GHG Emission Reduction Quantitative Assessment of Pollutant Control Plan in China

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Outline

1. Introduction
2. Pollution Control Plan in Panzhihua City
3. Methodologies
4. Results of Quantitative Assessment
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1. Introduction

- 11th Five Year Plan for Environmental Protection (2006-2010)

Approved by the State Council of P.R. China on November 22, 2007

Indicator	2005	2010	Target
COD (10000 t)	1414	1270	-10%
SO_2 (10000 t)	2549	2295	-10%
Percentage of the water sections under national monitoring program failing to meet Grade V National Surface Water Quality Standard (%)	26.1	＜22	-4.1 percentage points
Percentage of the water sections (of 7 big waters of China) under national monitoring program meeting Grade III National Surface Water Quality Standard (%)	41	＞43	2 percentage points
Number of days in which urban air quality of key cities is superior to Grade II National Air Quality Standard exceeding 292 days (%)	69.4	75	5.6 percentage points

1. Introduction

- December 2007

  Statement of Joint Implementation of Co-benefits Projects between MOEJ and MEP, P.R.China
- April 2008-

  Japan-China Co-benefits Cooperation Programme
- April 2009-

  Japan-China Joint Study on Quantitative Assessment of "Pollutant Control Plan for 5 years (2006-2010) in Panzhihua city"
- November 2009

  Quantitative Assessment of plan in terms of GHG emission reduction (29 measures in air quality management)

1. Introduction

攀枝花市主要污染物
总量减排实施方案

- Pollutant control plan for 5 years (2006-2010) in Panzhihua city, Sichuan province
  - Measures/programmes to achieve pollutant emission reduction
  - Methodologies for calculating pollutant emission reduction
- Quantitative assessment of plan in terms of GHG emission reduction
  - Methodologies for calculating GHG emission reduction in Pollutatnt control plan
  - Calculation of GHG emission reduction
- Identification of outcome (amount of GHG emission reduction or avoidance as a result of plan implementation)

2. Pollution Control Plan in Panzhihua City

- Goal for 5 years during 2006-2010
  - 22% energy consumption reduction
  - SO_2 emission reduction 33,741t/year

2. Pollution Control Plan in Panzhihua City

- Sectors
  - Air Management (SO_2 Emission Reduction)
  - Water Management (COD Emission Reduction)
  - Waste Management
- Measures
  - Structural Adjustment
  - Project
  - Management

3. Methodologies

Sorting out pollutant emission reduction measures in Panzhihua's plan

Identifying methodologies for calculation of pollutant emission reduction measures

- -Goal of pollutant emission reduction for 5years
- -Methodologies for calculation
- -Guidance for pollutant control and reduction (published in 2008)

Converting to methodologies for GHG emission reduction from methodologies for calculation of pollutant emission reduction

3. Methodologies

Case Study: **Closure of Power Generation Unit (50MW)**

Pollutant Emission Reduction

- SO_2 Emission Reduction=SO_2 Emission from the facility

$$E(SO_2) = M \times S \times 1.6 \times 10^2$$

$$= 11.14 \times 0.72 \times 1.6 \times 10^2$$

$$= 1283\ (t\text{-}SO_2)$$

  - E(SO_2): SO_2emission from the facility
  - M: Coal consumption for power generation 111,400t
  - S: Average sulfur content of coal 0.72%

3. Methodologies

GHGs Emission Reduction

- CO2 Emission Reduction=CO2 Emission from the facility

$$E(CO_2) = M \times C \times (44/12 \times 0.8) \times 10^2$$

$$= 11.14 \times 50 \times (44/12 \times 0.8) \times 10^2$$

$$= 163{,}281 \text{ (t-}CO_2\text{)}$$

  - $E(CO_2)$: CO_2 emission from the facility
  - C: Average carbon content of coal 50%
  - 44/12: Mass ratio between C and CO_2
  - 0.8: Combustion efficiency of coal 80%

4. Results of Quantitative Assessment

Measure	Sector	SO2 emission reduction (t)	CO2 emission reduction (t)
Closure of No. 1 Unit (50MW)	Power	1283	163281
Closure of No. 2 Unit (50MW)	Power	1193	151899
Closure of No. 5 Unit (50 MW)	Power	1805	375990
Closure of No. 6 Unit (50 MW)	Power	2476	315193
Closure of Sintering Machine No.1 & 2	Iron & Steel	129	0
Closure of Two (2) Wet Rotary Kilns	Cement	194	63384
Closure of Four (4) Coke Ovens	Iron & Steel	104	25510
Closure of Shaft Kiln	Cement	45	34517
Closure of Two (2) Coke Ovens	Iron & Steel	229	56066
Waste Gas Settlement utilizing ammonia water	Iron & Steel	19	0

4. Results of Quantitative Assessment

Measure	Sector	SO2 emission reduction (t)	CO2 emission reduction (t)
Closure of Five (5) Steam Boilers	Power	3080	513333
Closure of Limekiln		33	7058
Closure of Limekiln		10	2139
Closure of Shaft Furnace	Iron & Steel	40	8470
Closure of Coke Oven	Iron & Steel	859	209978
Closure of Coke Oven	Iron & Steel	462	112933
Closure of Shaft Kilns No. 1 & 3	Cement	22	66285
Flue gas desulfurization		99	0
Sintering Machine No.6 Flue gas desulfurization		12600	0

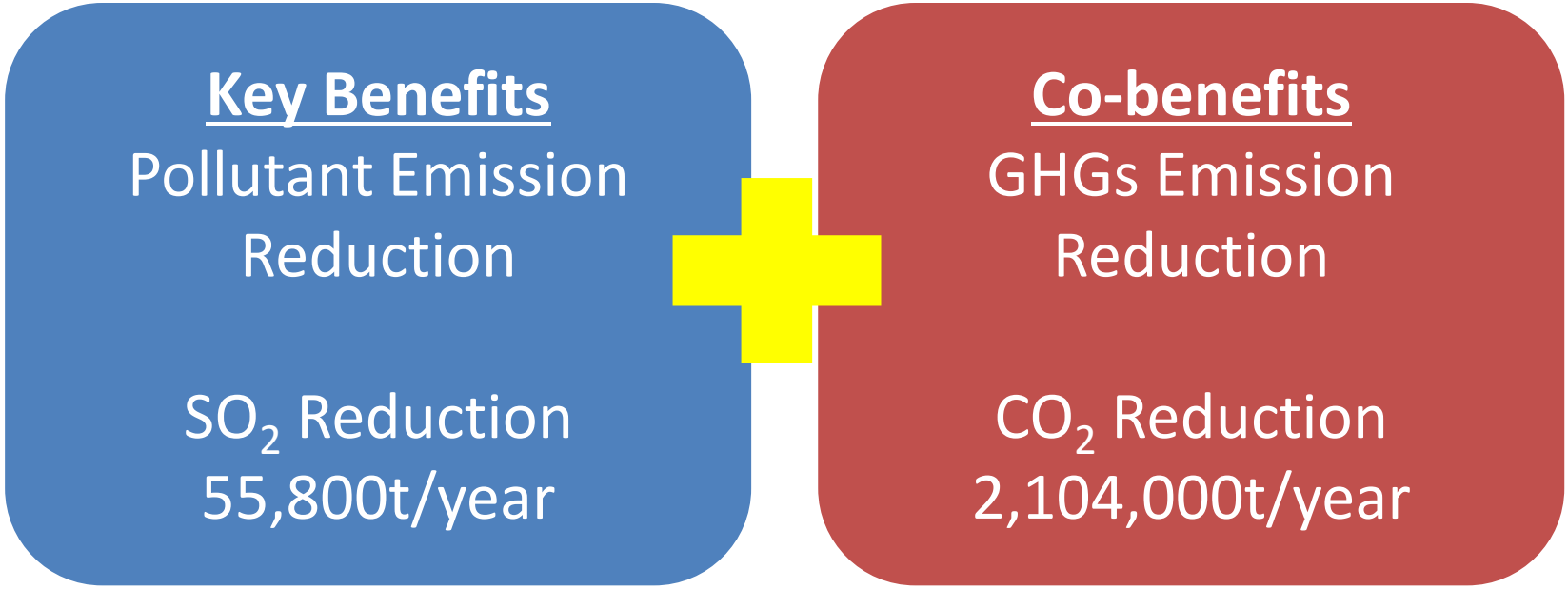
4. Results of Quantitative Assessment

Measure	Sector	SO2 emission reduction (t)	CO2 emission reduction (t)
Installation of New Sintering Machine	Iron & Steel	11000	0
Sintering Machine No.3, 4 & 5 Flue gas desulfurization	Iron & Steel	7964	0
Power Station No.1 Flue gas desulfurization	Power	3060	0
Power Station No.2 Flue gas desulfurization	Power	3060	0
Power Station No.3 Flue gas desulfurization	Power	3060	0
Flue gas desulfurization		1100	-756
Flue gas desulfurization		600	-413
Flue gas desulfurization		60	-41
Flue gas desulfurization		405	-278
Flue gas desulfurization		852	-586

4. Results of Quantitative Assessment

29 measures in “Pollution Control Plan for 5 years (2006-2010) in Panzhihua city”

- Calculation of GHGs emission reduction effect
- Only “structural adjustment” and “project”
- Only air quality management



5. Move Forward

- Recognition of positive and negative effect for both pollutant control and climate change mitigation
  - Valuable reference for development of future plan
- Further improvement of GHG emission reduction quantitative assessment
  - Expanding sectors and measures
  - Leakage
- Dissemination of quantitative assessment
  - Duplicating to other city/province (local) and national level
  - Elaborating manual/tool
- Policy recommendations to central and/or local government

Thank you!

Japan-China Co-benefits Cooperation Programme Secretariat

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