



## Hebei Air Pollution Prevention and Control Program (P154672)

EAST ASIA AND PACIFIC | China | Environment, Natural Resources & the Blue Economy Global Practice | Requesting Unit: EACCF | Responsible Unit: SEAE1  
IBRD/IDA | Program-for-Results Financing | FY 2016 | Team Leader(s): Dafei Huang

Seq No: 7 | ARCHIVED on 30-Dec-2019 | ISR39884 | Created by: Dafei Huang on 09-Dec-2019 | Modified by: Dafei Huang on 29-Dec-2019

### Program Development Objectives

Program Development Objective (from Program Appraisal Document)  
To reduce emissions of specific air pollutants in the key sectors in Hebei

### Overall Ratings

Name	Previous Rating	Current Rating
Progress towards achievement of PDO	● Satisfactory	● Satisfactory
Overall Implementation Progress (IP)	● Satisfactory	● Satisfactory

### Implementation Status and Key Decisions

The Program is on track to close with full implementation by its closing date of December 31, 2019. The Program has achieved its Program Development Objective (PDO) and its PDO indicators.

The program provided direct support to Hebei's Air Pollution Control and Prevention Action Plan with incentives to targeted prioritized measures. Hebei has reported significant results since the start of the Action Plan, achieving 40 percent reduction in annual average ambient PM2.5 concentration in 2018 compared to 2013.

The program has supported (a) installing continuous emissions monitors (CEMs) in all state- and municipal-controlled industrial facilities and using the CEM system to enforce air pollutant emissions standards; (b) decommissioning more than 4,500 older, highly polluting buses and their replacement with clean energy buses; (c) deployment of over 1.2 million clean stoves in Langfang and Baoding; (d) increasing nitrogen utilization efficiency (NUE) on more than 6.2 million hectares of cropping land; (e) implementation of a comprehensive inventory system; and (f) approval of the guidance on priority actions for air quality actions for the 14th Five-Year Development Plan period 2021-2025.

### Data on Financial Performance

#### Disbursements (by loan)

Project	Loan/Credit/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P154672	IBRD-86230	Effective	USD	500.00	500.00	0.00	500.00	0.00	100%

#### Key Dates (by loan)

Project	Loan/Credit/TF	Status	Approval Date	Signing Date	Effectiveness Date	Orig. Closing Date	Rev. Closing Date
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P154672	IBRD-86230	Effective	06-Jun-2016	12-Jul-2016	11-Oct-2016	31-Dec-2018	31-Dec-2019
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### DLI Disbursement

DLI ID	DLI Type	Description	Coc	DLI Amount	Achievement Status	Disbursed amount in Coc	Disbursement % for DLI
<b>Loan: IBRD86230-001</b>							
1	Regular	number of EPBs at the provincial and ref	USD	60,000,000.00	Fully Achieved	60,000,000.00	100 %
2	Regular	percentage of enterprises in statecontro	USD	120,000,000.00	Fully Achieved	120,000,000.00	100 %
3	Regular	number of clean stoves installed	USD	80,000,000.00	Fully Achieved	80,000,000.00	100 %
4	Regular	number of hectares with increased NUE of	USD	79,980,000.00	Fully Achieved	79,980,000.00	100 %
5	Regular	number of clean energy buses replacing	USD	78,770,000.00	Fully Achieved	78,770,000.00	100 %
6	Regular	implementation of a comprehensive offici	USD	40,000,000.00	Fully Achieved	40,000,000.00	100 %
7	Regular	approval of a cost effective comprehensi	USD	40,000,000.00	Fully Achieved	40,000,000.00	100 %

### Program Action Plan

<b>Action Description</b>	Training is provided to no less than 480 monitoring and enforcement staff at the EPB at all levels.				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
Technical		Client	Due Date	31-Dec-2018	Completed
<b>Completion Measurement</b>	The PMO and BEE provided evidence of the training on 480 members of enforcement staff on air quality monitoring and enforcement related topic.				
<b>Comments</b>					

<b>Action Description</b>	Training is provided to no less than 60 work safety supervision staff.				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
Other		Client	Due Date	09-Feb-2018	Completed
<b>Completion Measurement</b>	Training provided to no less than 60 work safety supervision staff has been completed by mid-term. Report and evidence was submitted during previous mission.				
<b>Comments</b>					



<b>Action Description</b>	A GRM is established at the provincial level with staff appointed at the HAP leading group office. The operation structure and protocols and a complaint hotline, is made available to public.				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
		Client	Due Date	30-Dec-2016	Completed
<b>Completion Measurement</b>					
<b>Comments</b>					

<b>Action Description</b>	Report to the Bank of any credible and material allegations of fraud/and/or corruption regarding the Program; and no persons or entities debarred or suspended by the Bank are awarded a contract under the Program.				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
Fiduciary Systems		Client	Recurrent	Yearly	Completed
<b>Completion Measurement</b>	Recurrent update				
<b>Comments</b>	The Bank team was informed by Hebei as of May 8, 2019, no contracts had been awarded to the Bank's debarred or suspended firms.				

<b>Action Description</b>	The CNAO to develop audit TOR and enable required Program financial statement audit report timely issued, acceptable to the Bank				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
		Client	Due Date	30-Dec-2016	Completed
<b>Completion Measurement</b>					
<b>Comments</b>					

<b>Action Description</b>	Program's implementation status should be disclosed publicly on annual basis.				
<b>Source</b>	<b>DLI#</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Timing Value</b>	<b>Status</b>
Technical		Client	Recurrent	Yearly	Completed
<b>Completion Measurement</b>	EPB created a "Public Information Disclosure" column on its official website where has published information on the updated '2018-2020, Winning the Blue Skies Battles' Work Plan.				
<b>Comments</b>	EPB created a "Public Information Disclosure" column on its official website where has published information on the updated '2018-2020, Winning the Blue Skies Battles' Work Plan.				

## Risks

### Systematic Operations Risk-rating Tool

Risk Category	Rating at Approval	Previous Rating	Current Rating
Political and Governance	● Low	● Low	● Low
Macroeconomic	● Moderate	● Moderate	● Moderate
Sector Strategies and Policies	● Low	● Low	● Low
Technical Design of Project or Program	● Moderate	● Moderate	● Moderate
Institutional Capacity for Implementation and Sustainability	● Substantial	● Substantial	● Substantial
Fiduciary	● Substantial	● Substantial	● Substantial
Environment and Social	● Substantial	● Moderate	● Substantial
Stakeholders	● Low	● Low	● Low
Other	--	--	--
Overall	● Substantial	● Substantial	● Substantial

#### Comments

E&S risk is adjusted to Substantial. News media reported fatalities related to carbon monoxide poisoning in Hebei. These reports are directly targeting the use of 'clean coal', a semi-coked briquette, but little information is available on the type of stoves involved in the incidents. The Program has a DLI of the number of households installed with cleaner heating stoves. The loan allocation has been fully disbursed against the verified number of stoves using natural gas and electricity. Although the Program approved a list of clean stoves that have been tested to meet technical criteria. It is unclear whether the incidents are within the Program boundary. The Hebei government has started investigations. The Borrower counterpart is following up with relevant agencies on the investigation results, and will share information as soon as it becomes available. The current risk rating is adjusted to Substantial with the potential linkage with the incidents. Risk rating may be adjusted pending on fact finding result and more information available. The task team has filed the ESIRT incident report.

## Results

### PDO Indicators by Objectives / Outcomes

Reduce emissions from specific air pullutants in the key sectors in Hebei				
►Reduction of SO2 emissions from enterprises included in the CEM (tons) (Number, Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	454,000.00	150,000.00
Date	02-Dec-2013	08-May-2019	16-Dec-2019	31-Dec-2019
Comments	The PMO's ICR reported results over the years of implementation. The emission reductions of SO2 historical trend is as below: 2015: 180,200 tons less than in 2014 2017: 35,000 tons less than in 2016 2018: 238,800 tons less than in 2017			



<p>The three year total emissions reduction is 454,000 tons, but reductions are likely to have been even larger. In 2016, the government changed the estimation method to calculate emissions, and that's the reason why the official emission data from 2015 cannot be compared with that of 2016. Therefore, for the estimation of this indicator, the reduction in SO2 emissions for the year 2015 compared to the year 2014 are estimated, together with the emission reductions for the year 2017 compared to the year 2016, and for the year 2018 compared to the year 2017. Total SO2 reduction from 2014 to 2018 are thus likely to have been even larger.</p>				
<b>►Reduction of NOx emissions from enterprises included in the CEM (tons) (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	331,100.00	160,000.00
Date	01-Jan-2014	08-May-2019	16-Dec-2019	31-Dec-2019
Comments	<p>The PMO ICR reported total emission reduction of NOx 331,100 tons. The historic trend is as below: 2015: 188,200 tons less than 2014 2017: 78,900 tons less than 2016 2018: 64,000 tons less than 2017 Emission reductions of 2016 was not included for the same reason abovementioned for SO2.</p>			
<b>►Reduction of PM2.5 emissions from the 800,000 clean stoves deployed (tons) (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	3,269.00	1,300.00
Date	01-Jan-2014	08-May-2019	16-Dec-2019	31-Dec-2019
Comments	<p>The PMO ICR reported 3,269 tons of PM2.5 emission reductions achieved by replacing 800,000 stoves. The actually verified result was a total of 1,221,500 stoves replaced, which, in total, is equivalent to 4,991 tons of emission reduction. The indicator was thus overachieved both in the total number of clean stoves deployed through the program (which went up to 1,221,500) and in the total emission reduction achieved, which went up to 4,991 tons.</p>			
<b>►Reduction of NOx emissions from the transport sector (tons) (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	42,170.00	40,000.00
Date	01-Jan-2014	08-May-2019	16-Dec-2019	31-Dec-2019
Comments	<p>The PMO ICR reported total 51,272 tons of NOx emission reduction, with historic trends as below: 2015: 6,801 tons from the previous year 2016: 10,150 tons from the previous year 2017: 11,961 tons from the previous year 2018: 13,195 tons from the previous year</p>			

### Intermediate Results Indicators by Results Areas

Comprehensive control of industrial enterprises and reduced emission of multi-pollutants emissions (SO2, NOx, and primary PM2.5) from key industrial sectors

- Number of EPBs at the provincial and prefecture level implementing Standard Protocols on CEM Systems for emissions of air pollutants (Number, Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	12.00	12.00	12.00
Date	06-Jun-2016	06-Sep-2018	06-Sep-2018	29-Jun-2018
Comments				
<b>►Percentage of enterprises in State-controlled Lists and Municipal-controlled Lists integrated in the Improved CEM and Enforcement Systems for Air Pollutants (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	100.00	100.00	100.00
Date	06-Jun-2016	06-Sep-2018	06-Sep-2018	29-Jun-2018
Comments				

#### Area pollution control and dust control

<b>►Number of clean stoves installed (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	1,221,500.00	1,221,500.00	800,000.00
Date	06-Jun-2016	18-Oct-2018	18-Oct-2018	29-Jun-2018
Comments				

#### Prevention and control of emissions from mobile sources

<b>►Number of Clean Energy Buses replacing diesel buses, which are disposed of, in accordance with the National Regulations (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	4,432.00	4,632.00	4,500.00
Date	06-Jun-2016	08-May-2019	19-Dec-2019	29-Jun-2018
Comments	The dismantling of replaced old buses advanced. The PMO reported verified 200 dismantled buses with replacement by new energy buses.			

#### Disbursement Linked Indicators

<b>►DLI 1 Number of EPBs at the provincial and prefecture level implementing Standard Protocols on CEM Systems for emissions of air pollutants (Process, 60,000,000.00, 100%)</b>				
	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	12.00	12.00	12.00



Date	06-Jun-2016	06-Sep-2018	06-Sep-2018	--
Comments	The 3rd-party verified the completion report based on the agreed verification protocol.			

►DLI 2 Percentage of enterprises in State-controlled Lists and Municipal-controlled Lists integrated in the Improved CEM and Enforcement Systems for Air Pollutants (Process, 120,000,000.00, 100%)

	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	100.00	100.00	100.00
Date	06-Jun-2016	06-Sep-2018	06-Sep-2018	--
Comments	The 3rd-party verified the completion report based on the agreed verification protocol.			

►DLI 3 Number of Clean Stoves installed (Output, 80,000,000.00, 100%)

	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	1,221,500.00	1,221,500.00	800,000.00
Date	06-Jun-2016	18-Oct-2018	18-Oct-2018	--
Comments	Disbursement of US\$ 80,000,000 was made based on the verified results.			

►DLI 4 Number of hectares with increased NUE of at least 37% due to the application of formula fertilizer based on soil testing (Intermediate Outcome, 79,980,000.00, 84%)

	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	5,234,360.00	6,211,160.00	6,200,000.00
Date	06-Jun-2016	08-May-2019	19-Dec-2019	--
Comments	The DLI is fully achieved. In December 2019, the Bank has approved the final disbursement of US\$12,456,756 for the 976,800 ha of land cropped with 7 minor crops with application of formula fertilizer based on soil testing, which has been verified by 3rd-party following agreed verification protocol. Previously, there were two rounds of verifications disbursements. NUE improvement on 2,231,500 ha of land planted with winter wheat has been verified, and US\$ 28.79 million has been disbursed. And NUE improvement has been verified for 3,002,860 ha of land planted with summer corn. US\$38,74 million has been disbursed.			

►DLI 5 Number of Clean Energy Buses replacing diesel buses, which are disposed of, in accordance with the National Regulations (Output, 78,770,000.00, 98%)

	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	4,432.00	4,632.00	4,500.00
Date	06-Jun-2016	08-May-2019	19-Dec-2019	--



<b>Comments</b>	The DLI is fully achieved. The Bank approved the final disbursement for the 200 buses disposed with replacement of new energy buses, verified by third-party. The disbursement was made based on 68 buses as the remainder to meet the 4,500 target since the last ISR. Two verifications have been completed on the 4,432 buses disposed with replacement of new energy buses.
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<b>►DLI 6 Implementation of a Comprehensive Official Emissions Inventory System (Process, 40,000,000.00, 0%)</b>				
	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	0.00	1.00	1.00
Date	06-Jun-2016	08-May-2019	20-Dec-2019	--
<b>Comments</b>	Hebei submitted achievement notification with completion and verification report. A comprehensive inventory system has been implemented.			

<b>►DLI 7 Approval of a Cost-effective Comprehensive Plan on Air Quality Control for the next 5 years (Process, 40,000,000.00, 0%)</b>				
	Baseline	Actual (Previous)	Actual (Current)	2016- 2018
Value	0.00	0.00	1.00	1.00
Date	06-Jun-2016	08-May-2019	20-Dec-2019	--
<b>Comments</b>	<p>A new air quality action plan was approved on December 20 by the Provincial Government. The Bank is processing confirmation of achievement to account for the advanced amount.</p> <p>Hebei Government approved a new air quality action plan on December 20, namely Hebei Province Guidance on Key Actions for Air Pollution Control for the 14th Five-Year Plan Period (2021-2025). A Bank technical assistance (TA) supported a study on cost-effectiveness assessment of measures across sectors to inform formulation of the Guidance. The Guidance sets a target for the province to further reduce 20 to 25 percent of annual ambient PM2.5 concentration during the 14th FYP and identifies priority measures for implementation cross different sectors. Over the past years, the Government has committed to address air quality as a top priority. Measures were taken without much consideration on costs. As the obvious measures have already been implemented, further reduction of pollution level will not only become more challenging but more costly. The TA output informed the Hebei Government of the remaining potential and feasible options with quantified effectiveness, thereby identified priorities for implementation.</p>			