

LIST OF ABBREVIATIONS

CFC	Chloro Fluoro Carbons
CP	Country Programme
CTC	Carbon Tetra Chloride
ExCom	Executive Committee of the Multilateral Fund
FECO	Foreign Economic Cooperation Office
GWP	Global Warming Potential
HCFCs	Hydrochlorofluorocarbons
IA	Implementing Agency
MEP	Ministry of Environmental Protection
MLF	Multilateral Fund for the Implementation of the Montreal Protocol
MOP	Meeting of Parties to the Montreal Protocol
MP	Montreal Protocol
MT	Metric Tonnes
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substances
PBP	Performance Based Payment
SBAA	Standard Basic Assistance Agreement
UNDP	United Nations Development Programme

I. SITUATION ANALYSIS

1. OBJECTIVE

The objective of this project is for the Government of China to formulate the Hydrochlorofluorocarbons Phase-out Management Plan (HPMP Stage II) for the solvent sector which will determine the specific target of HCFC reduction for the stage II of HCFC phase-out in the solvent sector in China and incorporate the strategy and action plan for the People's Republic of China to achieve the afore-mentioned target as well as to contribute to the compliance target of 35% reduction in Hydrochlorofluorocarbons (HCFC) consumption by 2020 at the national level. The HPMP Stage II is targeted for submission to the Executive Committee of the Multilateral Fund (MLF) for review and approval at its 76th Meeting in 2016.

2. BACKGROUND

2.1 ODS Phase Out in China

China signed Vienna Convention for the Protection of the Ozone Layer in June 1989, Montreal Protocol on Substances that Deplete the Ozone Layer (hereinafter Montreal Protocol) in June 1991. As of May 2010, China has ratified all amendments to the Montreal Protocol. Chinese government compiled and approved "Country Program for Phase-out of Ozone Depleting Substances" (hereafter Country Program) in January 1993 and established phase-out strategies for major sectors of ODS production and consumption in 1995. In November 1999, Chinese Government updated the Country Program. According to Country Program, with the support of Multilateral Fund and international institutions, China has conducted more than 400 projects and 18 sector plans including chemical production sector, Automobile Air-conditioner Sector, Tobacco Sector, Industrial and Commercial Refrigeration and Air Conditioning, Extinguishing Sector, Solvent Sector, Household Appliance, Foam Sector etc. to phase out production and consumption of CFCs, Halons, CTC, TCA and Methyl Bromide subsequently. With more than two decades of hard work, China has completed the phase-out of the production and consumption of CFCs and Halons on July 1st 2007, two and a half years earlier than the phase-out schedule under Montreal Protocol. Until January 1st 2010, except for essential use, Chinese Government had completely eliminated the production and consumption of CFC, Halons, CTC and TCA (5 years ahead the schedule) to meet the requirement of Montreal Protocol, which is an outstanding contribution to Ozone Layer protection.

2.2 Evolution of HCFC Phase-out Management Plans

HCFCs, which have Ozone Depleting Potential (ODP) up to 15% of that of CFCs, are also classified as controlled substances under Annex-C, Group-I of the Montreal Protocol. HCFCs, therefore, have use restrictions and would eventually have to be phased-out. Initially, for developing countries, the scheduled phase-out date for HCFCs was 1 January 2040 with an interim control measure of freezing HCFC production and consumption at 2015 levels from 1 January 2016.

The XIX Meeting of the Parties to the Montreal Protocol in September 2007, through its Decision XIX/6, adopted an accelerated phase-out schedule for HCFCs. The first control is the freeze on production and consumption of HCFCs from 01 January 2013, at the Baseline Level (average of 2009 and 2010 levels). The second control step is the reduction of 10% from the Baseline Levels on January 1, 2015. Subsequent control steps are 35% reduction by 2020, 67.5% by 2025, 97.5% by 2030 with allowance of 2.5% of baseline for period 2030-2040 and complete phase out from January 1 2040. The decision also directed the Executive Committee of the Multilateral Fund to assist Article-5 Parties in preparation of HCFC Phase-out Management Plans (HPMP).

2.3 HCFC Phase-out Management Plan of China

There are more than 30 categories of HCFCs controlled in Montreal Protocol. Currently, only six of them are produced in China: HCFC-22, HCFC-123, HCFC-124, HCFC-133a (mainly used as feedstock), HCFC-141b and HCFC-142b. Six kinds of HCFCs are consumed in China including HCFC-22, HCFC-141b, HCFC-142b, HCFC-124, HCFC-123 and HCFC-225ca/cb and HCFC-225 are imported from foreign market. The production and consumption of HCFCs in China mainly involves 7 sectors: HCFC Production Sector, Polyurethane Foam Sector, Extruded Polystyrene Foam Sector, Room Air Conditioning Sector, Industrial and Commercial Refrigeration and Air Conditioning Sector, Solvents Sector and Servicing Sector.

In order to meet the targets in Stage I from 2011 - 2015 in consumption sector, China reached an agreement with the Executive Committee for HCFC Phase-out Management Plan (Stage-I), which was approved at the 64th ExCom Meeting and updated at the 67th ExCom Meeting. In April 2013, the 69th ExCom Meeting approved the HCFC Phase-out Production Sector Management Plan (HPPMP) with a total of US\$95 million for the HPPMP in China (Stage-I) to meet the freeze and 10 percent reduction of baseline. The HPPMP agreement was approved at the 71st ExCom Meeting.

Through the implementation of the HCFC Phase-out Management Plan (Stage-I) that includes 7 sector plans, China has successfully achieved the 2013 freeze target and is progressing towards 10% reduction in 2015. As of now, the first four funding tranches of the consumption sectors and the first two tranches of HPPMP have been approved and released by the Executive Committee.

Formulation of China HCFC Phase-out Management Plan Stage-II

For the consumption sector, request for the last tranche of HPMP Stage-I of China is expected to be submitted in 2015. For the production sector, 2016 will be the last tranche based on the agreement of HPPMP Stage-I. As mentioned earlier, with a combination of phase-out projects, policies and regulations, awareness and capacity building and monitoring mechanisms that were established for HPMP Stage-I, China is expected to successfully achieve their 2015 targets. From here, China needs to proceed seamlessly and in a systematic manner, implementing activities to achieve HCFC phase-out projects to achieve 2020 targets in HCFC production and consumption. Based on detailed consultations with different stakeholders and implementing agencies, it was noted that 2020 HPMP targets can be achieved through phase-out sector plans for all the seven sectors, as identified during Stage-I. China needs to develop 7 sector-level HPMPs for Stage II covering production, PU foam, XPS foam, RAC, ICR, solvent and refrigeration servicing sectors.

To achieve the 35% reduction by 2020, China needs to respectively phase out 7,280 ODP tons and 4,716 ODP tons of HCFCs in the production and the consumption sectors at Stage II, which is much higher than the amount of phase out in Stage I. The unprecedented challenge faced by China in phasing out large quantities of HCFCs in a relatively very short period of time will require effective and efficient alignment of different sector plans to achieve 2020 targets in a smooth manner. Furthermore, there is a need to have an overarching project for China to integrate and coordinate preparation of all the sector plans under one umbrella at the national level. This will also ensure that the mechanisms for monitoring and reporting can be carried out in an efficient manner and reporting obligations to the Executive Committee are well fulfilled. Keeping in mind the above, the HPMP Stage II for the solvent sector will be prepared and will continue to organize investment activities, policy development and technical assistance activities to contribute to the required phase out to be achieved in order for China to meet its 2020 targets.

II. STRATEGY FOR FORMULATION OF THE HCFC PHASE-OUT MANAGEMENT PLAN IN THE SOLVENT SECTOR (STAGE II)

The preparation of China's HPMP Stage-II for the solvent sector comprises the following interventions:

- **Stakeholders' Coordination:** This sub-component will be carried out throughout the whole time period of the project, including coordination and consultation with relevant stakeholders as well as implementing agencies, etc. , with the purpose of ensuring timely and smooth implementation of the project.

The work will also involve coordination with the project management teams of PU sector plans. Each sub-sector will develop the HCFC Phase-out Management Sector Plan (Stage II). Therefore, it must be noted that while preparing the HPMP Stage II for the Solvent Sector, UNDP and Government of China will discuss and coordinate with the World Bank preparing the different sector plans.

- **Formulation of the HCFC Phase-out Management Plan for the Solvent Sector (Stage II):** As per the HCFCs accelerated phase-out schedule, Stage II of HPMP for the solvent sector will phase out at least 27.1% of the baseline consumption in addition to what is to be achieved in Stage I. This translates to at least 1,214 MT of HCFC-141b reduction (i.e., 35% of the baseline level in the sector). In order to properly develop the HPMP (stage II) for the solvent sector, the preparation project will include, information collection, policy review, field survey, data and technology analysis, cost calculation, exploration of project implementation modalities and formulation of HPMP. Detailed preparation activities are outlined in Annex II.

III. TIME FRAME/MONITORING MILESTONES

Overall time plan for implementation of the project is given in Table 1 below:

Table 1

MILESTONE/TIME FRAME	Quarters (Q) beginning January 2015						
	2015				2016		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
National Stakeholder Coordination							
Organize stakeholder coordination meetings.							
Coordination with local and international stakeholders/partners							
Review, coordination, monitoring and reporting, preparation of the HPMP Stage II for the solvent sector							
Coordination between the project management teams of the seven sector plans							
Policy reviewing, consultation.							
Preparation of the HCFC Phase-out Management Plan for the Solvent Sector Stage-II							

Table 2

RESULTS AND RESOURCES FRAMEWORK Applicable Goal (UNDAF):	Outcome: Low carbon and other environment sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environment Agreements Indicator: Relevant national laws and policies developed or revised for promoting a green economy			
ATLAS Award ID:				
ATLAS Project ID:				
Intended Outputs	Output Targets (2015)	Indicative activities	Responsible Parties	Inputs (US \$)
Output: HCFC Phase-out Management Plan for the Solvent Sector (Stage II) Indicator: Submission of the HCFC Phase-out Management Plan for the Solvent Sector (Stage II)	Targets: February 2015 Finalization and signing of Project Document. Targets: November 2015 The draft of HCFC Phase-out Management Plan for the Solvent Sector (Stage II)	Stakeholders' Coordination <ul style="list-style-type: none"> - Coordination with local and international stakeholders / partners - - Coordination with the project management teams of the seven sector plans 	FECO/MEP	6,000
	Target: December 2015/January 2016 - submission of the project proposal to the 76 th ExCom Meeting	Management, Review, coordination, monitoring and reporting <ul style="list-style-type: none"> - Monitoring and review of the progress of the preparation of HPMP Stage II for the solvent sector - Development of the project proposal for China for Stage-II HPMP for the Solvent Sector 	FECO/MEP	144,000
		Grand total		150,000

IV. ANNUAL WORK PLAN

The table below presents the annual budget allocation during the project life cycle of 2015-2016.

Table 3

AWARD ID							
PROJECT ID							
Project Title	Preparation of a HCFC Phase-out Management Plan for the Solvent Sector (Stage II)						
Executing Agency	Foreign Economic Cooperation Office, China Ministry of Environmental Protection (FECO/MEP)						
ATLAS Activity	Responsible Party	Source of funds	ATLAS Code	ATLAS Budget Description	2015	2016	Total
Activity 1 : Stakeholders' Coordination	FECO/MEP	63080	75700	Training, workshop and conference	4,000	2,000	6,000
	Sub-Total				4,000	2,000	6,000
Activity 2 : Review, coordination, monitoring and reporting, for formulating the HCFC Phase-out Management Plan (Stage II) for the Solvent Sector	FECO/MEP	63080	71300	Local consultant	3000	2,000	5,000
	FECO/MEP	63080	71600	Travel	3000	1,000	4,000
	FECO/MEP	63080	72100	Contractual Services – responsible party	63,000	27,000	90,000
	FECO/MEP	63080	72600	Project Management for FECO/MEP	12,000	3,000	15,000
	UNDP	63080	71200	International experts	12,000	6,000	18,000
	UNDP	63080	71600	Travel	12,000	0	12,000
	Sub-Total				105,000	39,000	144,000
Total							150,000

V. MANAGEMENT ARRANGEMENT

6.1 Implementation Modality

The relevant agreements between the Chinese Government and the ExCom will serve as the framework within which the project will be implemented. The project will be managed in accordance with National Execution (NEX) modality. The Government of China through its Foreign Economic Cooperation Office, Ministry of Environmental Protection (FECO/MEP) will be implementing the project with support from UNDP. Under the support of UNDP and FECO/MEP,

Beijing University of Chemical Technology will act as the responsible party for the project. The Performance Based Payment (PBP) mechanism will be applied to disbursements to FECO/MEP in this project in accordance to the MoU between UNDP and FECO/MEP which was signed on 8 January 2011.

6.2 Roles and responsibilities

UNDP is serving as the implementing agency to supervise the implementation of the project, specifically including the following:

- Providing assistance for coordination with local and international stakeholders / partners, when required;
- Providing assistance for coordination with other implementing agencies and the project management teams of the seven sector plans to monitor the progress of the preparation of HPMP (stage II) for the solvent sector;
- Providing assistance on monitoring and coordination at the national-level, when required;
- Monitoring the progress and carrying out supervision missions;
- Working in close coordination with FECO/MEP and Beijing University of Chemical Technology on the development of the HPMP Stage II for the Solvent Sector;
- Obtaining endorsement by FECO/MEP on the HPMP Stage II for the Solvent Sector, for submission of the plan to the Executive Committee;
- Responding to MLF Secretariat's comments on the HPMP Stage II for the Solvent Sector;
- Ensuring the Fund disbursed in accordance with the guidelines of the ExCom;
- Reporting the progress of the preparation of HPMP (stage II) for the solvent sector to the ExCom when necessary.

FECO/MEP will be responsible for the overall implementation, coordination and management of the project, specifically including the following:

- Facilitating UNDP in the implementation of the activities listed above;
- Managing and monitoring the project implementation;
- Coordinating with relevant stakeholders, implementing agencies as well as the project management teams of other sectors;
- Working together with UNDP, Beijing University of Chemical Technology, experts and other stakeholders on the preparation of HPMP (stage II) for the solvent sector in China;
- Preparing the documents as required during the project implementation, and submitting them to UNDP in a timely manner;
- Providing inputs to UNDP in the response to the MLF Secretariat's comments on the HPMP (stage II) for the solvent sector in China.

BEIJING UNIVERSITY OF CHEMICAL TECHNOLOGY will be engaged by FECO/MEP to act as the responsible party of the project, the responsibilities are as following:

- Collecting and analysing information on HCFC production, consumption, import and export for preparation of the HPMP Stage II for the Solvent Sector;
- Consulting widely with national and international experts, industrial associations, enterprises and other stakeholders on issues such as policy framework, alternative technology selection, conversion cost etc.;
- Developing HCFC phase-out strategy of Stage II for the solvent sector based on different scenario analysis;

- Preparing the HPMP Stage II for the Solvent Sector including HCFC phase-out strategy of Stage II, policy and regulation framework, alternative technology selection, environmental effects, cost calculation and action plans etc.;
- Participating stakeholder meetings and providing technical consultation.

6.3 Payment Schedule and Indicators

Fund Allocation for the Preparation of HPMP(Stage II) for the Solvent Sector

Table 4

Cost Component	Funding Request (US\$)
Stakeholder's coordination	6,000
Management, Review, coordination, monitoring and reporting, formulation of the plan	144,000
Total	150,000

Performance-Based Payment (PBP) Schedule to FECO/MEP for the Preparation of HCFC Phase-out Management Plan (Stage II) for the Solvent Sector

Table 5

Payment (Indicative)	Disbursement (US\$120,000)	Indicators/Milestones
First disbursement on Signature of the Project document	30% of fund (US \$36,000)	- Project Document is finalized and signed between FECO/MEP and UNDP.
Second disbursement	50% of fund (US \$60,000)	- Signature of agreement between FECO/MEP and Beijing University of Chemical Technology
Third disbursement	20% of fund (US \$24,000)	- The final version of the HPMP Stage II for the Solvent Sector - Confirmation letter of FECO/MEP for submission of the project proposal to ExCom
Total	US \$120,000	

VI. MONITORING FRAMEWORK AND EVALUATION

7.1 Monitoring & Verification

The activities of Monitoring & Verification include the following:

a) Financial Audit:

In accordance with the agreement between UNDP and the Chinese Government, an annual financial audit on UNDP National Execution (NEX) projects in China will be conducted by an independent contractor. According to the agreement, if the project achieved the annual expenditure

exceeded the UNDP defined minimum the project will participate in the financial audit. The project will be audited at least one time during its project life cycle. The financial audit aims to verify:

- If the project fund has been appropriately applied which are in line with the Project Document between UNDP and FECO/MEP.
- If the project fund has been appropriately disbursed. If the project has achieved certain progress which are defined in the project document and the annual work plan.

The invited auditing agency will formulate an auditing report to UNDP China Country Office and share with FECO/MEP. If there are any qualified issues which are verified in the financial audit, the related payment will be suspended until the issues to be worked out by the responsible parties and accepted by UNDP.

b) Review Meetings

Two official review meetings between UNDP and FECO/MEP will be conducted in the year, one of them to be arranged prior to the submission date of HCFC Phase-out Management Plan (Stage II). The objective of the meetings will be to review progress of implementation of preparation project of the solvent sector.

c) Monitoring & Evaluation

Monitoring will include a continuous review of the various project components and will be intended to (i) measure the progress towards meeting the overall project objectives and (ii) alert implementing partners to potential problems in implementation and propose corrective measures. Monitoring visits can be undertaken by UNDP on annual basis. Such visits could be done in connection with the official meetings to be held between partners. An independent expert, if necessary, could be invited to join the visit.

7.2 Quality Management for Project Activity Results

OUTCOME: Stage II HCFC Phase-out Management Plan for the Solvent Sector in China		
Output: The following activities contribute to achieving the above outcome.		
<ul style="list-style-type: none"> • Development and implementation of monitoring and coordination. • Planning, review & reporting on project implementation. • 		
Result 1	The relevant stakeholders are well coordinated.	Start Date: March 2015 End Date: August. 2016
Purpose	Coordinate with local and international stakeholders/partners on the formulation of HPMP Stage II for the solvent sector	
Description	<ul style="list-style-type: none"> • Coordination with stakeholders and partners on regular basis. • Organization of workshops, coordination meetings as necessary. • 	
Quality Criteria	Quality Method	Date of Assessment
workshops, coordination meetings organized when necessary	Meeting minutes (if applicable)	No later than November each year
Result 2	The Formulation of HPMP (Stage II) for the Solvent Sector is well reviewed, coordinated, monitored and	Start Date: March 2015 End Date: August. 2016

	reported.	
Purpose	Ensuring the accurate and timely submission of Stage II HCFC Phase-out Management Plan for the Solvent Sector of China by UNDP.	
Description	<ul style="list-style-type: none"> • Review the progress on regular basis; • Monitoring on project implementation and the progress of the preparation of HPMP (stage II) for the solvent sector. 	
Quality Criteria	Quality Method	Date of Assessment
The activities are conducted on time and the documents are timely submitted.	HPMP (stage II) for the solvent sector	Submission to the 76 th Executive Committee Meeting in 2016. No later than June 2016.
National coordination provided	Local experts involvement	Implementing agencies are involved

VII. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement (SBAA) between the Government of the People's Republic of China and the United Nations Development Programme, signed by the parties on 29 June 1979.

Consistent with the Article III of the SBAA, the responsibility for the safety and security of the executing agency and its personnel and property, and of UNDP's property in the executing agency's custody, rests with the executing agency.

The executing agency shall:

- put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- Assume all risks and liabilities related to the executing agency's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The executing agency agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

In addition, the following types of revisions may be made to this Project Document with the signature of the UNDP resident representative only, provided he or she is assured that the other signatories of the Project Document have no objections to the proposed changes:

- Revision in, or addition of, any of the annexes of the Project Document;

2. Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation; and
3. Mandatory annual revisions that rephrase the delivery of agreed project inputs, or reflect increased expert or other costs due to inflation, or take into account agency expenditure flexibility.

VIII. ANNEX

ANNEX-I: RISK ANALYSIS

ANNEX-II: Final version of the project proposal for Preparation of HCFC Phase-out Management Plan for the Solvent Sector (Stage II) submitted and approved at the 73rd Executive Committee Meeting, with funding approval at US \$150,000

ANNEX-I

RISK ANALYSIS

Description	Date identified	Type	Impact and Probability (Low 1 to High 5)	Counter Measures	Owner
Delay in completion of project deliverables	Project initiation date	Operational	Probability - 3 Impact - 4	Close coordination with FECO/MEP and periodic monitoring of project tasks. Facilitating timely completion of tasks.	FECO/MEP, UNDP
Delay in monitoring and coordination in the preparation of HPMP (stage II) for the solvent sector	Project initiation date	Operational	Probability - 3 Impact - 4	Consultation with experts and closely monitoring the progress of the preparation of HPMP (stage II) for the solvent sector	FECO/MEP, UNDP

ANNEX-II

PEOPLE'S REPUBLIC OF CHINA PREPARATION OF SOLVENT SECTOR PLAN (STAGE II – For compliance with 2020 target)

1. Background

At the 19th Meetings of the Parties held in September 2007, the Parties agreed to accelerate the HCFC phase-out schedule. As an Article 5 country, China was required to freeze the production and consumption of HCFCs at the average level of 2009 - 2010 (baseline) by 2013, to realize 10%, 35%, 67.5% reductions in 2015, 2020 and 2025, respectively, and achieve complete phase-out of HCFCs by 2030 with a 2.5% remaining allowed production and consumption of HCFCs to meet the residual demand in the servicing sector during the period of 2030 – 2040.

In cooperation with UNDP, the Implementing Agency of the Multilateral Fund for the Implementation of the Montreal Protocol, the Sector Plan for Phase out of HCFCs in the Solvent Sector in China (Stage I) was submitted to the 64th ExCom meeting for approval, and the ExCom approved at the 65th ExCom meeting a funding of US\$5,000,000 in May 2011 to implement HPMP Stage I in the solvent sector. The objective of the HPMP in Solvent Sector Stage I (2011-2015) was to ensure the HCFC consumption in the solvent sector is frozen on an average level of 2009-2010 by 2013 and realizes 7.9% reduction from the freeze level by 2015. To realize these targets, the sector plan covers production line conversion and technical assistance activities. According to the sector plan, around 627.27 MT of HCFCs, equivalent to 69 ODP tonnes, will be phased out by the year 2015.

In Stage II (2015-2020), to continue the phase-out of HCFCs and achieve the 2020 target of phasing out 35% of HCFC consumption from the baseline level, the HPMP (stage II) of the solvent sector is to be prepared, and will continue to organize the investment activities, policy development, and technical assistance (TA) activities. This document presents the intended coverage, time-lines and costs for the preparation of Stage II.

2. Sector background and coverage

2.1 Sector Background

A large number of (more than 400) Chinese enterprises in the solvent sector consume HCFCs. They include medical devices, electronics, metal, precision instrument and other sub-sectors and are widely located in 21 provinces/municipalities in China. However, the consumption amount is relatively concentrated - mainly in Jiangxi, Jiangsu, Zhejiang, Shanghai, Guangdong and Sichuan provinces, etc. Different enterprises have significantly different consumption scale; generally speaking, these enterprises' consumption scale is small. Due to limitations on the technical feasibility, financial obstacles and poor management capacity in small-and-medium sized enterprises as well as safety concerns, the solvent sector is facing great challenges to phase-out HCFCs. Since approval of the Stage I Solvent Sector Plan, China has initiated various activities to ensure the smooth implementation of the sector plan. With regard to policy actions, in order to duly achieve the freeze target in 2013 and 7.9% reduction in 2015, China has already issued the ODS regulations, strict control of HCFC production facilities and new establishment of facilities using HCFCs, and introduced the quota management in the solvent sector.

As a result of conversion activities carried out under the sector plan, collaborating with policy measures as well as series of TA activities, China has realized the freeze target for 2013, and the solvent sector also properly tracks its commitments set out in the sector plan. In the solvent sector in

China, taking into consideration the feasibility of current alternative technologies as well as the factors of zero ODP, low- GWP, etc., most enterprises so far selected KC-6 and HC as the alternative solutions to replace HCFCs. However, due to various applications and sub-sectors in the solvent sector, taking into account, among others, the scale of enterprise, the cost-effectiveness and product performance with alternative technologies, there may be some other alternatives to be considered by the industry in China for their ODS solvent phase out.

2.2 Implementation progress of HPMP (stage I) and challenge existed

According to the HPMP (stage I), solvent sector plan to phase out 69 ODP tonnes of HCFCs (approximately 627.27 MT, including 27.82MT to be phased out by demo project). By August 2014, 9 conversion contracts were signed, phasing out 610.292 MT of HCFCs. In order to support and push forward HCFCs phase-out activities in the solvent sector, FECO/MEP, with the cooperation and assistance of the Implementing Agency, also carried out a series of TA activities, including training workshops, work meetings, baseline verifications, etc. With regard to TA activities, FECO will continue to provide solvent enterprises with training and technical assistance. Due to the adoption of KC-6, HC and isopropanol as solvent by most beneficiaries, a handbook for safe practice with HC as solvent in the solvent sector is planned to be developed, with the intent of providing solvent enterprises with guidance on the use of HCFC alternatives.

In Stage I, most solvent enterprises in China lack information on options and applications of alternative technologies. Therefore, it is urgent to provide them with sufficient support and technical assistance in the course of HCFCs phase-out. Secondly, cooperation with related industrial associations, local EPBs, academic institutes and enterprises is significantly important to ensure the smooth implementation of the solvent sector plan. Additionally, the publicity to HCFCs phase-out strategy and the development of alternative technologies should be further enhanced among solvent enterprises, local EPBs and other stakeholders.

Given higher living standards and much more attention paid to public health, industry growth in medical devices, electronics and metal sub-sectors is seeing rapid increase. Some products need precision cleaning – in such product uses, HC solvent couldn't meet the requirements. If such enterprises phase out HCFC, they have to choose fluorinated solvent. As of date, these solvents are the most expensive alternatives at almost 10-15 times the price of HCFC-141b. Cost effectiveness of alternatives to HCFCs is key to assist this sector in systematic and seamless phase-out.

2.3 Preparation of the stage II of HPMP

As per the HCFCs accelerated phase-out schedule, Stage II of HPMP for the solvent sector will phase out at least 27.1% of the baseline consumption in addition to what is to be achieved in Stage I. This translates to at least 1,214 MT of HCFC-141b reduction (i.e., 35% of the baseline level in the sector). In order to properly develop the HPMP (stage II) for the solvent sector, the preparation project will include, among others, information collection, policy review, field survey, data and technology analysis, cost calculation, exploration of project implementation modalities and formulation of HPMP. The details are listed below:

A. Collection of general information

- Background information of the solvent sector will be collected and updated through consultation with industrial associations, solvent enterprises, and other related stakeholders.
- A brief review of activities will be undertaken in the solvent sector, focusing on lessons learned and how these could be used for future HCFCs phase-out.
- Consultation meetings at sub-sector and sectoral levels will be organized accordingly.

B. Development of questionnaire

- Questionnaire for data collection will be updated on the basis of the data collection exercise carried out during the preparation of Stage I of HPMP in the solvent sector. Working meetings will be organized with industrial associations, such as Industry Cleaning Association of China, solvent enterprises and experts to finalize the questionnaire.
- Consultation meetings with all relevant stakeholders will be organized to ensure common understanding of the data collection and the information required by the questionnaire.
- Training will be planned and provided to the staff participating in the data survey.

C. Policy review

- Existing national and local policies and regulations will be reviewed.
- New policies and regulatory framework for HCFCs phase-out in the solvent sector might be proposed.

D. Data collection and analysis

- Questionnaire will be distributed to around 150 enterprises.
- Field visits to a representative sample of 20 solvent enterprises will be organized. The field survey will be jointly carried out by the PMO/MEP, industrial associations, local EPBs and external experts, with a view to the eligibility of the enterprises, the information on HCFC-141b consumption, production lines, applications, technical preference for replacing HCFC-141b, and any difficulties or challenges to be faced by enterprises in future conversions.
- Upon the data collected, the consumption of HCFC-141b in solvent sector will be updated and analyzed, especially on the sub-sector basis and regional basis, and the situation of different solvents used in the solvent sector will be concluded.

E. Review and evaluate of substitute technologies

- Review and evaluation of alternative technologies used in the 9 phase-out project enterprises will be undertaken.
- Research on development of both domestic and overseas alternative technologies in solvent sector will be conducted. Updated information of alternative technologies to HCFC-141b in various sub-sectors will be collected and evaluated.
- Consultation meetings will be held to update and evaluate new alternative technologies.

F. Cost calculation

- Updated information of the cost for different alternative technologies will be shared with the relevant stakeholders.
- Cost calculation modality will be established, taking into account different scales of enterprises, especially the small and medium enterprises in the solvent sector.

G. Review of project implementation modality

- Project implementation modalities will be proposed. In the Stage I of HPMP in solvent sector, most beneficiaries are large or medium size enterprises. Given the fact that there are a large number of small and medium enterprises in the sector, in Stage II, it is expected that more of those enterprises will be involved in phase-out activities. Therefore, in order to identify implementation modalities fit to this situation, in addition to the single enterprise project, some other project implementation modalities may be taken into consideration.
- According to the findings of data analysis, taking into account the feasibility of alternatives, conversion costs, enforcement of local regulations, the possibility of "city-wide projects" might be discussed in future HCFCs phase-out. Some cities where a lot of medium and small

sized solvent enterprises are located and the local governments are capable and expressed their willingness to accelerate HCFCs phase-out, may be considered to develop city-wide projects, with the intent of undertaking accelerated phase-out of all the ODS solvents in those particular cities.

H. Formulation of the HPMP(stage II)

- Stakeholders meetings will be organized to review the draft of the sector plan, including proposed HCFCs phase-out strategy, technology options, proposed policy framework, cost calculation, proposed implementation modalities, and so on.
- The Stage II of HPMP for solvent sector will be revised based on the feedback from aforementioned meetings, and will be concluded for submission to the 76th ExCom Meeting.

3. Timelines for preparation

Overall time plan for implementation of the project during the 12 months is given in the table below:

	Q1	Q2	Q3	Q4
Inception meeting	X			
Field survey planning	X	X		
Data collection	X	X		
Data analysis		X	X	
Project preparation		X	X	X
Stakeholder consultations		X	X	X
Project document finalization				X

4. Project costs and break-down

The project preparation costs for sector project can be given in the table below.

Component	Particulars	Cost in USD
Workshops / meetings	Inception/ industry consultations on technology issues / finalization	30,000
Data collection and analysis	Field survey for data collection, data analysis, technology options assessment including technical support, project development and implementation plan development including support during stakeholder consultations	290,200
Management, communications and miscellaneous	Travel for FECO staff for preparation, communication, printing including outreach and other miscellaneous costs	54,020
	Grand total	374,220

