



## CH GEF Municipal Solid Waste Management Project (P126832)

EAST ASIA AND PACIFIC | China | Environment & Natural Resources Global Practice |  
Global Environment Project | Investment Project Financing | FY 2015 | Seq No: 7 | ARCHIVED on 22-May-2018 | ISR31425 |

Implementing Agencies: Foreign Economic Cooperation Office of Ministry of Environmental Protection, People's Republic of China

### Key Dates

#### Key Project Dates

Bank Approval Date:14-Nov-2014

Effectiveness Date:29-May-2015

Planned Mid Term Review Date:27-Nov-2017

Actual Mid-Term Review Date:02-Feb-2018

Original Closing Date:31-Dec-2019

Revised Closing Date:31-Dec-2019

### Global Development Objectives

Global Environmental Objective (from Project Appraisal Document)

The project's objective is to build capacity and demonstrate best available techniques (BAT) and best environmental practices (BEP) in municipal solid waste incineration in accordance with the Stockholm Convention.

Has the Global Environmental Objective been changed since Board Approval of the Project Objective?

No

### Components

Name

Capacity Building for Improved Operation and Regulation of MSW Incinerators:(Cost \$27.44 M)

Capacity Building for Improved MSW Management Planning:(Cost \$1.75 M)

Project Management:(Cost \$3.72 M)

### Overall Ratings

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

### Implementation Status and Key Decisions



Although progress is still behind schedule overall, the pace of implementation has improved markedly and the project is now on a more solid path toward achievement of its objectives. Operational and environmental performance audits have been completed at the three incinerators in Kunming that were selected for demonstration BET/BEP investments. On the basis of these audits, detailed operational improvement investment plans are now being prepared, with the proposed investments and monitoring expected to be completed by the end of 2019. Installation and upgrade of automatic monitoring systems has allowed government agencies to continuously monitor operating and emissions data at the eight active incinerators in the cities of Kunming and Ningbo, and has facilitated disclosure of key data on public websites. Detailed dioxins emissions baselines at the three demonstration incinerators are expected to be established within the next two months to enable more careful monitoring and assessment of the effectiveness of the planned BAT/BEP investments and their contribution toward compliance with Stockholm Convention standards. Efforts aimed at improving various incinerator technical standards, laboratory procedures, and the capacity of incinerator operators and government regulators are ongoing.

## Risks

### Systematic Operations Risk-rating Tool

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

## Results

### Global Environmental Objective Indicators



▶ Regular and reliable monitoring data show operating practices that lower dioxin levels to 0.1 ng TEQ/m<sup>3</sup> at three demonstration incinerators.(Text, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	TBD based on first year audits	TBD	Operational Baselines: Xishan 72% compliance with Stockholm Convention BAT/BEP; Dongjiao 69%; Konggang 70%. Dioxins baselines will be available in coming two months.	Operating practices at three demonstration incinerators are consistent with the 0.1 ng TEQ/m <sup>3</sup> dioxin emission target.
Date	05-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

▲ A planned schedule of improvements in operating procedures established after measuring and evaluating the baseline situation at three demonstration incinerators.(Yes/No, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	N	N	Y

▷ Achievement of milestones set for the improvement of operating procedures as identified in the schedule of improvements in operating procedures at three demonstration incinerators(Text, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	TBD based on first year audits	TBD based on first year audits	TBD based on first year audits	TBD based on first year audits

#### Overall Comments

The Operational and Environmental Performance Audit to assess baseline operating conditions at the four MSW incinerators in Kunming has been completed. It indicates that they are about 70% compliant with Stockholm Convention BAT/BEP guidance. The techniques and practices in which the incinerators currently fall short of SC BAT/BEP standards include areas such as waste acceptance and treatment, combustion conditions in the furnace, boiler and steam system operation, flue gas treatment, and bottom and fly ash treatment systems.

Because one of the four incinerators (Wuhua) will close in 2019, it is not included in the project financing for BAT/BEP improvement.

Note on sub-indicator 1: The investment plans are overdue because of the delay in the baseline audits, but with these audits completed the plans are now expected to be finalized and investments underway soon. The Konggang and Dongjiao incinerators have submitted operational



investment plans which are being reviewed by the Bank. Xishan will submit soon.

Note on sub-indicator 2: Based on review of the submitted operational improvement plans, the final target will be achieved overall once the plans are implemented.

### Intermediate Results Indicators

- **KEPB and KUMB have continuous access to data on operating conditions and emissions from all five Kunming incinerators (Yes/No, Custom)**

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y
Date	05-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

#### Comments

This indicator is to be achieved through development, installation and upgrade of monitoring systems for KUMB, YEPD and KEPB and installation of online monitoring sensors at incinerators. The systems have been completed and operational since mid-2017. The regulators have access to the operational and emission data of the 5 incinerators in Kunming.

The five incinerators refer to the original four incinerators that were appraised for the project investments by the project for BAT/BEP investments and another one in Kunming (Chenggong) that will only receive supervision by environmental and urban management authorities. Wuhua incinerator will be closed in mid-2019 as agreed by Kunming municipal government and the incinerator. It will be under supervision of the system until its closure.

- **NEPB has continuous access to data on operating conditions and emissions from all three incinerators in Ningbo. (Yes/No, Custom)**

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y
Date	05-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

#### Comments

This indicator is to be achieved through retrofit of CEMS in Ningbo incinerators and enhancement of Ningbo EPB information systems. Pertinent contracts have been completed and the systems are operational. The Ningbo regulators have access to the operational and emission data of all three incinerators in Ningbo.

Among the three incinerators in Ningbo, a new one was put into operation later 2018 and had been included in the system.

Note: At project appraisal, there were 3 incinerators in Ningbo. One was closed around 3 years ago. A substitute one was built and put into operation in 2017.



► Data on operating conditions and emissions disclosed to public in Kunming (Yes/No, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

Comments

This indicator is primarily to be achieved based upon the completion and operation of online monitoring and information management systems developed in Kunming. The systems have been completed and operational. Online disclosure websites were operational in early August 2017, and data disclosed to the public.

Note on below three supplemental indicators,

#1 and #3 -- the FIVE incinerators include four incinerator (Konggang, Xishan, Dongjiao and Wuhua) that were appraised at the project preparation and one incinerator (Chenggong) that was under construction during the project preparation; it will only be covered by the monitoring and information system financed by the project.

#2 -- the FOUR incinerators refer to the incinerators (Konggang, Xishan, Dongjiao and Wuhua) that were appraised at the project preparation

▲ Operating conditions of five incinerators posted on the web (Yes/No, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y

▲ Information on environmental impacts of four incinerators posted on community bulletin boards (Yes/No, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y



▲ Dioxin emission test results for five incinerators in Kunming posted on the web (Yes/No, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y

▶ Operating conditions of three Ningbo incinerators posted on the web (Yes/No, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	Y	Y	Y
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

Comments

This indicator is to be achieved through retrofit of CEMS in Ningbo incinerators and enhancement of Ningbo EPB information systems. The online disclosure website has been operational in early August 2017, and data disclosed to the public.

Among the three incinerators in Ningbo, a new one was put into operation later 2018 and had been included in the system.

▶ Public awareness of incinerator information disclosed (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	13.70	15.33	20.80	50.00
Date	31-May-2013	15-Aug-2017	01-Feb-2018	31-Dec-2019

Comments

The baseline was obtained during project preparation through social assessment in Kunming, meaning at that time people had certain level of access to incinerator information, e.g. through EIA and other means.

This indicator milestones are to be measured on a yearly basis through consultancy work carried out by public participation and communication consultant and external social impact monitoring consultants. Last monitoring was carried out in second half of 2017.

The public participation and communication supported by the project will continue throughout the project implementation.



#### ▲ Awareness of females of incinerator information disclosed (Percentage, Custom Breakdown)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	9.30	14.18	21.40	50.00
Date	31-May-2013	15-Aug-2017	01-Feb-2018	31-Dec-2019

#### ▲ Awareness of males of incinerator information disclosed (Percentage, Custom Breakdown)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	18.80	16.43	21.80	50.00
Date	31-May-2013	15-Aug-2017	01-Feb-2018	31-Dec-2019

#### ▶ Kunming district EPBs inspect each of five incinerators once per year on the basis of integrated permit (Yes/No, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	N	N	Y
Date	05-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

#### Comments

The indicator is to be achieved based on integrated permit development activity (below supplemental indicator) which is under implementation. An integrated permit is a facility-specific operating license setting out a range of operating and performance requirements (feedstock management, combustion performance, emission limits, monitoring, staff training, disclosure, etc.) needed to reduce the facility's environmental impact and follow Stockholm Convention best practices guidelines.

#### ▲ Integrated permit finalized for each incinerator (Yes/No, Custom Supplement)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	N	N	N	Y



► Number of regulators trained through study tours to northern America and Europe (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	6.00	6.00	36.00
Date	01-Jan-2015	29-Sep-2017	10-Apr-2018	31-Dec-2019

Comments

The Yunnan delegation, comprised of 6 members carried out a study tour to the Netherlands and Switzerland in September 2017. The Ningbo delegation is still making efforts to organize a study tour to North America.

► Number of incinerators nationwide with at least five supervisors and operators trained in BAT/BEP (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	40.00
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

Comments

This indicator is to be achieved through recruiting institutions to provide training to trainers and incinerators. Procurement of the consultancies are underway.

► Dioxin emissions from demonstration incinerators (Text, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	Baseline to be determined at end of first year audits	Baseline to be determined at end of first year audits	Baseline to be determined at end of first year audits	0.1 ng TEQ/m <sup>3</sup>
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

Comments

The contract is now being negotiated. It is expected the baselines will be available in May-June 2018.





► Ningbo Lab standard operating procedure assessed as consistent with international good practices (Text, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	Yes	Yes
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019

Comments

The SOP has been developed and accepted.

► Number of standards revised/developed (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	1.00	3.00
Date	01-Jan-2015	15-Aug-2017	10-Apr-2018	31-Dec-2019


Comments

1) MSWF-9 *Technical Standard for Operation Maintenance and Safety of MSW Incineration Plants* has been completed; 2) MSWF-8 *Technical Code for MSW Incineration and Energy Utilization Projects* and MSWF-10 *MSW Incinerator and Heat Recovery Boiler* will be finalized soon. 3) the new standards on fly ash is being prepared.

Overall Comments

## Data on Financial Performance

### Disbursements (by loan)

Project	Loan/Credit/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	Disbursed
P126832	TF-18479	Effective	USD	12.00	12.00	0.00	5.37	6.63	 45%

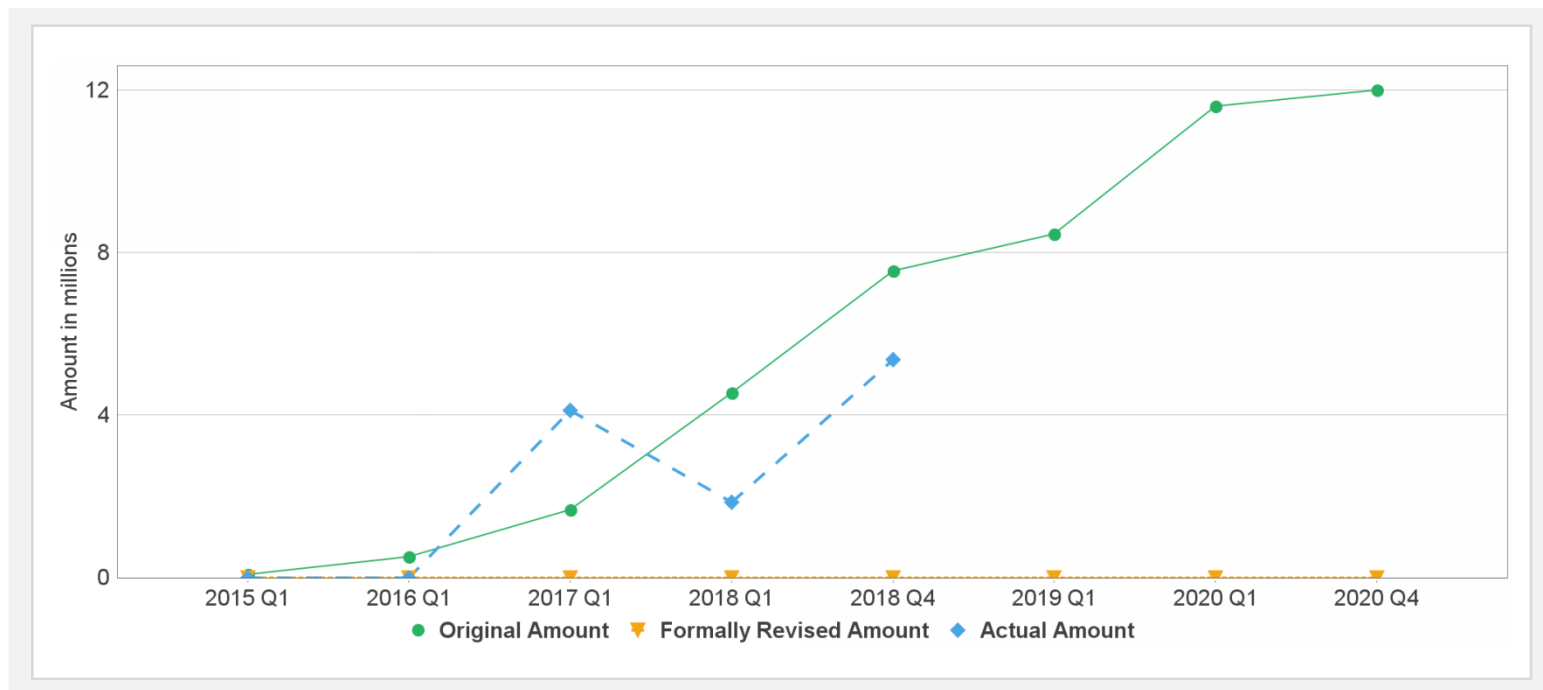
### Key Dates (by loan)

Project	Loan/Credit/TF	Status	Approval Date	Signing Date	Effectiveness Date	Orig. Closing Date	Rev. Closing Date
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P126832	TF-18479	Effective	14-Nov-2014	30-Dec-2014	29-May-2015	31-Dec-2019	31-Dec-2019
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## Cumulative Disbursements



## Restructuring History

There has been no restructuring to date.

## Related Project(s)

There are no related projects.