

3 May 2019

**Addendum**

**REPORTS ON PROJECTS WITH SPECIFIC REPORTING REQUIREMENTS**

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

# 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)

# 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**

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

1. 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)

# 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]](#footnote-1) and requests for the third tranches of four[[2]](#footnote-2) sector plans under stage II of the HPMP.[[3]](#footnote-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.

# 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)).

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

# At the 82nd meeting, the Executive Committee also considered a document containing a note from the Secretariat[[4]](#footnote-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)).

# 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 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).

1. 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)

# During the discussions on the annual progress report on stage I of the polyurethane (PU) foam sector plan,[[5]](#footnote-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]](#footnote-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.

# 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)).

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

1. 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)

# At the 82nd meeting,[[7]](#footnote-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).

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

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

# 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]](#footnote-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)).

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

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

# 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]](#footnote-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)).

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

**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**

# 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).

# 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**

# 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.

# 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.

# The Secretariat’s comments are divided into three sections:

## 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;

## Technical clarifications related to monitoring and reporting under the HPMP and the HPPMP; and

## Reports of illegal production of controlled substances.

Overarching observations

# 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]](#footnote-10)*

# 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.

# 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.

# 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]](#footnote-11)

*Establishment of testing laboratories[[12]](#footnote-12)*

# 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.

# 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.

*Strengthened inspections and enforcement*

# Local ecology and environment bureaus (EEBs)[[13]](#footnote-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:

## 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;

## 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]](#footnote-14)*

# 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.

# 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]](#footnote-15)*

# 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.”

# 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 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]](#footnote-16)*

# 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.

# 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.

# The Secretariat notes, however, that the monitoring mechanism does not include perchloroethylene (PCE) plants. Numerous sources[[17]](#footnote-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]](#footnote-18) in line with decision 75/18(b)(iii), may be helpful in this regard.

# 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*

# As noted by several participants at the international workshop on capacity building for the implementation of the Montreal Protocol,[[19]](#footnote-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 enforcement by providing information on the sectors and enterprises.[[20]](#footnote-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.

# 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.

# Article 9 of the Regulation on Administration of Ozone Depleting Substances (Decree No. 573)[[21]](#footnote-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]](#footnote-22)*

# 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

# 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*

# 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 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.

# 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.

# 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]](#footnote-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.

# 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.

# 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*

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

# 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

# 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.

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

## 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]](#footnote-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;

## 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;

## One case of illegal production of MB was found in 2014;

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

## 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.

# Since August 2018, two additional illegal CFC-11 production facilities in Liaoning and Henan Province have been found.[[25]](#footnote-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.

# 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).

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

## 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;

## 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

## 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.

# 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.

# 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]](#footnote-26) and 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.

# 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.

# 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**

# 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:

## 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;

## 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;

## 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.

# 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:

## 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;

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

## 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;

## 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

## 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**

# The Executive Committee may wish to:

## 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

## 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**

# 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)).

# 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**

# 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.

# 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.

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

HCFC phase-out in China’s PU foam sector

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

# 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:

## 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;

## 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

## 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.

# 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*

# 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]](#footnote-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:

## 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 consumption;

## 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

## 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.

# 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*

# 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*

# 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.

# 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*

# 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.

# 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*

# 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.

# 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*

# 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 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;

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

## 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

# 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:

## 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;

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

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

## 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*

# 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.

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

## 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;

## 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

## 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*

# 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.

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

## 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

## 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*

# 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.

# 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*

# 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]](#footnote-28)

# 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*

# 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.

# In addition, the following related issues were discussed:

## 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 not using ODS and therefore not under the ODS regulations;

## 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;

## 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**

# 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.

# A summary of the Secretariat’s observations is presented below:

## 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;

## 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;

## 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;

## 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;

## 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;

## 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;

## 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

## 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).

# 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**

# The Executive Committee may wish:

## 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

## 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**

# In line with decisions 71/12(b)(ii) and (iii)[[29]](#footnote-29), 72/13[[30]](#footnote-30), 73/20(b)[[31]](#footnote-31), 75/18[[32]](#footnote-32), 77/26(b)[[33]](#footnote-33), and 80/27[[34]](#footnote-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.

# 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.

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

Planned budgets and progress reports

# 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 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 |
| 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.**

# 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.**

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

CFC production sector

# 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**.

# 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**.

# A total of US $233,411 had been allocated to supervision and management. **IECO** has disbursed US $**63,111[[36]](#footnote-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

# 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.

# **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.**

# **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.

# **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.**

# 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.

# **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

# 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.**

# 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.**

# 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.**

# 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.**

# 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.**

# **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:**

## **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;**

## **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;**

## **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;**

## **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;**

## [**Market**](javascript:;)[**supervision**](javascript:;) **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**

## **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

# 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.

# 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 m2 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**.

# 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.**

# **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**.

# 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.**

# 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.

# **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.**

# **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.**

# **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

# 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.

# 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.**

# 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

# 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.

# **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]](#footnote-37) was completed. Management and monitoring activities, including on-site verifications, monitoring audits and project evaluations, continued to be implemented.

# **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.**

# **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**

# 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** |

# 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

# 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)).

# 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).

# 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.

# 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:

## 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;

## 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;

## 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*

# 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.

# 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.

# 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*

# 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.

# 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]](#footnote-38)

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

## 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;

## 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;

## 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

## 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.

# 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.

# 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.

# 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.

# 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*

# 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

# 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*

# 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.

# 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.

# 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.

# 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.

# 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.

# 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.

# 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.

# 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.

# 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.

# 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.**

# 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.

# 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.

# 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.**

# **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:**

## **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;**

## **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;**

## **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.**

# **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*

# **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.

# 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.

# 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*

# 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.

# 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.

# 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.

# 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.**

# 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.

# 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*

# 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*

# 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*

# 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.

# 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.

# 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.

# There are two issues related to halon-1301. First, halon-1301 is still being produced[[39]](#footnote-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 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.

# 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

# 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.

# 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

# 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.

# 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.

# 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**

# The Executive Committee may wish:

* 1. To note:
     1. 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**;
     2. That the funding balances associated with each of the sector plans had not been fully disbursed **by April 2019**;
     3. 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**;

## **To agree to extend the process agent II and the halon sector plan to 2020 and 2022, respectively;**

* 1. To request the Government of China, through the relevant implementing agency:

### **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;**

### **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;**

### **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**

* + 1. To submit the **remaining** completed research and technical assistance reports undertaken in all sectors, for possible dissemination to other Article 5 countries;

## **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**

## **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)

1. 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)).
2. 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.
3. 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]](#footnote-40) 99.75 mt (59.85 ODP tonnes) for 2016,[[41]](#footnote-41) 92.977 mt (55.79 ODP tonnes) for 2017,[[42]](#footnote-42) and 87.24 mt (52.34 ODP tonnes) for 2018.[[43]](#footnote-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]](#footnote-44)
4. 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.
5. 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.
6. 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.
7. 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 2016 to 2018 on crops pest identification, integrated pest management, soil disinfection technologies, and soil fumigation service systems.
8. 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.
9. 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.
10. The Ministry of Agriculture announced the ban on the use of MB in the agriculture sector as of 1 January 2019.

Financial report

1. 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**

1. 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.
2. 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.
3. 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**

1. The Executive Committee may wish:
   1. To note:
      1. 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;
      2. 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;
   2. To request the Government of China and UNIDO:
      1. To include in the verification of the 2018 MB production requested by decision 82/19(e) the amounts used for MB consumption; and
      2. 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)**

1. UNIDO, on behalf of the Government of China, had submitted to the 82ndmeeting, 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 83rdmeeting 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)).
2. 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

1. 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

1. 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.
2. Regarding the former, IECO will undertake three sub-activities:
   1. Strengthen MB producers’ data collection by improving the data collection forms and assisting producers to submit those completed forms quarterly;
   2. 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
   3. Recruit independent experts to carry out annual verifications of the 2019-2021 MB production; independent verifications after 2021 are not planned.
3. 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:
   1. Implementing a MB labelling and traceability system based on the needs of the three MB producers and QPS and feedstock users’ suggestions;
   2. 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;
   3. 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;
   4. 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
   5. 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.
4. 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** |

1. 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:
   1. 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;
   2. 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]](#footnote-45)
   3. 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;
   4. 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
   5. 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

1. 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 84thmeeting, on the understanding that the allocated funds (US $250,000, plus agency support costs of US $18,750 for UNIDO)[[46]](#footnote-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 84thmeeting itself, rather than by the customary deadline for projects with specific reporting requirements.

Implementation plan for 2019–2021

1. 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 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 84thmeeting.
2. 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**

1. The Executive Committee may wish:
   1. 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;
   2. 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 84thmeeting, 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
   3. 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 84thmeeting in line with decision 82/19.

1. Paragraphs 48 to 140 of document UNEP/OzL.Pro/ExCom/82/45 [↑](#footnote-ref-1)
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. [↑](#footnote-ref-2)
3. Paragraphs 141 to 212 of document UNEP/OzL.Pro/ExCom/82/45 [↑](#footnote-ref-3)
4. UNEP/OzL.Pro/ExCom/82/70 [↑](#footnote-ref-4)
5. Paragraphs 83 to 101 of document UNEP/OzL.Pro/ExCom/82/45 [↑](#footnote-ref-5)
6. Reports on projects with specific reporting requirements. [↑](#footnote-ref-6)
7. Paragraphs 4 to 74 of document UNEP/OzL.Pro/ExCom/82/20 [↑](#footnote-ref-7)
8. Paragraphs 79 to 89 of document UNEP/OzL.Pro/ExCom/82/20 [↑](#footnote-ref-8)
9. Paragraphs 90 to 108 of document UNEP/OzL.Pro/ExCom/82/20 [↑](#footnote-ref-9)
10. Discussed in section 4.2.5 of the report submitted by the Government of China. [↑](#footnote-ref-10)
11. More information on atmospheric monitoring is contained in document UNEP/OzL.Pro/ExCom/83/38. [↑](#footnote-ref-11)
12. Discussed in section 4.2.5 of the report submitted by the Government of China. [↑](#footnote-ref-12)
13. Roles and responsibilities of EEBs are presented in various sections of the report submitted by the Government of China. [↑](#footnote-ref-13)
14. Discussed in section 4 of the report submitted by the Government of China. [↑](#footnote-ref-14)
15. Discussed in section 3.4.1 of the report submitted by the Government of China. [↑](#footnote-ref-15)
16. Discussed in section 4.2.1 of the report submitted by the Government of China. [↑](#footnote-ref-16)
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. [↑](#footnote-ref-17)
18. This report is further discussed in Part III of the present document. [↑](#footnote-ref-18)
19. Beijing, 18-19 March 2019. [↑](#footnote-ref-19)
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. [↑](#footnote-ref-20)
21. See Annex I of the report submitted by the Government of China. [↑](#footnote-ref-21)
22. Discussed in section 3.3.2.2 and annex I of the report submitted by the Government of China. [↑](#footnote-ref-22)
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. [↑](#footnote-ref-23)
24. Case 3, as described on page 31 of the appended report submitted by the Government of China. [↑](#footnote-ref-24)
25. Described on pages 31 and 32 of the report submitted by the Government of China. [↑](#footnote-ref-25)
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). [↑](#footnote-ref-26)
27. Guang Dong, Hebei, Henan, Jiang Su, Liaoning, Qingdao, Shang Dong, Shanghai, Sichuan, Tianjin, Zhe Jiang. [↑](#footnote-ref-27)
28. Refer to the Secretariat’s comments in Part III of the present document. [↑](#footnote-ref-28)
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. [↑](#footnote-ref-29)
30. The Committee invited the Government, through the relevant implementing agency, to submit to the 73rdmeeting 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. [↑](#footnote-ref-30)
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. [↑](#footnote-ref-31)
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. [↑](#footnote-ref-32)
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. [↑](#footnote-ref-33)
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. [↑](#footnote-ref-34)
35. Part I of document UNEP/OzL.Pro/ExCom/82/20 [↑](#footnote-ref-35)
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.**  [↑](#footnote-ref-36)
37. Beijing Yuji, Dongyang Weihua, Shanghai Xilikang, Quzhou Sancheng and Huaxia Shenzhou. [↑](#footnote-ref-37)
38. A table with the value of the contracts signed with each EEB was made available to the Secretariat. [↑](#footnote-ref-38)
39. As noted in UNEP/OzL.Pro/ExCom/82/SGP/03, HFC-23 is used as a feedstock during the production of halon‑1301. [↑](#footnote-ref-39)
40. Decision XXVI/6 [↑](#footnote-ref-40)
41. Decision XXVII/3 [↑](#footnote-ref-41)
42. Decision XXVIII/7 [↑](#footnote-ref-42)
43. Decision XXIX/6 [↑](#footnote-ref-43)
44. Based on the final report submitted for the project. [↑](#footnote-ref-44)
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. [↑](#footnote-ref-45)
46. As further described in UNEP/OzL.Pro/ExCom/82/20. [↑](#footnote-ref-46)