scale and scope of ODS use in the foam sector to start with.

B. Stage I HCFCs Consumption Phase-out Project Arrangements

i. Environmental and social safeguard provisions

41. As the MLF implementing agency for the Stage I HPMP PU foam sector plan, the World Bank requires, in line with its safeguard policies, that an environmental and social safeguard framework be prepared and publicly disclosed by FECO before the overall HCFCs phase-out project Grant Agreement is signed between the Government of China and the Bank. The safeguards framework looks at China's environmental regulations and labor laws relevant to the project and evaluates potential environmental and social risks that may occur during project implementation. In the case of the Stage I HPMP, the framework lays out the required actions and procedures for beneficiaries to follow surrounding their PU foam conversions, taking into account all identified risks, to avoid or mitigate any negative impacts.

42. Consequently, all potential beneficiaries must prepare an environmental management plan (EMP) under the framework and inform the local EEB of plans to convert from HCFC-141b prior to starting conversion. An enterprise may be required to conduct anew an environmental impact assessment prior to conversion and receive an acceptance visit from local EEB or independent experts following local EEB instructions. The safeguard framework allows the local authorities to be aware of the conversion activities at the early stage of each subproject and include them in the ODS monitoring plan. Moreover, in the preparation and FECO acceptance of EMPs, related environmental impacts are identified on site. This serves as an additional check on the use of all hazardous and controlled substances that enterprises may be using in their operations.

ii. Project implementation manual

43. The annual programs that are prepared by FECO and submitted to the ExCom for approval each year provide a summary of the phase-out impacts achieved through policy actions, investments, and technical assistance (TA) activities and identify the next planned actions. However, it is the project implementation manual (PIM), developed before launching HPMP implementation that details how implementation will proceed from subproject appraisal to standardized procedures for conversions, to monitoring and reporting steps and frequency. The PIM serves as a one-stop guide for both FECO and beneficiaries, capturing fiduciary and safeguard responsibilities, key ExCom decisions and policies, operational procedures, and various reporting templates.

44. According to the PIM, FECO is responsible for implementation and supervision of the sector plan, as well as subprojects along with technical support by the ISA. The World Bank and an independent verification agency are responsible for review and monitoring phase-out activities, including technical, social and environmental aspects. The local EEBs are responsible for supervision and inspection of foam enterprises during and after subprojects. Consumption verification activities in particular may be assigned to different implementing entities due to the varied nature of the tasks. Monitoring and verification under the HPMP and as detailed in the PIM are illustrated in the following table.

Table II. Monitoring and Verification under HCFC-141b Phase-out Activities under the HPMP

Project Activities	Monitoring and Verification Actions	Results of Monitoring and Verification Actions	Verification Implementer(s)
Control HCFC-141b consumption in the PU foam sector	• Verify the annual production, import and export of HCFC-141b	• Compliance with annual control target of HCFC-141b is confirmed; • HCFC-141b consumption in foam sector is determined.	World Bank, FECO
Fulfillment of annual program	• Annual financial audit of the sector plan; • Inspection and verification of completed subprojects.	• Progress reports (implementation status of TA contract and phase-out sub-project and policy measures, etc.) were submitted to ExCom; • AP Approved by ExCom; • Performance verification report and financial audit report concluded.	World Bank, FECO
Subproject financial and technical appraisal	• On-site baseline consumption verification; • Supporting documents on HCFC consumption, such as invoice, procurement contracts, production volume; • Visual check of baseline equipment, and storage of pre-blend polyols and blowing agent; • Evidence of starting business with HCFCs before the cut-off date (2007.9.21) reviewed.	• Baseline consumption of HCFC-141b verified; • Eligibility of the enterprise confirmed.	ISA, selected accounting firm, independent experts, FECO
Subproject proposal evaluation	• Evaluation of the implementation plans prepared by enterprises in terms of cost effectiveness, feasibility of the selected alternative technology procurement plan, budget, and implementation schedule.	• Sub-grant funding level determined; • Appropriate alternative technology identified; • Feasibility of subproject proposal evaluated; • EMP, ECP and/or RAP* prepared if needed.	The evaluation panel, including ISA, independent sector experts, safety experts and FECO
Subproject implementation through completion	• Random site visits to beneficiary enterprises; • Onsite inspection of production lines; • Interviews with beneficiaries.	• Subproject implementation progress examined; • Technical or financial issues discussed; • Compliance with Executive Committee checked; • Environmental and social due diligence issues related to World Bank management reviewed.	World Bank task team
Subproject conversion	• On-site technical verifications against milestones set in SGA; • On-site check for procured/retrofitted equipment; • On-site check for safety measures; • Review material purchase; documents and disbursement status; • Interview on technical aspects.	• Consistency of supply contract and installed equipment checked; • Safety modifications inspected; • Trial run with new alternatives checked; • Disbursement status and supporting documents examined.	ISA and independent safety experts

Subproject Beneficiary financial performance verification	• Performance and financial verifications during the conversion; • On-site financial verification of disbursement related to the subproject; • Verification of the halt in use of HCFC-141b; • Verification of blowing agent/pre-blend polyols purchased; • Confirm status of the baseline equipment (dismantled or not);	• Disbursement of ICC and/or IOC has reached 90% of the funding level confirmed; • Operation status after conversion confirmed; • The cut-off date of no more HCFC-141b consumption checked.	Selected accounting firm, independent experts
Subproject acceptance	• Subproject acceptance; • Review subproject completion report; • Onsite inspection of production lines; • Interview with beneficiaries.	• Smooth production after conversion demonstrated; • Environmental and/or safety approval following local regulations checked; • Environmental and social due diligence examined; • Enterprise commitment to no longer use ODS re-emphasized. • Disposal of baseline equipment (where applicable) verified.	FECO, ISA, technical experts, local officials
TA activities	• Commissioning, execution and acceptance of TA activities.	• TA implementation progress reviewed; • Outcomes that can facilitate sustainable HCFC-141b phase-out in the sector generated and evaluated.	FECO, ISA, and technical experts (where applicable)
Post Subproject Phase-out inspections	• Regular monitoring and enforcement post subproject acceptance (or for EIA renewal); • Onsite inspection od compliance with national/local ODS management regulations.	• Quota for annual ODS consumption received, or enterprise is registered in the region; • Compliance with national/local ODS management regulations; • Blowing agents used by enterprises sampled, tested and inspected; • Legal enforcement carried out if deviations from national ODS regulations.	MEE and local EEBs

EMP=environment management plan; ECP= environmental code of practice; and RAP = resettlement action plan

45. In addition to the monitoring and verification that takes place at the above project junctures, there are secondary opportunities to support monitoring and verification of ODS phase-out. For example, in procurement "prior" reviews by the World Bank per its requirements, there may be areas in the proposed terms of reference for a monitoring activity that can be strengthened. Or, a procurement review by FECO of beneficiary enterprises may lead to a recommendation in specifications that will enhance sustainability of the conversion.

C. Monitoring system through the subproject cycle

i. Subproject baseline verification

46. According to the requirement from the PIM, each enterprise that applies for MLF support through a subproject proposal under the Stage I HPMP requires on-site verification organized by FECO. A two-

prong verification approach as described for the CFCs foam sector plan in Chapter II is still employed with both independent financial and technical experts who are selected by FECO through an open and competitive selection process. According to the consultancy TOR, the financial expert goes through the HCFC-141b purchase invoices to determine the baseline HCFC-141b consumption in the enterprise. The expert also checks the enterprise's bank transfer records, warehouse inventory, and other supporting documentation to verify its baseline consumption. Concurrently, a technical expert is responsible for analyzing and determining the HCFC-141b consumption for the last three years based on production data, while addressing any technical issues that may arise during the verification. The technical expert also helps evaluate whether HCFCs consumption is congruent with the enterprise's production capacity. After the verification team collects data on the enterprise's eligibility, baseline consumption and equipment, and other information pertinent to ExCom decision and the PIM, as well as photographs the manufacturing site and verification, all verification documents are copied and stamped by the enterprise.

47. The consumption verification results are reflected in financial and technical reports prepared by the team members respectively and submitted to FECO. FECO will in turn review and confirm the eligible funding in accordance with the PIM and ExCom decision.

ii. Commitment of subproject beneficiaries to permanently stop the use of HCFCs

48. After the baseline consumption is determined, the beneficiary enterprise drafts and submits an implementation plan illustrating its selection of HCFC-141b alternative technologies, conversion schedule, procurement plan, budget plus counterpart funding, and others. The implementation plan is evaluated and approved by the evaluation panel organized by FECO, with the participation of technical experts, safety experts, ISA and FECO. Particularly important to the sustainability of the conversion is a signed commitment letter by the enterprise to completely phase out HCFC-141b in addition to the SGA that FECO signs with each beneficiary enterprise. In both the SGA and commitment letter, there are provisions that maintain if the beneficiary enterprise fails to stop the use of HCFC-141b and/or continues to use other ODS already phased out, it would be a breach of contract. In such a case, FECO has the right to take actions against the beneficiary such as requiring it to immediately correct its breach and pay a breach penalty of up to 10% of the SGA's value, suspending further disbursement to the enterprise, or unilaterally terminating the SGA and requiring an immediate return of all subproject proceeds. There have been no breaches to date under the Stage I HPMP foam sector plan.

iii. Monitoring during subproject implementation to physical completion

49. Once the subgrant agreement is signed with the beneficiary enterprise, it will start conversion activities in line with the approved implementation plan, and apply for onsite verifications by the ISA, safety experts and selected accounting firm for certain technical and financial milestones that are specified in the SGA, for example, the completion of installation and trial runs of converted production lines, the physical completion, and the fulfillment of IOC. In addition, beneficiaries are required to submit on an annual basis from the time of SGA signing through subproject acceptance, HCFC-141b and alternative consumption amounts to FECO and ISA by email. This way FECO can monitor the gradual phase-out of the beneficiaries and report in semi-progress reports to the World Bank and annual programs to the ExCom.

50. After the beneficiary enterprise has completed the installation of new equipment for alternative technologies and completed the trial runs with the alternatives, the implementation support agency will conduct another on-site verification to check that the installed equipment is in line with the subproject's implementation plan, and the specifications in the procurement contract between the beneficiary and equipment supplier. If a discrepancy is detected during the verification, the ISA would require the beneficiary to submit to FECO explanations which may be supplemented by the ISA's justification from the technical perspective. The ISA also interviews the enterprise and goes through the documentation such

as production logs, raw material procurement invoices and other supporting documents to make sure that the beneficiary is operating well with the alternative technology. After the verification, the ISA shall include the findings in a verification report and submit to FECO. The ISA verification report is one of the milestones to trigger further disbursement to the beneficiary in accordance with the SGA.

51. After the beneficiary passed the ISA verification and disbursed over 90% of the funding, an independent consulting firm will conduct an onsite financial performance verification. This verification focuses more on the appropriate use of MLF grants and timely suspension of HCFC-141b use. The verification scope includes collecting HCFC-141b consumption and procurement information after SGA signature, the end point of purchasing HCFC-141b, and the data on exhausting all HCFC-141b stock at the enterprise. The firm also verifies the payment made to the equipment and raw material suppliers, disbursement records, purchase invoices, and disposal of baseline equipment (as an asset). The enterprise's financial records, including sales and production volume of the final products, as well as the sales contracts and the products based on alternatives are verified along with the documentation cited above. The financial verification confirms that the MLF grant allocated to the beneficiary has been used in accordance with the SGA and that the enterprise has fulfilled all its SGA obligations.

52. During the time of physical completion and awaiting the onsite verification, an enterprise that has converted to cyclo-pentane must notify local authorities for relevant approvals related to safety and environmental management.

iv. Subproject acceptance

53. After the beneficiary completes all the conversion activities, successfully adopts the alternative technology, passed the ISA onsite verification and financial performance verification, and gained the required approval from the local EEB and other authorities as required, the beneficiary may apply for subproject acceptance. In the application to FECO, the beneficiary also needs to provide its subproject completion report that specifies the phase-out impact, conversion milestones, annual HCFC-141b consumption during the implementation period, and consumption of alternatives, among others. FECO then organizes a commissioning team which is composed of local EEB officers, members from FECO and the ISA, and technical experts invited FECO who also serve to lead the commissioning team and who also will usually conduct the on-site acceptance. The commissioning team interviews the enterprise on its experiences, checks production with alternatives, and, goes through the verification reports, approvals from local authorities and other documents to make sure the beneficiary has completed all conversion activities without breaching the SGA. After internal discussion, the commissioning team announces that the beneficiary has passed the subproject acceptance, and then FECO will issue the certificate accordingly.

v. Post conversion

54. Once the beneficiary enterprise receives acceptance through FECO, the local EEB assumes responsibility of long-term monitoring of the enterprise's continued compliance with agreement provisions. FECO is to provide the list of enterprises that have completed conversions to relevant provincial EEBs, and provincial EEBs are to deliver the information to the local levels. Enterprises on the list can neither apply for HCFC-141b quota nor register HCFC-141b consumption at the provincial level. The EEBs are to include these enterprises in their monitoring and enforcement plans.

55. Aside regular EEB monitoring, all beneficiary enterprises are obliged to receive inspections from the World Bank as the IA. The World Bank inspections are done time to time at converted enterprises during the life of the overall project.

D. Ensuring Sustainable Phase-out

i. Institutionalized measures

56. The basis for longer-term, regular monitoring of foam enterprises in China using MP controlled substances is the 2013 circular under the ODS management regulations that establishes consumption quotas and registries. As explained in Chapter II, PU foam enterprises that consume over 100 MT of HCFC-141b annually are controlled at the national level by MEE and shall therefore apply in writing or through MEE's online system with supporting documents for an annual consumption quota before October 31 of the previous year. The MEE shall, in accordance with the annual production quotas of HCFCs and market need for HCFCs among different sectors, review the consumption quotas from the applicants before December 20th. If applying enterprise meets the requirements, MEE will issue the consumption quota licenses to enterprises meeting eligibility requirements while copying the relevant provincial EEBs. Similarly, if MEE rejects the application it will notify the applicant in writing why and request the applicant to register at provincial EEB.

57. Additional links between national and provincial level regulators are the notices and instructions sent by MEE for regional execution. A major instruction sent by MEE is the registration requirement of all HCFCs consumers across all sectors. PU foam enterprises with annual HCFC-141b consumption less than 100 MT must register consumption with supporting documents each year with the provincial EEBs which in turn conduct their review. HCFC consuming enterprises must keep relevant original data for more than three years for inspections (i.e. production logs, sales reports and invoices, financial statements, production operation records, accounts of main raw materials and products, and warehouse accounts).

ii. Monitoring and enforcement actions

58. Following the roles and responsibilities described in Chapter II, the Atmospheric Environment Department of MEE is mandated to lead in ODS management and monitoring. It consequently develops general work plans, evaluates and executes policy actions on HCFCs, organizes training for national and local focal points and coordinates with other departments and agencies. The Department will also instruct the Enforcement Bureau to organize on-site inspections at ODS related enterprises and impose penalties in case of any violation detected. MEE's inspections and enforcement are usually for the most urgent or serious issues and high-risk areas.

59. Monitoring at the local level occurs through several channels. Local EEBs may be instructed through special national or provincial level notices to conduct special inspections of foam enterprises. As the institutional organization and mandates basically mirrors the MEE structure and functions at the national level, local EEBs will assemble similar teams for developing work plans, or to monitor or conduct inspections and enforcement actions. For instance, the atmospheric environment branch or other branch who owns the ODS management mandates usually takes the lead role, develops work plans and coordinates with other agencies. EEB's monitoring branches are involved to collect samples and test the components in the samples. The enforcement team is in charge of the on-site inspections, and punishes the enterprise that violates the regulations in accordance with the penalties specified in the ODS Management Regulation.

60. For HCFCs production and use, monitoring actions will therefore fall under (a) regular monitoring and inspections related to general pollution, and (b) special actions specifically targeting HCFCs and MP controlled substances.

61. Regular monitoring and inspections on general pollution issues by local (city/county/district level) EEBs starts with obtaining lists of enterprises primarily from EIA reports registered in the region. As the EIA identifies what type of environmental management rules that need to be followed, enterprises

established as HCFCs users will be included per the ODS management regulations. Local EEB inspectors focus on whether the production process is in line with the approved process, whether the raw materials used comply with the EIA and environmental regulations, and check on essential facilities that control air emissions, water effluents and waste management. The inspectors go through the production data and other documentation, as well as conduct visual inspection of the production line and warehouse. ODS use would be flagged even if the enterprise was not classified as an ODS user per the EIA. Samples are collected and tested by qualified institutions when inspectors are suspicious of a contravention. In case of being an HCFCs user, the enterprise would be punished with a fine of up to 500,000 yuan if it had not applied for a quota from MEE and did not register with the provincial EEB, or with a fine of up to 200,000 yuan if its HCFCs consumption exceeds the type, quantity, applications or term of validity in the issued quota or information registered on provincial level.

62. Special actions targeting HCFCs are also designed and implemented by provincial EEBs since the establishment of HCFC registration systems. A special action will first come up in a work plan targeting specific enterprises or sectors. For instance, a PU foam enterprise list will be compiled from registered HCFC-141b consuming foam enterprises and system houses, the list of MLF beneficiary enterprises provided by FECO, as well as the information collected from previous surveys and provided by industrial associations. Then monitoring actions will be conducted by provincial inspectors and local inspectors together. The inspectors will primarily look into the enterprise's compliance with issued quotas or registered information, and visually inspect the production data, purchase invoices and warehouse accounts. The inspectors may also take samples from production lines, final products, and raw material from the warehouse. The sample will be sealed with signatures and sent to qualified institutions to test the foam blowing agent.

Implementation of MRV in Zhejiang Province

Organizational structure and legal basis

A provincial ODS management leadership team has been established in the EEB in Zhejiang Province and is made up of the air and environmental management division, policy and regulation division, enforcement team, the public awareness and education division, and the monitoring and environmental centers. There are about 100 people involved in ODS management in the Province. The air and environmental management division is the lead for ODS management, which mirrors the same arrangement at the Ministry level.

The basis for all actions on ODS management, specifically HCFCs, is ODS management regulations and policies at national level, including the MEE regulation on HCFCs quota management. Provincial EEBs in turn interpret and execute them based on their local circumstances. The Zhejiang Provincial EEB accordingly issued an ODS regulation in 2017 that strengthens HCFCs production and consumption management. A series of notices were issued to each city and county level EEB under the new rules.

Registry of HCFCs producers and consumers

According to the regulation issued by Zhejiang EEB, all HCFCs producers and users across all sectors should be subject to the registration. The registry includes consumption levels as determined by invoices, sales, the application and subsector. All consumers must register regardless of the amount of HCFCs consumption. Sellers and distributors with sales of above 1 MT must also register.

An online registry has been created and put into use whereby all enterprises must log-in to register production, consumption, and sales (with supporting documentation) by the end of January of a given year. By 15 February the county level EEBs must complete the verification of uploaded documents and by the end of February, the city level EEBs will have registered enterprises. Information is subsequently publicly disclosed. If an enterprise has not registered in two years and is still producing or using HCFCs, it will be fined.

Under the first phase of the EEB capacity building activity in 2007, lists of HCFCs enterprises were already collected, and updated and revised on an ongoing basis. Local EEBs were informed that they must inform new enterprises of this registration system. So far, there are 246 companies registered in Zhejiang Province registry system. FECO has regular communication with local EEBs on the status of conversion sub-projects and it informs EEBs when such subprojects are completed, with the purpose to extending the list of enterprises to be monitored.

Regular ODS monitoring and enforcement system in Zhejiang

In Zhejiang, there are around 90 districts and county units and some regions have more enterprises than others so the average number of monitoring and enforcement officers is about five in less concentrated areas and 10-20 persons for more concentrated districts. These officials cover all environmental issues, not just HCFCs producing/using companies. There are inspectors at multiple levels; higher levels (MEE, Provincial EEB) can also do spot checks but this usually for the most urgent or serious issues and high-risk areas. And the regular monitoring and enforcement actions are usually taken place at city or county levels. The method of inspection includes checking production logs as well as financial records to cross check. Business licenses and other documents to prove the enterprise's legality will also be checked. Sample of products/raw materials are collected for testing when needed.

In the 2018, all 246 enterprises in the registry and completed conversion subprojects had been inspected. Zhejiang EEB incorporates monitoring and supervision in the regular monitoring. The local government will provide budget (against a work plan) to regular ODS monitoring and supervision, because it is now a provincial regulation. The regulation states inspection shall be done at least once a year.

E. Stage I PU Foam Sector Plan TA

i. Subsector HCFCs phase-out impact assessment

63. Technical assistance in the PU foam sector plan, enabled delivery of China's Stage I HCFC-141b phase-out strategy starting first with impact assessment on the industry first targeted. China Household Electrical Appliance Association (CHEAA) was selected to conduct an impact study on how the ban would affect the three targeted subsectors (reefer containers, refrigerators/freezers, and small appliances). Based on surveys, on-site interviews, information on HCFC-141b consumption, technical capacity for using alternatives, and cost impacts, the assessment concluded that banning HCFC-141b as blowing agent in the three subsectors was technically and economically feasible and would allow China to achieve its required HCFCs reductions. CHEAA proposed the draft ban to FECO.

ii. Putting the subsector ban into place

64. Once the assessment and proposed ban were finalized, FECO provided them to MEE for approval. MEE paid high attention to the report and industry data, organized work meetings with sector experts and enterprise representatives, and forwarded the draft ban to all the relevant ministries, provincial EEBs, and industrial associations to solicit feedback. Hence the ban gained ownership by regulators at all levels and by the time it came into force in early 2019, local authorities could be ready to begin monitoring and enforcement of all enterprises in the subsectors, including those that did not receive MLF support.

iii. Building capacity for provincial and local monitoring

65. Despite the progress and eventuality of national-level policies on quotas and registration as well as to ban HCFC-141b in the subsectors, it came to MEE and FECO's attention that some technical and capacity challenges remained on the ground, for example on the speed of creating registries per the 2013 rules, how

to differentiate alternatives from HCFCs, how to collect samples, and how and where blowing agent could be tested.

66. Therefore, in order to ensure sustainable phase-out of HCFC-141b and support building monitoring capacities at the local level, technical assistance and monitoring support were provided in 2018 to the Zhejiang, Guangdong, Qingdao, Shanghai, Liaoning and Jiangsu Provinces, where PU foam enterprises are highly concentrated. According to the TOR and work plan provided to contracted parties (at times research or monitoring institutions or other bodies within local ODS coordination groups), of the development of registries or lists of PU foam enterprises and system house companies in respective regions were accelerated or initiated as was necessary and supplemented. During the monitoring, relevant inspection teams have been required to conduct on-site visits to up to 30 PU foam enterprises and system houses per quarter depending on the regional enterprise population and budget. Samples of foam products and/or polyols must be collected during the visits. FECO provided 11 pieces of instant blowing agent detecting equipment to the teams to screen for the types of blowing agents. If ODS that was already phased-out is detected during the screening, the inspectors send the samples to certified institutions for lab testing and for a certified report. If the certified report indicates illegal ODS use by the enterprise, the evidence is provided to provincial EEBs and reported to FECO for legal and punitive actions.

67. The actions taken per the contracted TA will become absorbed and institutionalized by the provinces that have received the support for long-term monitoring, verification and enforcement. Several of the provincial EEBs have confirmed that a budget will be provided once the TA support is exhausted.

iv. Other TA activities to promote sustainable conversion

68. To promote the use of HCFC-141b alternatives in the larger PU foam industry, FECO has developed a number of TA, such as alternative studies in the panel and spray foam subsectors, and research on catalyst and stabilizers that are compatible with alternatives that may provide more solutions to different subsectors and different size companies. A safety standard on using HC technology in PU foam enterprises was developed and submitted to the relevant committee for review. The safety standard will guide enterprise management on using HC or HC pre-blended polyols as blowing agent in the sector and avert any inclination to resume use of non-flammable ODS.

69. Because SMEs in the PU foam sector lack information on alternatives and management capacity, they face more difficulties and challenges in selecting and using appropriate HCFCs-alternative technologies. A qualified institution was selected during Stage I to provide SMEs with technical training, consulting and onsite guidance. During the course of training and technical consultations, feedback and suggestions from enterprises and trainees was collected which will help FECO to plan and design phase-out activities in subsequent work plans. FECO also held workshops on ODS management policy, HPMP implementation, and development of alternative technologies each year during Stage I.

F. Special ODS Law Enforcement Action

70. As of August 2018, on the basis of previous supervision and law enforcement, MEE has mobilized environmental authorities at provincial and municipal levels across the country to launch the latest ODS law enforcement action. MEE has emphasized its "zero tolerance" position towards illegal ODS related activities on various occasions. This enforcement action targeted, alleged sources of ODS by extensively collecting information and tracking down illegal production. In the process, it found and demolished two illegal CFC-11 production factories in Liaoning Province and Henan Province. On the spot, 177.6 tonnes of raw materials and 29.9 tonnes of illegally produced CFC-11 respectively were seized. The raw materials and CFCs were properly sealed, awaiting an accredited entity for disposal. Suspects were transferred to China's judicial organ for criminal prosecution. The action, also simultaneously targeted illegal ODS use

and as a result 1,172 related companies were investigated in China. Out of these investigations some CFC-11 traces in some batches of materials from 10 system houses, were detected. Local environmental authorities filed charges and exercised punishment to those involved in illegal use according to laws.

71. The enforcement action has demonstrated that with the revamping of control measures such as the 2013 rules requiring quota and registration for producers and users of HCFCs plus the 2015 amendments to the framework laws on environmental protection and air pollution control, there remain some incidences of illegal activity. Lessons drawn from and gaps identified during Stage I implementation and transfer of responsibility to local EEBs can more specifically assist FECO to maximize its influence through the MLF funded foam sector plans on the monitoring, verification and enforcement system, within its mandate. These are compiled in the following chapter.

IV. Lessons Learnt

A. Proven / best practices in monitoring and verification of consumption and phase-out

i. Third-party consumption verification

72. As indicated above, independent financial and technical consultants have been primarily responsible for the verifications during HPMP Stage I implementation. Introducing third-party verification, which is ensured by an open-competitive selection process, guarantees the independence of verification results. Moreover, because the third-party consultants were selected among other competitors, they were regarded as the most qualified to conduct the verification. Actual result from Stage I, namely the fact that all subprojects and grants delivered sustained HCFCs phase-out results, all in line with baseline information as well as with ExCom and PIM guidelines, confirms that the verifications were conducted with efficiency and integrity.

ii. Role of the mass-balance approach at enterprise and national levels

73. The mass-balance approach was adopted on two levels during Stage I HPMP implementation. Firstly, at the beneficiary enterprise level, the consultant used this approach to validate the baseline HCFC-141b consumption by comparing the ratio between MDI and HCFC-141b-based polyols. The data on foam production and HCFC-141b content per unit of product was also calculated for additional cross-checking. The performance verification after completion of conversion followed similar calculation procedures by comparing MDI, pre-blended polyols, and foam production data. This approach provides a reasonable way to determine the baseline, and would detect whether the beneficiary enterprise was using other blowing agents due to the different ratio of blowing agent contained in the polyol.

74. Secondly, the mass-balance approach also is useful to capture national level HCFC-141b that is consumed in PU rigid foam manufacturing. Unlike polyols that are produced and sold by hundreds of system house companies, MDI companies are limited in number allowing MDI used in PU rigid foam to be easily counted. The fixed ratio between MDI and polyols is known, as is the fixed percentage of HCFC-141b in polyols for different applications. Thus FECO, with assistance from sector experts, was able to derive HCFC-141b consumption as a cross-check with known annual HCFC-141b production figures. Any large deviation between the two figures would serve as an additional warning sign to any other type of monitoring activity that other foam blowing agents may be in use.

B. Identified gaps and possible means to bolster enforcement capacity

75. Experience in implementing the PU foam sector plan under the Stage I HPMP that is coming to a close in June 2019 not only has helped to reinforce what works well in terms of ensuring sustainable phase-out, but also reveals some areas that could benefit from further attention.

76. *Testing Capacity to Facilitate Enforcement*. It was confirmed during regular EEB monitoring and during the 2018 enforcement action that there are currently only up to three institutions that can provide certified testing reports which are essential for enforcement and litigation against companies that violate China's ODS regulations. With development of a technical standard on testing blowing agent in foam with FECO's support in 2017, six more testing centers in key provinces are expected be able to adopt the standard and become certified PU foam blowing agent testing labs by the end of 2019.

77. *Tools and Equipment for Expanding Monitoring and Sampling Capacity*. During regular monitoring activities, foam and polyol samples are collected by local inspectors. It would be costly and time-consuming if all the samples were sent to testing centers. A blowing agent detector has become recently available in the market that has the proven ability to provide instant reports on the nature of the blowing agent in a sample of foam or polyols. In fact, the limited pieces that have been provided by FECO to eleven provinces and cities have significantly bolstered onsite monitoring capacity. Each provincial EEB and local EEB with a high concentration of PU foam enterprises should have at least 3-5 pieces of equipment to improve efficiency.

78. *Bolstering Enterprise Registries to include Former ODS-Users.* The local EEBs obtain lists of HCFC-141b consuming enterprises primarily based on the quota and registry information from MEE and provincial EEBs. However, the lists may not include the enterprises that have converted to non-HCFCs technologies or are under conversion. FECO has now provided the list of beneficiary enterprises that were converted under both the CFCs phase-out plan and HPMP Stage I in the PU foam sector to provincial EEBs, and recommends that the municipal level to more consistently improve PU foam enterprise data via EIA records and other channels to broaden the scope of monitoring for sustainable phase-out. Moreover, more follow-up from authorities at the provincial and national levels to ensure local EEBs make use of the lists, i.e. incorporate them into functioning registries may be needed.

79. *Fostering cross-regional cooperation and knowledge exchange.* Although training and work meetings are regularly organized within each province, experience and practice exchanges across regions/provinces have been insufficient. It is recommended that cross-regional workshops on monitoring experience in the PU foam sector and other sectors be held at least once a year. Officers from leading departments and enforcement teams from different provinces, sector experts, and officers from MEE and FECO shall be invited to discuss achievements and outcomes through enforcement action as well as monitoring obstacles.

V. Proposed Methodology for Verifying Use of Phased-out Substances

80. The methodology currently in place under the Stage I HPMP for verifying the type and amount of HCFCs consumed at beneficiary enterprises and for monitoring their HCFCs phase-out up to hand-over to the local authorities has evolved over the years to a point where it is virtually impossible for parallel use of already phased out substances. Moreover, with the multiple project monitoring, verification and reporting measures, the continued technical support to enterprises during conversion, and the research and knowledge exchange on applying well-established alternatives (hydrocarbon and CO_2/water), the conversions are likely to be sustainable. Nonetheless, by assessing the approach described in the previous chapters,

observing on the ground results from the recent TA to the provinces and considering some of gaps previously laid out, the areas that could merit from more attention are those after hand-over by FECO. Although not directly the purview of the HPMP, an expanded methodology is proposed below to verify that ODS already phased-out have, are and will not be consumed at enterprises covered by the project. Most notably is to employ a wider, more systematic use of sampling in compliance monitoring. Several additional measures under the Stage II HPMP are also introduced to support the verification methodology post-project.

i. Subproject commissioning and handover

81. The Stage II HPMP will follow the same monitoring, verification and reporting mechanism as in Stage I, given that the activities are more or less the same. A new simplified implementation modality will be adopted for a subset of conversion at SMEs but onsite verification of consumption and monitoring of implementation will still continue at beneficiary SMEs. Meanwhile, additional measures and emphasis beyond the core activity of project implementation will be made primarily through technical assistance and proposed in the last section below as complementary to the proposed, expanded methodology.

82. As the national entity responsible for the overall coordination and implementation of the sector plans and implementation of conversion subprojects at foam enterprises, FECO should ensure that information exchange with local EEBs is maintained and even further strengthened, while verifying the sustainability of conversions where it still has authority. FECO will introduce the following measures:

- Once a conversion subproject is completed, relevant information on the beneficiary enterprise will be shared with the local EEB concerned for inclusion or update in the EEB's registry of enterprises.
- Data will be provided including but not limited to: enterprise contact information, completion date, substances phased out, type of products manufactured, and the alternative technology adopted.
- While the overall HPMP is still ongoing, FECO and/or the World Bank as the IA, will undertake random visits to **at least 10% of enterprises a year** that have converted one year prior or more.

ii. Integrated registry of past and present HCFCs-consuming enterprises

83. All compliance monitoring and enforcement activities require accurate, ongoing identification of the regulated users of HCFCs. The regulatory basis is there with registries required from MEE for producers, larger users and distributors and local EEBs for smaller companies.

84. The current registration systems in place with most local EEBs primarily contain information on enterprises that use and/or sell HCFCs. However, in order to have a means to ensure that there has been longer term, sustainable HCFCs phase-out, local EEBs will be encouraged to upgrade their existing registration systems, to also include previous users of HCFC-141b, i.e. to develop registries of foam manufacturers. The main sources of information will include:

- the list of enterprises with HCFCs consumption quotas and the list of registered HCFCs distributors provided by MEE;
- regular information on beneficiary enterprises provided by FECO;
- historical sectoral information provided by industrial associations;
- downstream client information shared by system houses in the region;
- business registration information shared by local administration for industry and commerce; and,
- internet searches, newspapers, advertising, "drive-by" surveys and other types of reconnaissance.

85. In addition, local EEBs will be required to assign personnel for data management and system maintenance, to cross check all relevant information in a timely manner, and to update the list of enterprises consumption/ ODS sales status. The inventory should facilitate tracking of changes in enterprise history

for instance graduation to a large user (above 100 MT) or vice versa, number of monitoring visits, dates and findings, and any non-compliance.

iii. Policy and planning for HCFCs compliance monitoring

86. Monitoring, inspection and enforcement is the joint effort of different departments under MEE, which is represented at the provincial and local levels with air and environment divisions or other division leading, given their ODS mandate. Local EEBs must develop and implement an approved compliance monitoring work plan that reflects state or provincial priorities as well as meets the requirements of air pollution and environmental rules (which would include ODS regulations); is effective in determining compliance with rules, standards and bans; and, provides representative monitoring data required by the provincial EEB and/or MEE. The work plan incorporates monitoring and enforcement at multiple levels and is developed based on the number and geographical distribution of enterprises in a region. More recently, with the special ODS investigation and the "look back" programs for environmental compliance, there have been special inspections and sampling.

87. Under this proposed expanded verification methodology, the work plans should now consistently include:

- enterprises in the foam sector that may have already stopped the use and/or sales of ODS blowing agents as well as those that still use and sell HCFC-141b products;
- a minimum threshold (frequency) of these enterprises to be visited in the reporting period; and,
- the type of monitoring (routine or on-demand, and consequently the required composition of the monitoring team and reporting requirements).

iv. Monitoring and enforcement

88. Compliance monitoring and enforcement work is conducted by the local EEBs. There will be a lead division/branch that has the ODS mandate in local EEBs. Monitoring consultants and officials from monitoring branches may participate in sampling and testing but only authorized/licensed enforcement officials are allowed to conduct inspections at an enterprise. There are also inspectors at multiple levels; the higher levels of MEE and provincial EEBs can also conduct spot checks, normally on the basis of "on demand" or special campaigns such as the ODS investigations of August 2018. To complete the loop of inspections and facilitate enforcement action, qualified institutions must be used for testing any samples collected.

89. *Regular and on-demand inspections*. In terms of the methodology, inspections of foam manufacturers and system houses will be similar to the technical and financial verifications done during subproject preparation and implementation involving physical inspection of manufacturing facilities, operation and storage areas; document review and interviews with key personnel. In accordance with current work rules for monitoring and enforcement, at least two licensed enforcement officers are required for each on-site inspection. They will check both the production logs as well as financial records for corroborating data. Business licenses and other documents to prove the enterprise legality will also be checked.

90. For better mainstreaming of ODS monitoring and for resource efficiency, this proposed methodology envisions:

- annual inspections on all PU foam enterprises and system houses in a given EEB jurisdiction.
- physical inspection, document review and interviews in all inspections.

91. It is important to note, that monitoring arrangements under the proposed methodology would entail additional costs, particularly for targeted inspections of foam blowing agent only. The indicative budget for regular inspections is estimated below.

Table III. Estimated cost of one on-site visit to an enterprise (US$)

Item	Cost standards	Budget (US$)
Transportation	100 US$/person, 2 persons	200
Accommodation	150 US$/person, 2 persons	300
Sub-total	--	**500**

92. *Sampling at enterprises to determine compliance*. In both regular and on-demand inspections, sampling will be conducted using standard criteria that is adapted for specific regions to select which enterprises where sampling is required and frequency. Each EEB shall specify the sample collecting plan in the annual investigation plan. Inspectors will collect random samples from PU foam products, production lines or pre-blended polyol using standard procedures that are clear to the enterprise and that will permit high quality testing results. Each sample is required in triplicate for testing, with an estimated cost of US$450 per triplicate samples. The collected samples will undergo preliminarily testing onsite with specially designed instant foam blowing agent detectors. When samples result in positive results for banned and phased out ODS, they will be sent to qualified labs for further testing and certification.

93. The ability for inspectors to determine historical use of already phased out ODS is limited to the business practices at enterprises. Most foam companies produce on demand and will not carry stock of more than a year. In the rare cases that companies do have products or product samples reaching back several years, inspectors will be encouraged to take samples as their mandates permit and according to a sampling protocol or methodology.

94. *Third-part testing and enforcement*. In order to prosecute breaches of policy and regulations and impose punitive action, certified ODS samples taken on-site are required. Currently only up to three laboratories in China are qualified to do so. The estimated cost is US$120 per sample but what is more prohibitive is the time required until local EEBs receive results especially where they are located outside the province with the testing capacity. The effectiveness of monitoring action and consequently the sustainability of the phase-out is largely dependent on the potential punishment that an illegal producer or user will receive if caught. Having certified results defendable in court is therefore critical. The proposed action is to expand the number of qualified testing labs in China. MEE is establishing 6 testing centers including a national laboratory for ODS testing by the end of 2019 to enhance ODS testing capacity and provide legal support for enforcement actions.

95. In addition, to intensify punishment on illegal ODS production, MEE will strengthen cooperation with jurisdictional authorities to enable severe illegal ODS behaviors to be subject to punishment under Criminal Law. Punishment of various ODS illegal behaviors will be further intensified and deterrence force will be further enhanced.

v. Cross-regional cooperation and validation

96. *Joint Inspections.* The entire chain of PU foam production is complicated involving chemical suppliers, system houses, suppliers/distributors of raw materials and PU foam manufacturers. Knowledge is needed on the inputs to banned or regulated ODS as they may manifest themselves in various ways.

Furthermore, the geographical distribution of PU foam manufacturers and system houses is wide-spread across China. Nonetheless, during monitoring and enforcement, it is possible that local environmental enforcement authorities will trace back the source of raw materials for PU foam production to other administrative regions. In such cases, cross-regional collaboration for checking suspected players in the supply chain is needed. Local EEBs would report such a situation to MEE, and MEE will in turn coordinate across involved provinces to trigger a cross-regional verification and as required, enforcement action.

97. In addition, due to the more impactful means of enforcement with the Department of Public Security, and thereby leverage to ensure more effective and efficient law enforcement, local environmental enforcement authorities will more actively seek the cooperation of, and at times joint action with the local DPS to investigate the cases.

98. *Cross-regional inspections*. Some EEBs have pioneered a verification system whereby inspection teams from one municipality or county will be assigned random inspections in another jurisdiction to cross-check inspections from regular inspectors. This provides a type of "third-party" check and is important where regular inspections to enterprises may become routine and make it difficult to detect any or all deviations from regulations on the books.

vi. Enabling longer-term monitoring and verification

99. Considering the turnover and reposting of officials and enforcement staff, as well as local changes in the foam market from time to time, regular training on ODS compliance monitoring, verification and enforcement is required on a yearly basis. The proposal is to have at least one training workshop organized at the provincial level every year for each EEB, with the participation of local officials and enforcement staff from provincial, city and county levels.

Table IV. Estimated cost of one training workshop for local officials & enforcement staff per province (US$)

Item	Cost standards	Budget (US$)
Consultant services	180 US$/person, 6 persons	1,080
Meeting organization	The rate of the meeting room, meeting equipment, etc.	1,300
Document preparation	5 US$/person, 150 persons	750
Accommodation	80 US$/person, 150 persons	12,000
Total	--	**15,130**

100. The review of the system to monitor consumption of foam blowing agents under the Stage I HPMP as well as the past and more recent lessons learned in ensuring sustainable phase-out reveal a number of technical assistance activities that could be included in the Stage II PU foam sector plan. These activities would make it even more likely that conversions from Stage I were sustainable and build a more robust system outside of the project to help keep previously phased out ODS blowing agents from resurfacing over time. These include:

- Expand TA activities for strengthening registries and monitoring capacity at the local level to other key provinces, targeting first those implicated with some illegal ODS production and uses and/or having known foam manufacturing.
- Develop tools to facilitate monitoring, inspection, sampling and enforcement of ODS users and distributors, including:
    - **Inspection manual or module** (for integration in existing inspection manuals/procedures) specific to system houses and foam manufacturing;
    - **Foam product and polyol sampling protocol or methodology** for distribution/sharing among provinces;

    - **Develop a model online registration and tracking system** for HCFCs users, including those that have phased it out for adaptation/adoption by provincial and local EEBs;
- Continue to conduct technical research and demonstration of HCFCs alternative foam blowing agents.
- Conduct **annual mass balance analysis** soliciting MDI sales information and alternative consumption in the sector to cross-check with the national HCFC-141b production, determine market size, and verify whether additional foam blowing agent may be in the market.
- Support annual training workshops in provinces on the national level to level the knowledge and capacity for effective monitoring.
- Support MEE to facilitate cross-regional enforcement action, where it is not always clear in the supply chain who is responsible for illegal activity.

Annex 1 –Agreement between the Executive Committee and China for the Reduction in Consumption of HCFCs: Key Decisions and Provisions related to the PU Foam Sector Plan

Executive Committee Decision 64/49 - Stage I of the HCFCs phase-out management plan for China

(a) To acknowledge with deep appreciation the commendable efforts made by China towards the implementation of HCFCs phase-out activities in the polyurethane foam (PU), the extruded polystyrene foam (XPS), the industrial and commercial refrigeration (ICR), the refrigeration and air conditioning (RAC) and the servicing sectors to enable it to meet the 2013 and 2015 phase-out targets stipulated in the Montreal Protocol;

(b) To approve, in principle, stage I of the HCFCs phase-out management plan (HPMP) for China for the period 2011 to 2015 to reduce HCFCs consumption by 10 per cent of the baseline, at the amount of US$265,000,000 plus agency support costs for the Government of Germany, the Government of Japan, UNDP, UNEP, UNIDO and the World Bank, on the understanding that a maximum level of funding of up to US $5,000,000, plus agency support costs for UNDP, for the solvent sector could be considered at the 65th meeting;

(c) To note that the Government of China had agreed to establish as its starting point for sustained aggregate reduction an estimated baseline of 19,408.8 ODP tonnes, calculated using actual consumption of 18,602.7 ODP tonnes reported for 2009 under Article 7 of the Montreal Protocol, and estimated consumption of 20,215.0 ODP tonnes for 2010.

Executive Committee Decision 67/20 – HCFCs Consumption Reduction Agreement

(a) To approve the updated Agreement between the Government of China and the Executive Committee for the reduction in consumption of HCFCs submitted by UNDP, on behalf of the Government of China; and

(b) To note that the Fund Secretariat had updated paragraphs 1, 6 and 9 and Appendices 1-A, 2-A, 6-C and 6-D of the Agreement between the Government of China and the Executive Committee to reflect the newly established HCFCs baseline for compliance, the change in responsibility of co-operating agencies, and the now established agency support costs, and that a new paragraph 15 had been added to indicate that the updated Agreement superseded that reached at the 65th meeting and its revised Appendix 5-A approved at the 66th meeting, as shown in Annex X to the present report.