China HCFC Phase-Out Project (Stage I) (P115561)  

Key Dates  

**Key Project Dates**  
- Bank Approval Date: 22-Nov-2012  
- Planned Mid Term Review Date: 31-Dec-2015  
- Original Closing Date: 31-Dec-2017  
- Effectiveness Date: 04-Jan-2013  
- Actual Mid-Term Review Date: 12-Oct-2015  
- Revised Closing Date: 31-Dec-2017  

Global Development Objectives  

**Global Environmental Objective (from Project Appraisal Document)**  
The project development objective is to reduce HCFC production and HCFC-141b consumption in the polyurethane (PU) foam sector in order to contribute to the Government of China's endeavor to comply with its Montreal Protocol phase-out obligations for HCFCs by 2015, as well as to reduce emissions of GHG from the production and PU foam sectors.

Has the Global Environmental Objective been changed since Board Approval of the Project Objective?  
No

Components  

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment in HCFC Production Reduction</td>
<td>(Cost $85.00 M)</td>
<td></td>
</tr>
<tr>
<td>Technical Assistance and Policy Support</td>
<td>(Cost $11.10 M)</td>
<td></td>
</tr>
<tr>
<td>Investment in HCFC 141-B Consumption Reduction in the Polyurethane (PU) Foam Sector</td>
<td>(Cost $63.00 M)</td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>(Cost $8.40 M)</td>
<td></td>
</tr>
<tr>
<td>Preparation of HCFC Phaseout Activities Post 2015</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall Ratings  

<table>
<thead>
<tr>
<th>Name</th>
<th>Previous Rating</th>
<th>Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress towards achievement of GEO</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Overall Implementation Progress (IP)</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Overall Risk Rating</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Implementation Status and Key Decisions

The project has already met or exceeded most of its key outcome targets, including compliance with China’s 2015 Montreal Protocol (MP) production and consumption limits for HCFCs. Production of all types of HCFCs in 2015 was 16 percent below the MP limit. Consumption of all HCFCs including HCFC-141b in the polyurethane foam sector targeted by the project was 5 percent below the sector-specific target, which also contributed toward China’s compliance with its total HCFC consumption limit. These results, along with a planned Stage 2 project being designed with assistance from the current project, put China on a solid path toward compliance with the lower MP allowance limits for 2020 and beyond.

Reduction in greenhouse gas (GHG) emissions has substantially exceeded the targets set by the project. To date, 37 foam manufacturing enterprises have phased out their consumption of HCFC-141b through project-financed subprojects and another 17 conversion subprojects are still underway. In addition, the project is financing investments at six upstream “system houses” to help them formulate and supply low- or zero-OPD/GWP foam-blowing agents to foam producers, including many of the smaller-scale enterprises. Although the number of enterprises implementing subprojects is lower than originally planned, the total amount of HCFC phased-out is expected to be higher. Issuance of the proposed ban on the use of HCFC-141b in the three foam subsectors was subject to delays. The draft regulations and recommendations are still under consideration of MEP. However, these regulations are expected to be in place by last quarter of 2017.
### Risks

**Systematic Operations Risk-rating Tool**

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Rating at Approval</th>
<th>Previous Rating</th>
<th>Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political and Governance</td>
<td>--</td>
<td>• Low</td>
<td>• Low</td>
</tr>
<tr>
<td>Macroeconomic</td>
<td>--</td>
<td>• Low</td>
<td>• Low</td>
</tr>
<tr>
<td>Sector Strategies and Policies</td>
<td>--</td>
<td>• Low</td>
<td>• Low</td>
</tr>
<tr>
<td>Technical Design of Project or Program</td>
<td>--</td>
<td>• Moderate</td>
<td>• Moderate</td>
</tr>
</tbody>
</table>
Institutional Capacity for Implementation and Sustainability

- --
- Moderate
- Moderate

Fiduciary

- --
- Moderate
- Moderate

Environment and Social

- --
- Substantial
- Substantial

Stakeholders

- --
- Moderate
- Moderate

Other

- --
- --
- --

Overall

- --
- Moderate
- Moderate

Results

Global Environmental Objective Indicators

- Consumption of HCFC141B within Maximum Allowable Limits in 2013 and 2015

<table>
<thead>
<tr>
<th>Value</th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>5,393 ODP tons</td>
<td>4,244.28 ODP tons</td>
<td>4,244.28 ODP tons</td>
<td>4,450 ODP tons</td>
</tr>
<tr>
<td>Date</td>
<td>12-Nov-2012</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>01-Jan-2016</td>
</tr>
</tbody>
</table>

Comments
The total consumption of HCFC-141b in 2015, as per the independent verification report, is 38,584 MT or 4,244.28 ODP tons. HCFC-141b consumption continues to decline and has surpassed the target of the project by 5%.
The total consumption of HCFC-141b in 2016 is not available yet. The 2016 independent verification exercise starts at end 2017. The result will only be available in September.

- Production of HCFC 141B, HCFC 142B and HCFC 22 within maximum allowable limits in 2013 and 2015

<table>
<thead>
<tr>
<th>Value</th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>29,122 ODP tons</td>
<td>21,925.63 ODP tons</td>
<td>21,925.63 ODP tons</td>
<td>26,210 ODP tons</td>
</tr>
<tr>
<td>Date</td>
<td>12-Nov-2012</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>01-Jan-2016</td>
</tr>
</tbody>
</table>

Comments
The independent verification of 2015 HCFC production confirms the level of production of all HCFCs in 2015 is 21,925.63 ODP tons. This actual production level of 21,925.63 ODP tons represents an accelerated phase-out of more than 4,000 ODP tons against the target.
The verification of 2016 HCFC production starts at end of April 2017. Actual HCFC production in 2016 will only be available in September.
### Reduction of GHG Emission from the PU Foam Sector (Text, Custom)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>n/a</td>
<td>7.5 million tCO2e (tonnes of CO2 equivalent)</td>
<td>7.5 million tCO2e (tonnes of CO2 equivalent)</td>
<td>11 million tCO2e (tonnes of CO2 equivalent)</td>
</tr>
<tr>
<td>Date</td>
<td>--</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>31-Dec-2016</td>
</tr>
</tbody>
</table>

**Comments**
GHG emission reduction from the PU Foam sector remains unchanged from the level reported in the previous ISR. The current reduction amount plus the projection is on track to meet its end-of-project target.

### Reduction of GHG from the Production Sector (Text, Custom)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>n/a</td>
<td>196.98 million tCO2 (tonnes of CO2 equivalent)</td>
<td>196.98 million tCO2 (tonnes of CO2 equivalent)</td>
<td>63 million tCO2e (tonnes of CO2 equivalent)</td>
</tr>
<tr>
<td>Date</td>
<td>--</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>31-Dec-2016</td>
</tr>
</tbody>
</table>

**Comments**
The original target was based on HCFC-141b accounting for 100% of the total phase-out, while the actual substances phased out included large volumes of higher GWP substances:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Reduced production 2010-15 (metric tons)</th>
<th>GWP 100-yr (tons CO2e / MT)</th>
<th>Climate impact (million tons CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCFC-22</td>
<td>66,111</td>
<td>1,760</td>
<td>116.36</td>
</tr>
<tr>
<td>HCFC-141b</td>
<td>32,834</td>
<td>782</td>
<td>25.68</td>
</tr>
<tr>
<td>HCFC-142b</td>
<td>15,048</td>
<td>1,980</td>
<td>29.80</td>
</tr>
<tr>
<td>HCFC-123</td>
<td>1,062</td>
<td>79</td>
<td>0.08</td>
</tr>
<tr>
<td>HCFC-124</td>
<td>325</td>
<td>527</td>
<td>0.17</td>
</tr>
<tr>
<td>HFC-23**</td>
<td>1,983</td>
<td>12,400</td>
<td>24.59</td>
</tr>
<tr>
<td>Total</td>
<td>115,381</td>
<td></td>
<td>196.68</td>
</tr>
</tbody>
</table>

**Overall Comments**
Intermediate Results Indicators

- **Number of enterprises covered by contracts (Number, Custom)**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
<td>0.00</td>
<td>60.00</td>
<td>60.00</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>12-Nov-2012</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>31-Dec-2017</td>
</tr>
</tbody>
</table>

**Comments**
Includes 54 subprojects for foam manufacturing enterprises and 6 subprojects for "system houses" that supply raw materials including blowing agents to foam enterprises. To date, 37 subprojects have already completed conversions and obtained national acceptance by relevant authorities. The remaining 17 subprojects including system houses are ongoing and expected to obtain national acceptance by end of 2017. The funds available for this activity have been fully committed. Although the number of enterprises is lower than the initial target, the same amount of HCFC reduction will still be achieved.

- **Number of phaseout contracts signed with HCFC producer (Number, Custom)**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
<td>0.00</td>
<td>12.00</td>
<td>12.00</td>
<td>15.00</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>12-Nov-2012</td>
<td>24-Nov-2016</td>
<td>24-Apr-2017</td>
<td>31-Dec-2017</td>
</tr>
</tbody>
</table>

**Comments**
The number of phase-out contracts signed with HCFC producers remains unchanged from the previous ISR. With the 12 contracts, China was able to achieve its production phase-out target. FECO conducted a reverse auction to provide incentives for HCFC producers to permanently close down idle HCFC production capacity in late 2016. The total funding requirement to cover the four winning bids is $2.6 million. Closure contracts for the four HCFC producers have already been signed. With these four closure contracts, an additional combined production capacity of 20,500 metric tons per year of HCFC-142b and HCFC-22 will be permanently removed.

- **Implementation of key policies and regulations (Text, Custom)**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Actual (Previous)</th>
<th>Actual (Current)</th>
<th>End Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
<td>n/a</td>
<td>For the production sector, quotas have been established for each of the 28 enterprises.</td>
<td>For the production sector, quotas have been established for each of the 28 enterprises.</td>
<td>Non-HCFC Foam product safety/standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regulation quotas for 2013 and 2015 have</td>
<td>Regulation quotas for 2013 and 2016 have</td>
<td></td>
</tr>
</tbody>
</table>
The result indicators for key policies and regulations consist of three elements:

1. Production quota system - This has already been put in place;
2. Ban the use of HCFC-141b in the three targeted sub-sectors - The final proposal and the final text of the proposed ban were submitted to MEP during the second half of 2016. Due to MEP's new legal approval procedures, issuance of the ban is expected in the last quarter of 2017;
3. Non-HCFC foam standards - Standards will be endorsed by June 2017.

Comments
Audited financial report for the period end December 2016 is not yet due. The last reports: 2015 progress reports and 2016 work programs for the foam and HCFC production sectors were submitted to the Bank and the ExCom during the last ISR reporting period. No new reports are due at this time.

The semi-annual progress report for the period July - December 2016 was timely submitted to the Bank. The Bank team found the report satisfactory.
Overall Comments

Data on Financial Performance

Disbursements (by loan)

<table>
<thead>
<tr>
<th>Project</th>
<th>Loan/Credit/TF</th>
<th>Status</th>
<th>Currency</th>
<th>Original</th>
<th>Revised</th>
<th>Cancelled</th>
<th>Disbursed</th>
<th>Undisbursed</th>
<th>Disbursed</th>
</tr>
</thead>
<tbody>
<tr>
<td>P115561</td>
<td>TF-13143</td>
<td>Effective</td>
<td>USD</td>
<td>168.30</td>
<td>168.30</td>
<td>0.00</td>
<td>162.81</td>
<td>5.49</td>
<td>97%</td>
</tr>
</tbody>
</table>

Key Dates (by loan)

<table>
<thead>
<tr>
<th>Project</th>
<th>Loan/Credit/TF</th>
<th>Status</th>
<th>Approval Date</th>
<th>Signing Date</th>
<th>Effectiveness Date</th>
<th>Orig. Closing Date</th>
<th>Rev. Closing Date</th>
</tr>
</thead>
</table>

Cumulative Disbursements

Restructuring History

Level 2 Approved on 04-Sep-2013, Level 2 Approved on 17-Apr-2015, Level 2 Approved on 02-Aug-2016
Related Project(s)

There are no related projects.