## Terms of References

## for PU Foam Sector Small and Medium-Sized Enterprises Market Survey

(Ref. No.CS-33)

### Background

### The Stage I Sector Plan of HCFC-141b in the polyurethane (PU) foam sector in China was approved at the 64th ExCom meeting in 2011. It aimed to completely phase out HCFC-141b consumption in the three targeted sub-sectors: (i) refrigerators and freezers; (ii) reefer containers; and (iii) small household appliances. At present, 54 conversion projects and 6 system house projects have been financed by the HCFC phase out plan (stage I) PU foam. The 54 conversion projects, when completed, will have eliminated HCFC-141b demand of 12,762 MT out of the targeted phase-out of 14,685 MT. The remaining phase-out will be achieved through policy measures.

### The Stage II Sector Plan for phase-out of HCFC-141b in the PU foam sector in China was finalized in January 2016 by the joint effort of FECO/MEP and World Bank, and was approved at the 77th ExCom with a total funding of US $141,471,210. Taking into account the large remaining quantity of HCFC-141b to be phased out in the sector and the readiness of various remaining sub-sectors for conversion in relation to viable technologies, China proposes 45% reduction in 2020, and complete phase-out in 2026.

### Different from the enterprises in Stage I, most of the remaining foam enterprises are small and medium-sized enterprises (SMEs) whose technical and financial capacity is limited. Adoption of low GWP alternative technology with intensive investment is a major challenge. Moreover, the consumption is scattered across several different sub-sectors, each with their own specific technical challenges. Consequently, special consideration of the funding and capacity needs of SMEs is needed, as are the issues of equity, cost-effectiveness, speed in implementation, availability of affordable and viable alternatives, and management and delivery capacity.

### Objectives

### The objective of this assignment is to conduct an SME market survey in the PU foam sector, including SMEs, equipment suppliers and system houses and prepare an analysis report based on the collected data. The survey and report will assist FECO to gain better knowledge of the status and location of the SMEs and promote the design of new SME funding and implementation modality under HPMP Stage II.

### Scope of Work

Service that will be provided by the Consultant includes:

a) Collection of base information

* Available information of the PU foam SMEs among various sub-sectors to be addressed under sector plan (stage II), whose annual HCFC-141b consumption is considered small for the subsector and/or estimated to be under 20 MT, will be collected and updated through wide consultation with industrial associations, equipment suppliers, foam producers, alternative producers, system houses, and other related stakeholders nation-wide.
* A brief review of World Bank and FECO management policy, proposed voucher scheme, safeguards documentations for the PU foam sector plan with a view to understanding possible alternative funding and implementation modalities for SMEs.
* A data collection plan will be developed, taking into account, among others, information collected in the survey for Stage II preparation, and the above, available and updated information on enterprises. The action plan will suggest the threshold of HCFC consumption for SMEs per subsector for the purposes of the survey, the number of SMEs to be reached, as well as the targeted response rates.

b) Development of questionnaires

* Questionnaires will be developed and disseminated to the SMEs identified above in step a). The samples shall cover 7 major sub-sectors, namely panel, insulation pipe, spray foam, solar water heater, heat pump water heater, integral skin, shoe sole, and other. Follow-up will be required until collected questionnaires meet the data collection plan’s response rate target per subsector. At least 200 questionnaires in total shall be returned for analysis.
* It is expected that the returned questionnaire should reflect the proportion of sub-sectors in the industry. The recommended sub-sector distribution is indicated in Table 1:

 Table 1: Sub-sector Distribution

|  |  |  |
| --- | --- | --- |
| **Sub-sector** | **Proportion**  | **Returned Questionnaire****(at least)** |
| Panel | 20% | 40 |
| Spray  | 20% | 40 |
| Solar water heater | 20% | 40 |
| Pipe insulation | 20% | 40 |
| Heat pump water heater | 7% | 14 |
| Integral skin | 5% | 10 |
| Shoe sole | 5% | 10 |
| Others  | 3% | 6 |

*
* The questionnaire shall cover essential information including but not limited to: the SMEs geographical distributions, sub-sector, establishment date, ownership proportion; plus both MDI and HCFC-141b/polyol consumption in 2017 and output of the products; in addition, baseline equipment information such as type, quantity, suppliers is also needed.
* Questionnaires used during the preparation of Stage II will be taken into consideration.
* The consultant are encouraged to increase the number of questionnaires collected from SMEs and remains the rights to adjust how many questionnaires be solicited from each sub-sector basing on the consultant’s knowledge and experience. The adjustment should be specified in the data collection plan and be agreed by FECO.

c) Field survey

* Field visits are expected to focus on the 7 sub-sectors manufacturers, as well as system house companies and equipment suppliers. At least 45 field visits shall be conducted with full consideration of the geographic distribution; specifically at least 35 foam enterprises,, 5 system house companies and 5 equipment suppliers will be covered.
* It is expected that the foam enterprise-level visits should cover all the sub-sectors and reflect the proportion of sub-sectors in the industry. The recommended sub-sector distribution is indicated in Table 1.
* The field survey will probe into more details of the foam manufacturers. The survey will verify the information in the questionnaire, and explore the financial status of the SMEs along with the procurement and payment methods practiced between SMEs and suppliers. The survey would also solicit the SMEs’ preference on alternative technology for replacing HCFC-141b, and any conversion plan and technical assistance in need for conversions. In addition, the information on media (i.e. website, newspaper, annual exhibitions) that SMEs usually access to is also needed
* The field survey will also reach system house companies and equipment suppliers. The survey will collect information of suppliers’ annual product scale, delivery cycle, the type and quantity of the downstream partners, as well as the development and adoption of HCFCs alternative technologies and safety measures. The field survey will also examine the market practices between suppliers and downstream SMEs.

d) Review and analysis

* Upon the information collected, the consultant will analyze and provide a perspective on the status of the foam SMEs, with specific analysis of general SME business status, present SME market mechanics/structure, financial and technology vulnerability, and suggestions to SME funding and project implementation modality under HPMP Stage II.
* Consultation meetings will be held to update and share the collected information, solicit stakeholders’ suggestions on the formulation of the survey report and required funding and project implementation modality.

### Meetings to be organized by the Consultant

|  |  |  |  |
| --- | --- | --- | --- |
|  | Meeting | Participants | Estimated participants |
| 1 | Consultation meeting on initiation of survey | The Association/technical experts/ sector representatives ensuring the sufficient representativeness of 7 sub-sectors, equipment suppliers as well as system house companies | 50 (FECO’ excluded) |
| 2 | Consultation meeting on survey report and funding and project implementation modality | The Association /technical experts/ sector representatives ensuring the sufficient representativeness of 7 sub-sectors, equipment suppliers as well as system house companies | 50 (FECO excluded) |

### Outputs

The outputs of the services will include:

1) Questionnaire development and data collection plan

2) Survey Report with analysis of collected information through questionnaire and site visits on PU foam SMEs, and suggestions of SME funding and project implementation modality;

3) Short list of SMEs, system house and equipment suppliers in the sector;

4) 2 meeting minutes for the two rounds of consultations with participant lists.

### Qualification of consultant

The Consultant should meet the following requirements:

1) The Consultant should have extensive experiences on conducting national surveys and writing sector-level analysis reports;

2) The Consultant is able to develop a list of adequate amount of SMEs’ contact information and obtain data through questionnaire survey and site visits;

3) The Consultant is able to reach system house and equipment suppliers in various regions where SMEs are concentrated, and engage the suppliers to assist in data collection;

4) The Consultant should have experience in organizing meetings and invite foam SMEs representatives, equipment suppliers, system houses and experts, to obtain helpful inputs and comments in the preparation, implementation, and conclusion stages of the market survey.

7)

### Requirement for the Key Personnel

1. The Consultant should be able to form a 4-member task team with requisite qualifications and experience and afford at least 255 person days. The team should include 1 team leader, 1 technical expert, and 2 team members. The required qualifications for team members are as follows:

|  |  |  |
| --- | --- | --- |
| **Personnel** | **Requirements** | **Estimated Inputs (Person days)** |
| Team leader | 1. At least five years working experience in PU foam or chemical industry;
2. Knowledge of the Montreal Protocol and China HCFCs phase-out sector plan in PU foam;
3. Sufficient experiences of working with administrative departments, industry association, PU foam enterprises and foam suppliers;
4. Strong influence and ability of coordination;
5. Responsible for the assignment to ensure satisfied performance of the team and report to FECO regularly on project progress;
 | 65 |
| Technical expert | * + - 1. At least five years’ experience in PU foam research or production field;
			2. Familiar with the PU foam sector and its sub-sectors;
			3. Sound knowledge on HCFC-141b alternative technologies;
			4. Capacity to identify the challenges from technical and safety aspects when ;
			5. Willing and able to travel frequently within China.
 | 80 |
| Team Members (2 persons) | 1. At least 2 years working experience in industry data processing and analysis;
2. Good writing skills and hands-on experiences on formulating industrial survey report;
3. Cooperative and have excellent inter-personal skills;
4. Willing and able to travel frequently within China.
 | 110 |

### Timetable

The duration of this assignment is estimated to be 10 months.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tasks** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Signing contract | √ |  |  |  |  |  |  |  |  |  |
| Develop questionnaire and work plan | √ |  |  |  |  |  |  |  |  |  |
| First Consultation Meeting |  | √√ |  |  |  |  |  |  |  |  |
| Distribution of questionnaire |  | √√ | √√ | √√ | √√ |  |  |  |  |  |
| On-site investigation |  |  | √√ | √√ | √√ |  |  |  |  |  |
| Analyze collected data |  |  |  |  |  | √√ |  |  |  |  |
| Proposal draft report |  |  |  |  |  |  | √√ | √√ |  |  |
| Second Consultation Meeting |  |  |  |  |  |  |  | √ | √ |  |
| Finalization of Survey Report |  |  |  |  |  |  |  |  | √ | √√ |

### Payment Schedule

The grant of lump sum contract will be disbursed through four installments. The detailed payment condition and amount are indicated in the below table.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Payment Condition** | **Percentage of the total contract amount**  | **Estimated disbursement Date** |
| 1 | Contract signed | 10% | Upon the contract signed |
| 2 | Questionnaire and data collection plan developed and accepted by FECO | 30% | 2 months after the contract signed |
| 3 | Draft report submitted and accepted by FECO | 40% | 7 months after the contract signed |
| 4 | Final report, short list, and 2 meeting minutes submitted and accepted by FECO | 20% | 10 months after the contract signed |