



Reducing Air Pollution and CO₂ in Guiyang, China (Digest version)

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Environmental Problems in China

- Air Pollution
- Water Pollution
- Hazardous wastes
- Soil pollution
- Toxic chemical compounds
- Desertification
- Acid rain
- Yellow sand storm, etc.
- **Climate change is not an urgent and prior issues for China!**

Sino-Japan Environmental Model City Cooperation Program is...

one of the programs consisting of the
「Sino-Japan Environmental Cooperation Program
for the 21st Century」 ()
proposed by the Sino-Japan summit conference
on September, 1997

- () Sino-Japan Environmental Model City Cooperation Program
(loan assistance + technical cooperation)
- One Hundred City Environmental Information Network Program
(grant aid + technical cooperation)

Sino-Japan Environmental Model City Cooperation Program is...

3 Target Model Cities
(Dalian, Chongqing and Guiyang)



Beijing → • ← Dalian
Chongqing → •
Guiyang

Sino-Japan Environmental Model City Cooperation Program is...

- To establish measures for major air pollution sources and air monitoring system
- Supported by total 30.7 billion Japanese yen (267million US\$) of loan assistance for three cities
- To establish a recycling-oriented society system

Sino-Japan Environmental Model City Cooperation Program is...

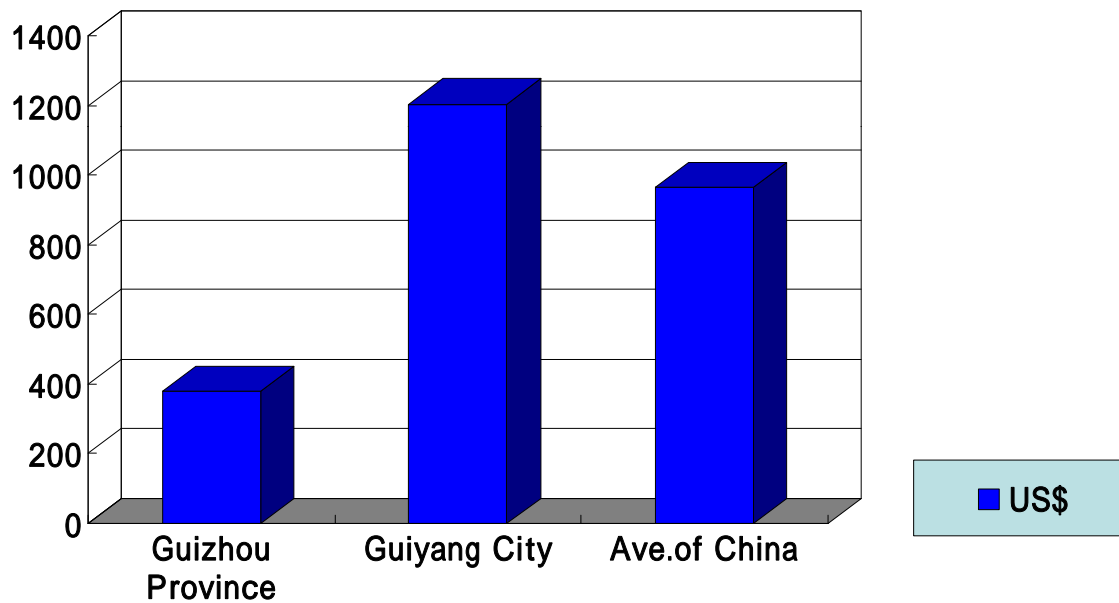
- To give technical assistance on human and institutional capacity building by technical cooperation
- To make a successful model case of environmental improvement

Cooperation Program in Guiyang City of China

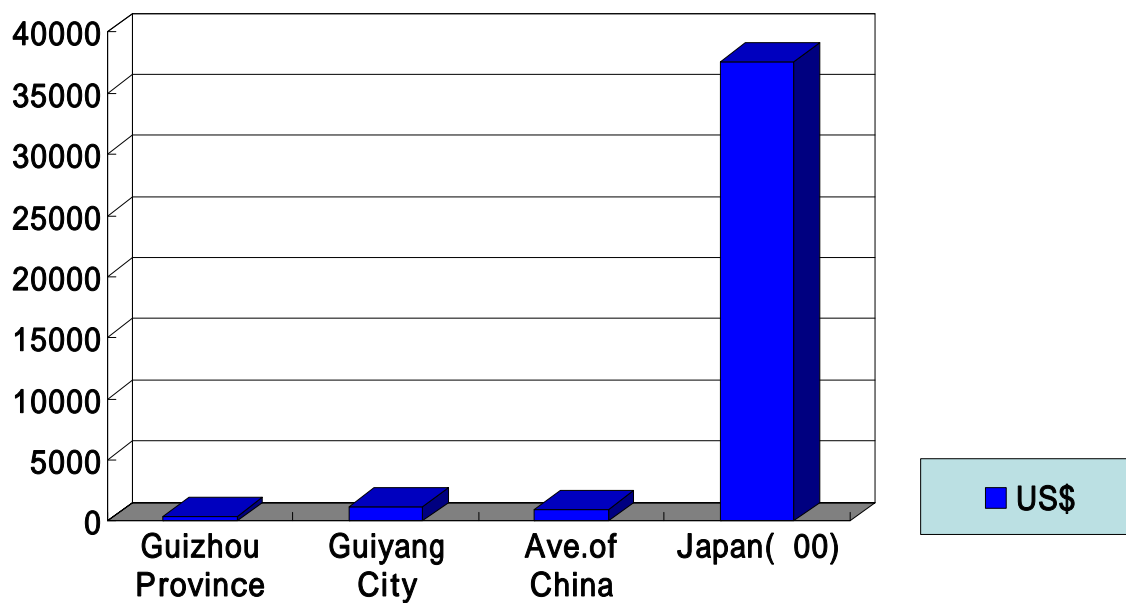
Area 8,000km²
Population 3.5million
(CBD Area 150km²
CBD Population 1 million)



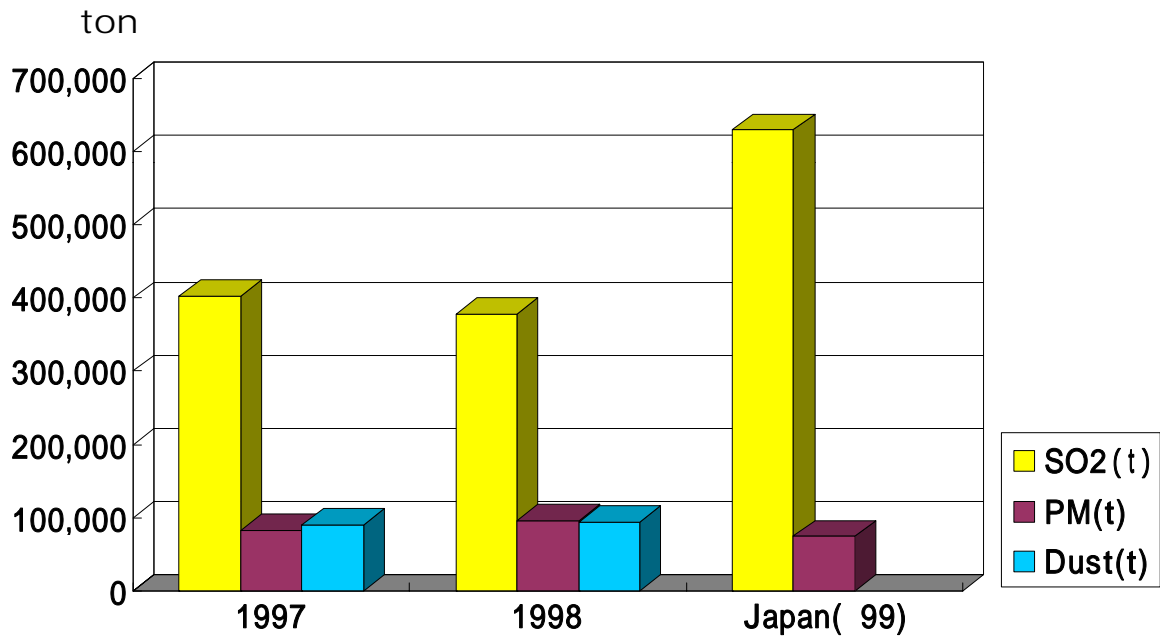
2002F.Y. GDP/person · year



2002F.Y. GDP/person · year



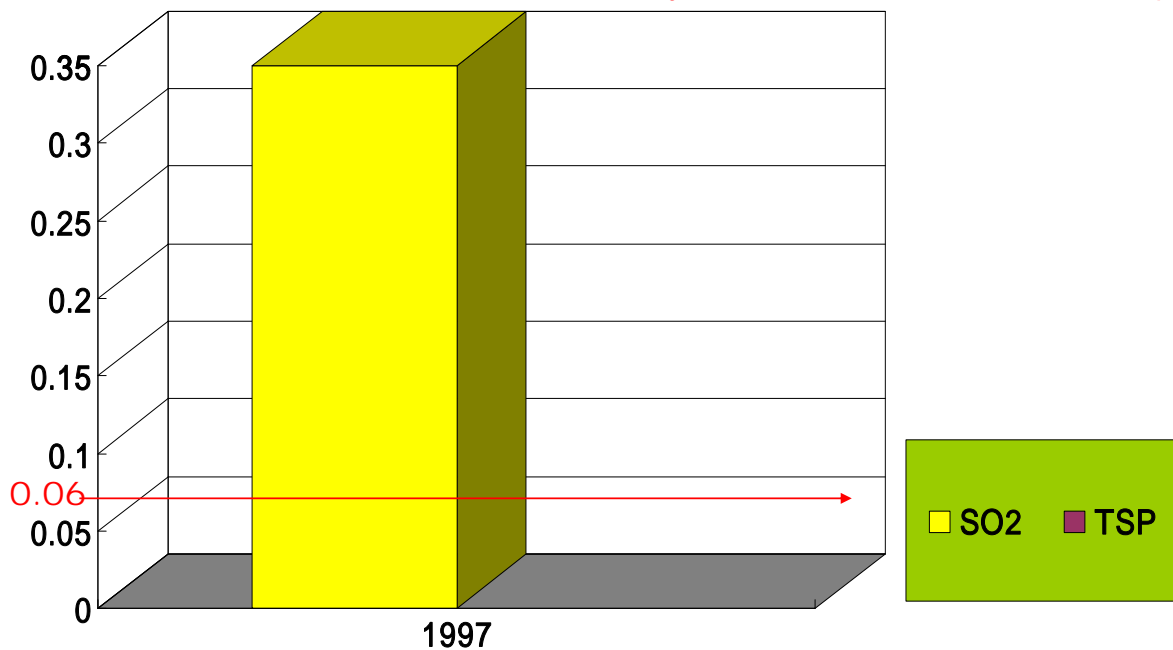
Air Pollutant Emissions in Guiyang City



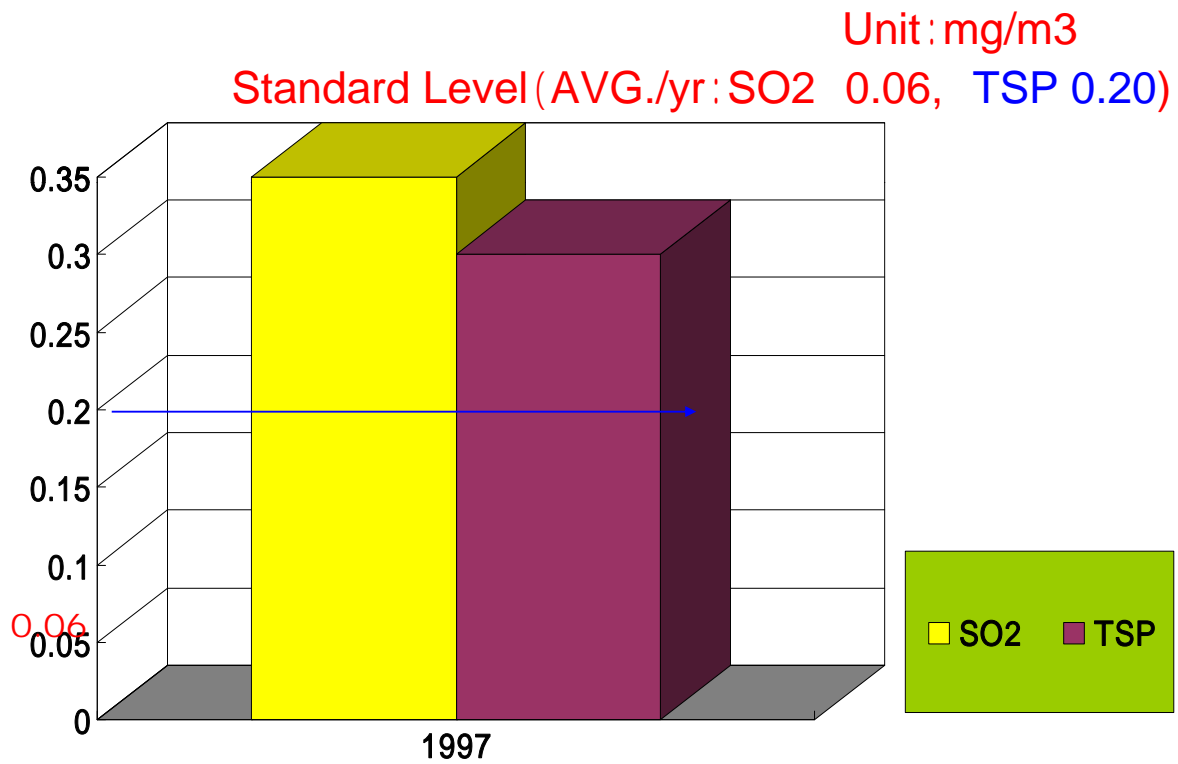
Air Pollution Concentration in Guiyang City

Unit: mg/m³

Standard Level (AVG./yr: SO₂ 0.06, TSP 0.20)



Air Pollution Concentration in Guiyang City



1 . Summary of Cooperation Project by Loan Assistance

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- Total 30.7 billion Japanese yen (267 million US\$) loan for three cities
- 14.5 billion yen (126 million US\$) for Guiyang city and same amount was prepared by implementing organization's own fund
- Total 7 sub-projects were implemented in Guiyang city

Measures for Large-scale Air Pollution Sources

- (1) Measures for Sulfur Dioxide and Dust from [Guiyang Steel Plant](#)
- (2) Measures for Sulfur Dioxide and Dust from [Guizhou Cement Plant](#)
- (3) Measures for Sulfur Dioxide and Dust from [Guiyang Power Plant](#)

Supply of Clean Energy

- (4) Supply Desulfurized Clean Coal
- (5) Supply Coal Gas

Strengthening the Capacity of Environmental Monitoring

- (6) Establishment of Automatic Air Monitoring Stations and On-line Monitoring System for Emission Sources

Preventing Mercury Contamination

- (7) Construction of new production facility without the use of mercury

2 . Summary of Cooperation Project by Technical Cooperation

- Cooperation on human capacity development and institutional capacity development

2 . Summary of Cooperation Project by Technical Cooperation

(1) Assistance on Preparation of Master Plan
for Air Quality Management in Guiyang City

(2) Dispatch of Experts

(3) Assistance for Enterprises on
Environmental Management

(4) Assistance on Establishment of Recycling-
oriented Society System

(4) Assistance on establishment of
recycling-oriented society system

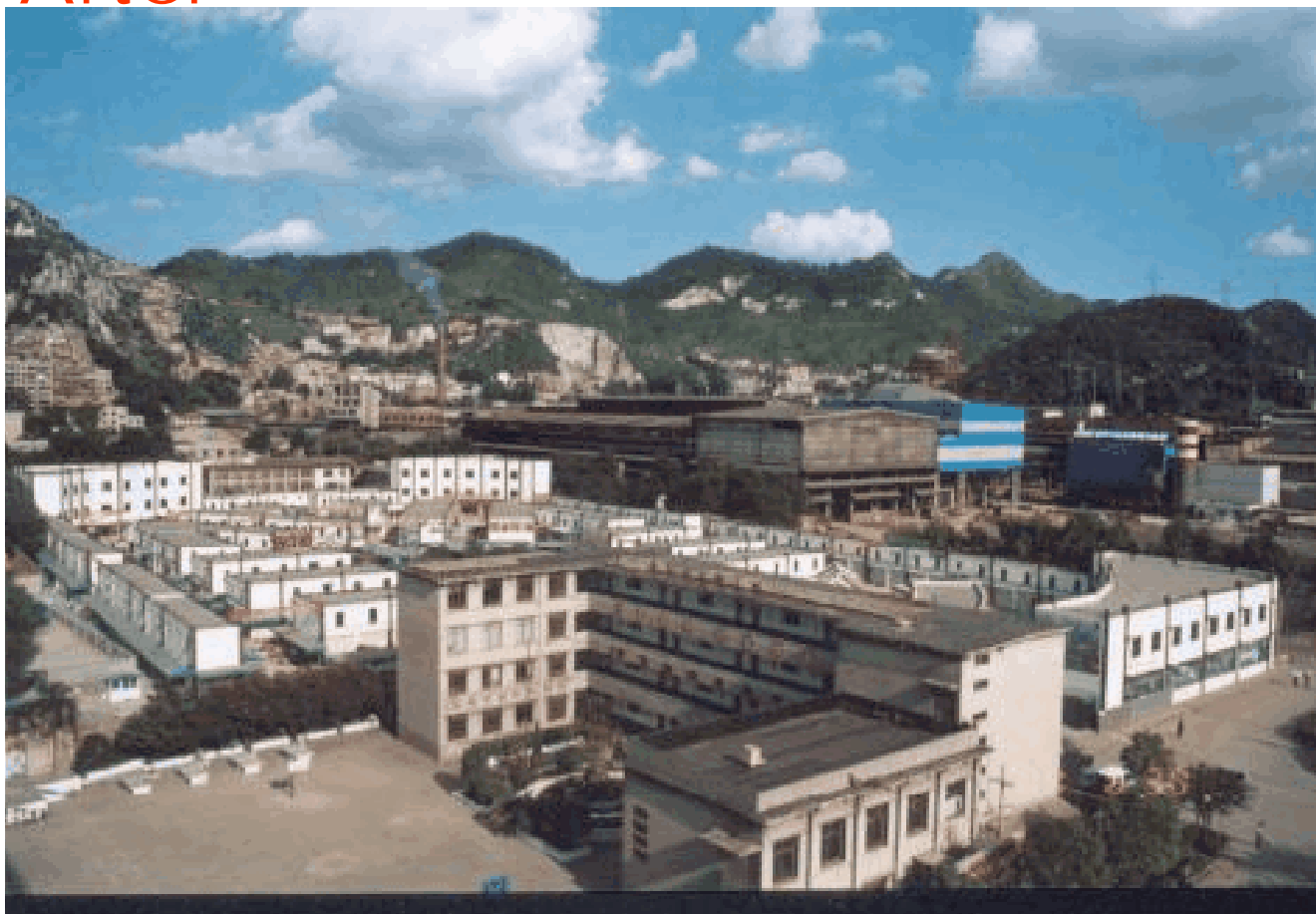
· **Assisted establishment of
Guiyang Circular Economy
Ordinance**

(1) Guiyang Steel Plant

Before



After



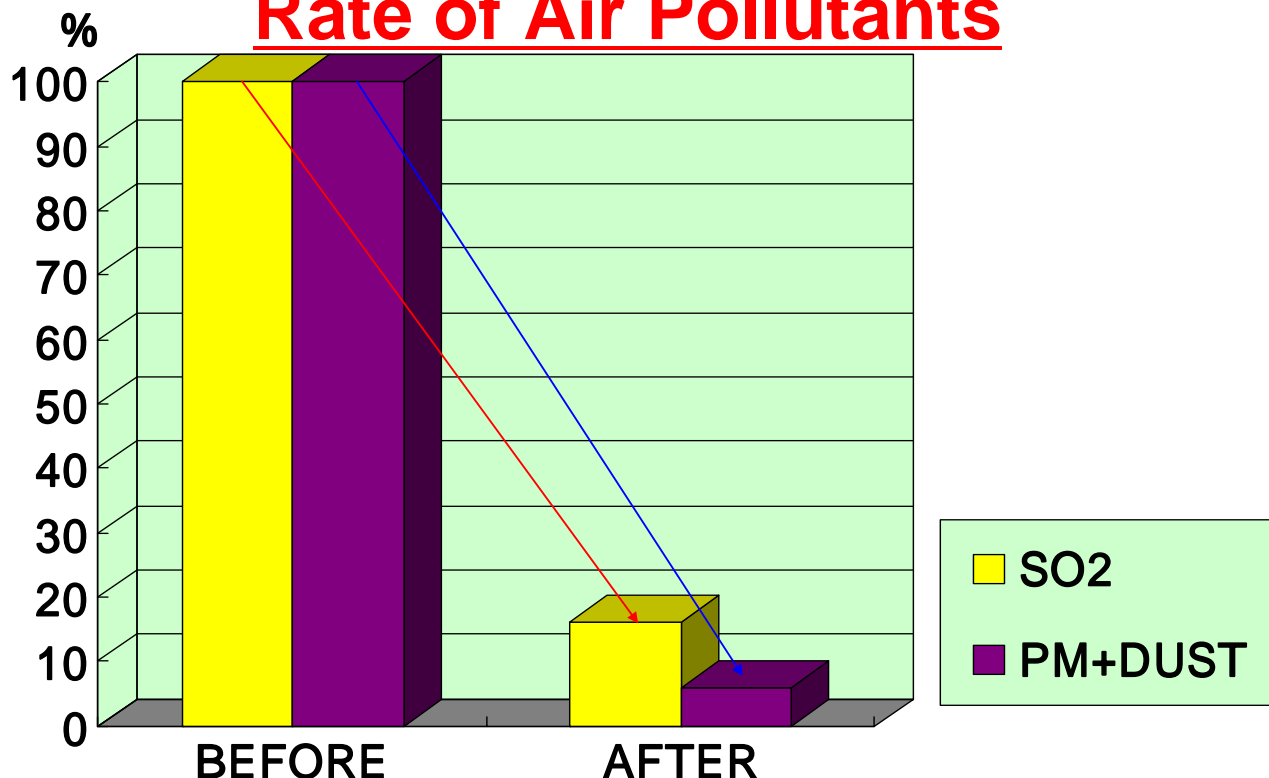
Expected Emission Reduction of Air Pollutants

(1) Guiyang Steel Plant

- SO₂ **Approx. 8,600 t/year**
(84% of reduction rate)
- PM + DUST **Approx. 5,800 t/year**
(94% of reduction rate)

Source: City of Guiyang

Expected Emission Reduction Rate of Air Pollutants



(2) Guizhou Cement Plant

Before



Expected Emission Reduction of Air Pollutants

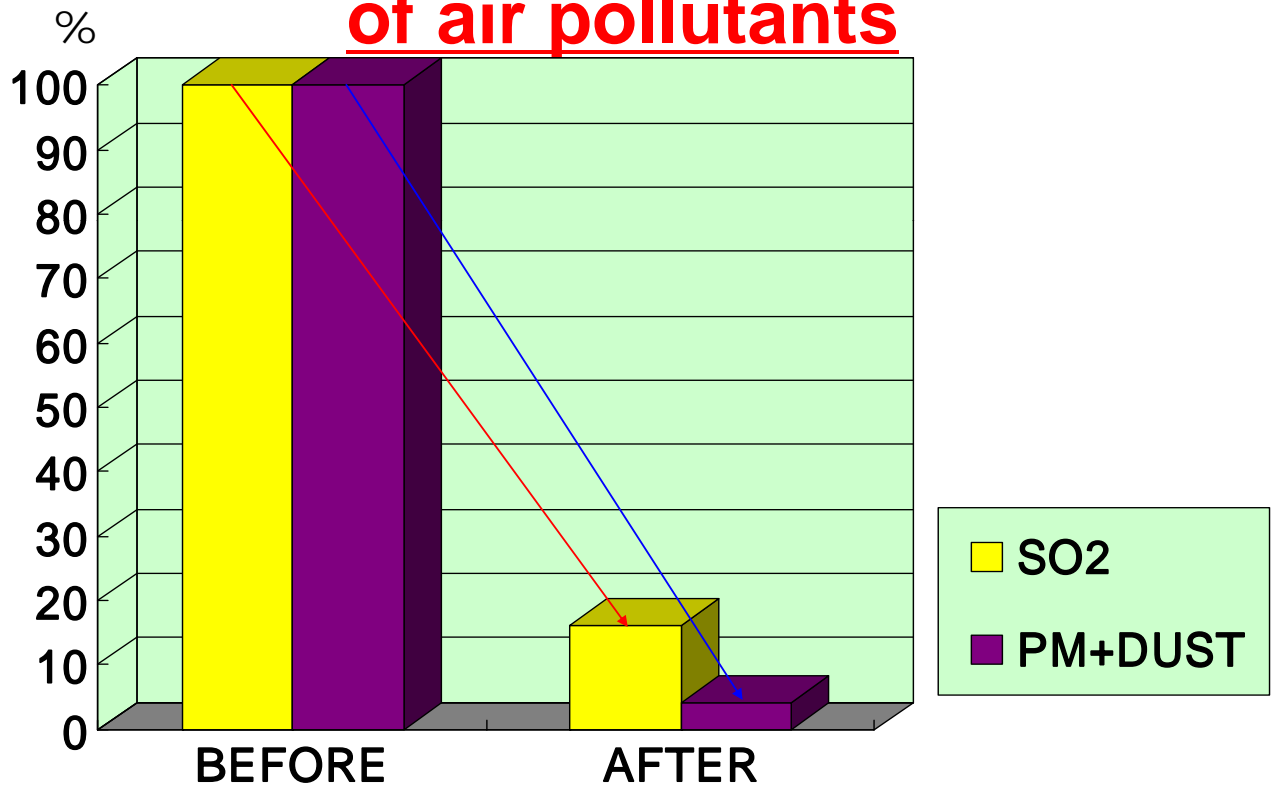
(2) Guizhou Cement Plant

- SO₂ **Approx. 3,900** t/year
(84% of reduction rate)

- PM+DUST **Approx. 9,500** t/year
(96% of reduction rate)

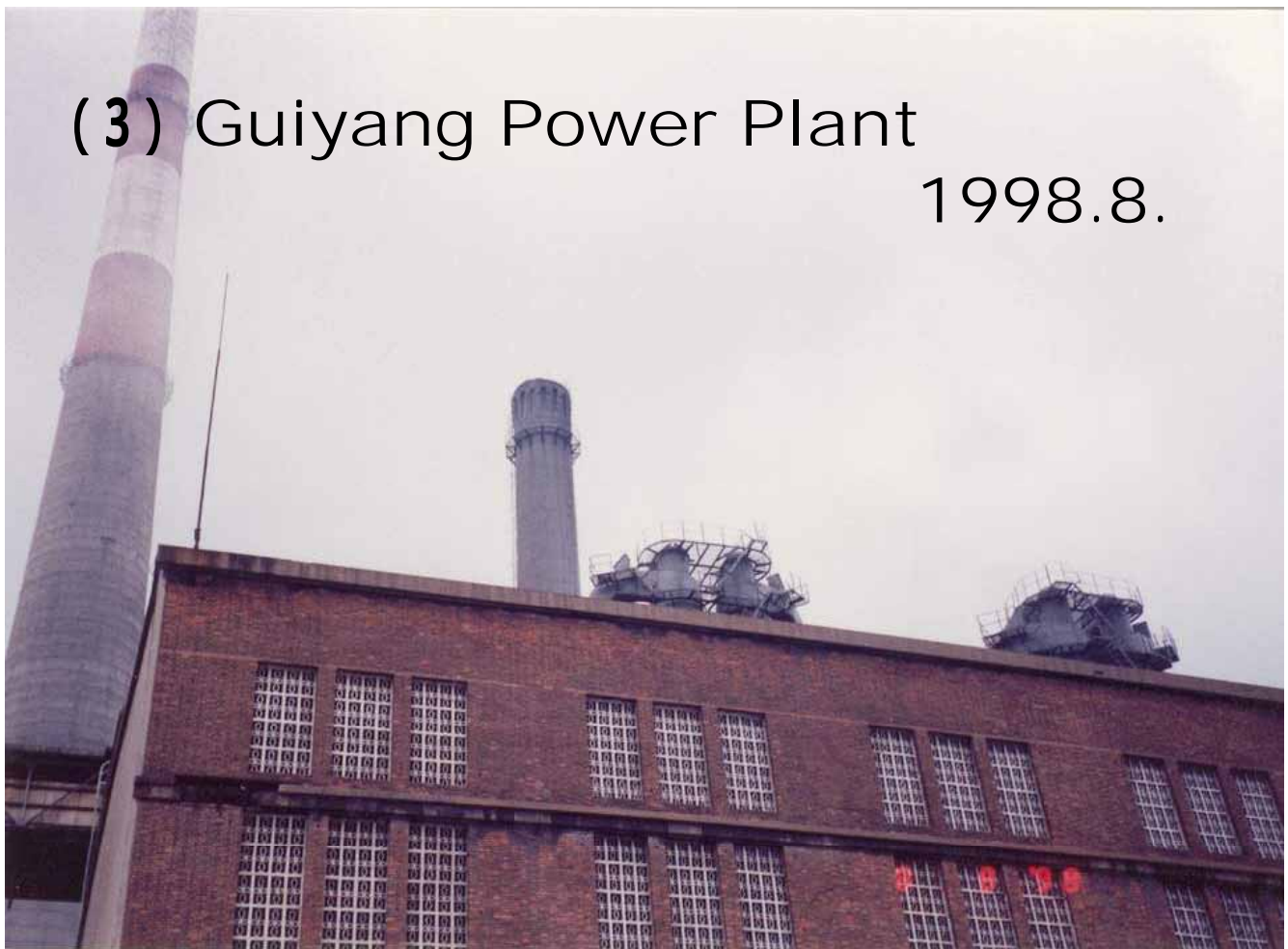
Source: City of Guiyang

Expected emission reduction rate of air pollutants



(3) Guiyang Power Plant

1998.8.



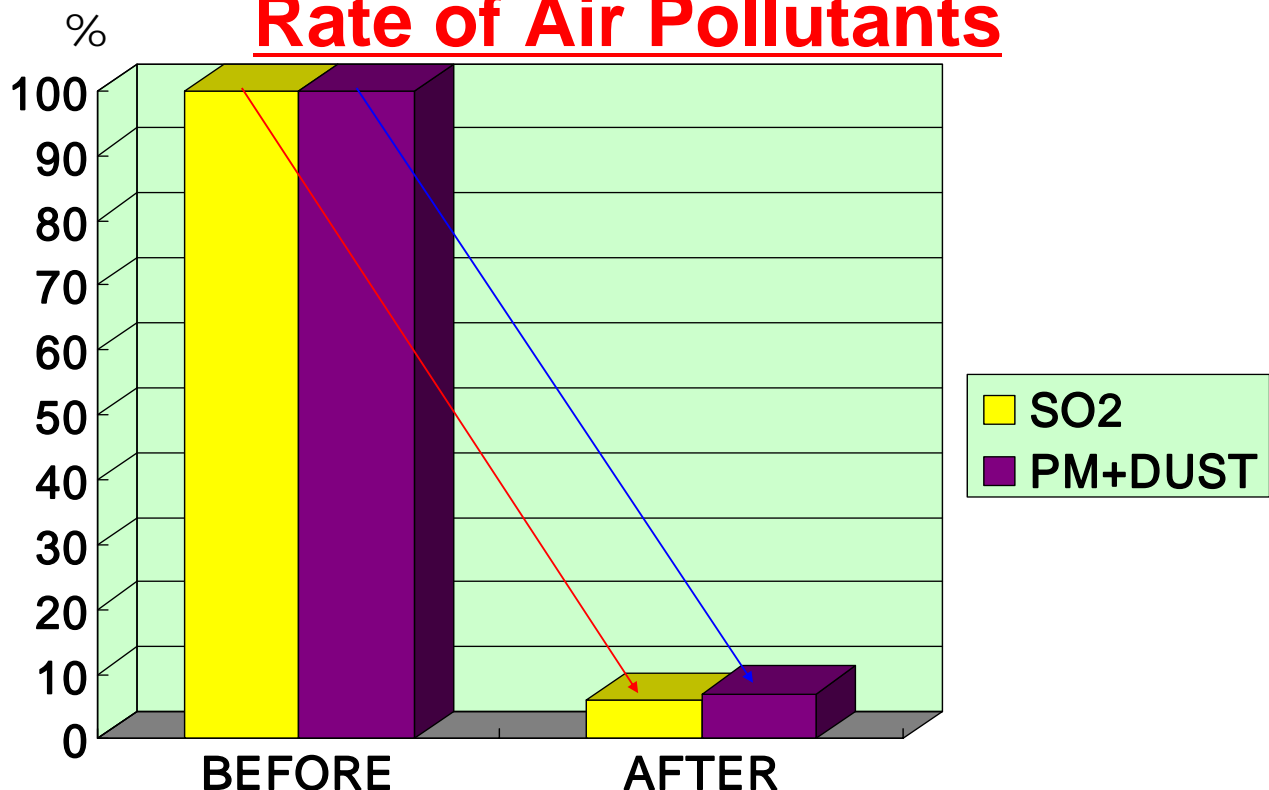
Expected Emission Reduction of Air Pollutants

(3) Guiyang Power Plant

- SO₂ Approx. 102,800t/year
(94% of reduction rate)
- PM+DUST Approx. 33,400 t/year
(93% of reduction rate)

Source: City of Guiyang

Expected Emission Reduction Rate of Air Pollutants



Expected Emission Reduction of Air Pollutants

(4) Supply Desulfurized Clean Coal

- SO₂ Approx. 26,500 t/year
- PM+DUST Approx. 14,700 t/year

Source: City of Guiyang

Expected Emission Reduction of Air Pollutants

(5) Supply Coal Gas

- SO₂ Approx. 18,200 t/year
- PM Approx. 9,100 t/year

Source: City of Guiyang

(6) Establishment of Automatic Air Monitoring Stations and On-line Monitoring Systems for Emission Sources



Old Monitoring Facility

Expected Emission Reduction of Air Pollutants

(7) Measures for Mercury Pollution at Chemical Plants

- SO₂ **Approx. 3,600 t/year**
- PM **Approx. 5,300 t/year**
- COD **Approx. 5,500 t/year**

Conclusion



Result of technical cooperation

- Preparation of master plan for air quality management in Guiyang city (2004.11.)
- Establishment of Guiyang Circular Economy Ordinance (2004.11.)

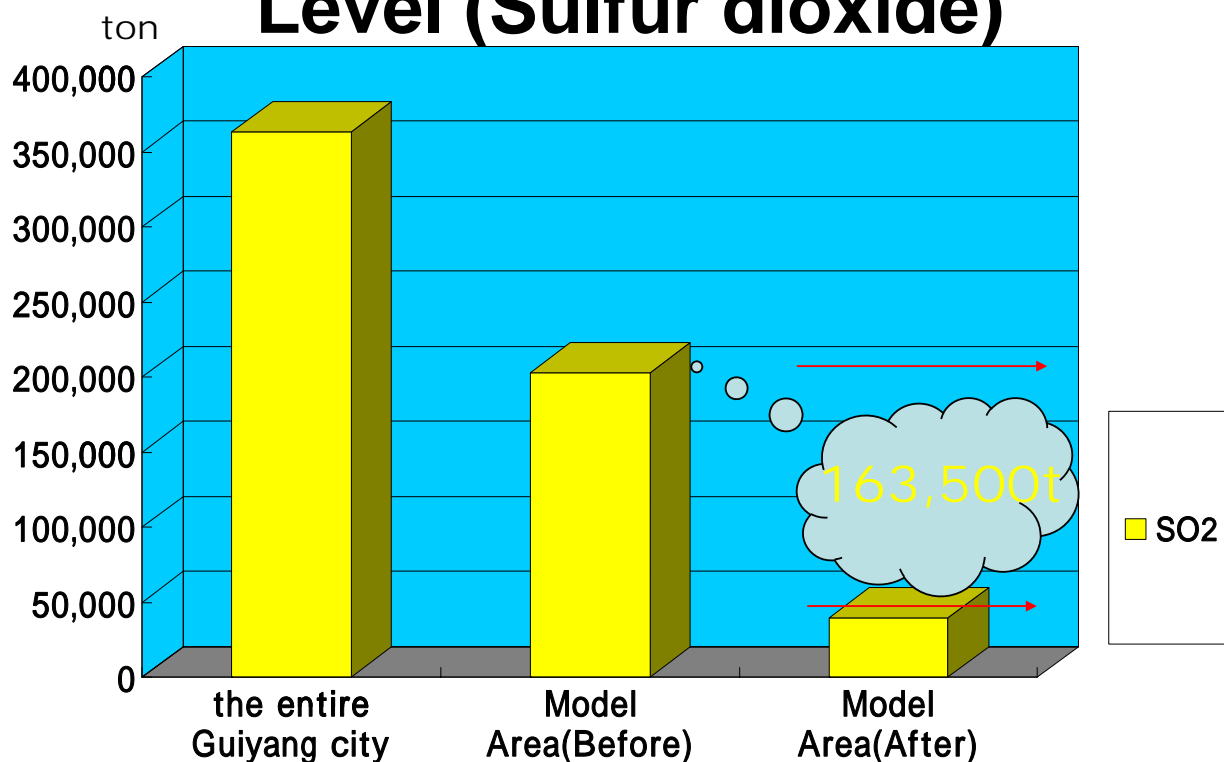
Expected outputs from implementing model city cooperation program

(Within Model Area 140km²)

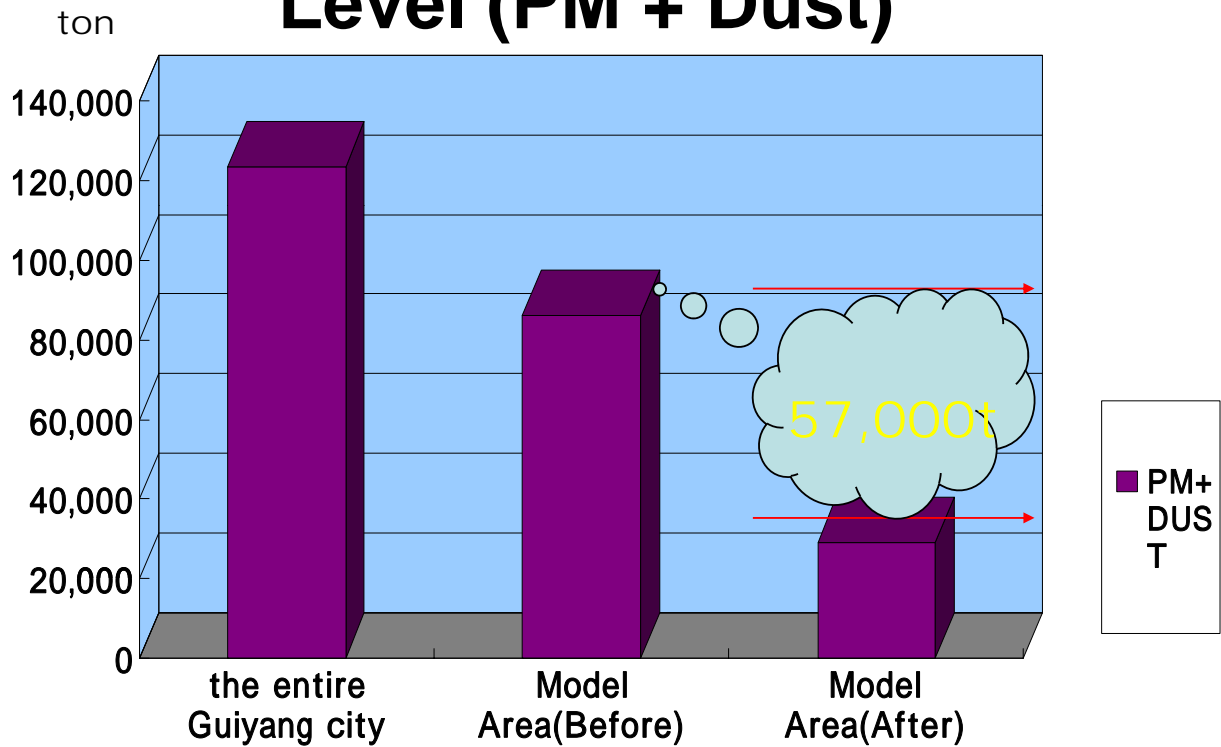
- Total emission reduction of sulfur dioxide
163,500 t/year
(Year 1996 203,000t 81% of reduction rate)
- Total emission reduction of PM and dust
57,000 t/year
(Year 1996 86,000t 66% of reduction rate)

Source: City of Guiyang

Comparison with 1996 Emission Level (Sulfur dioxide)



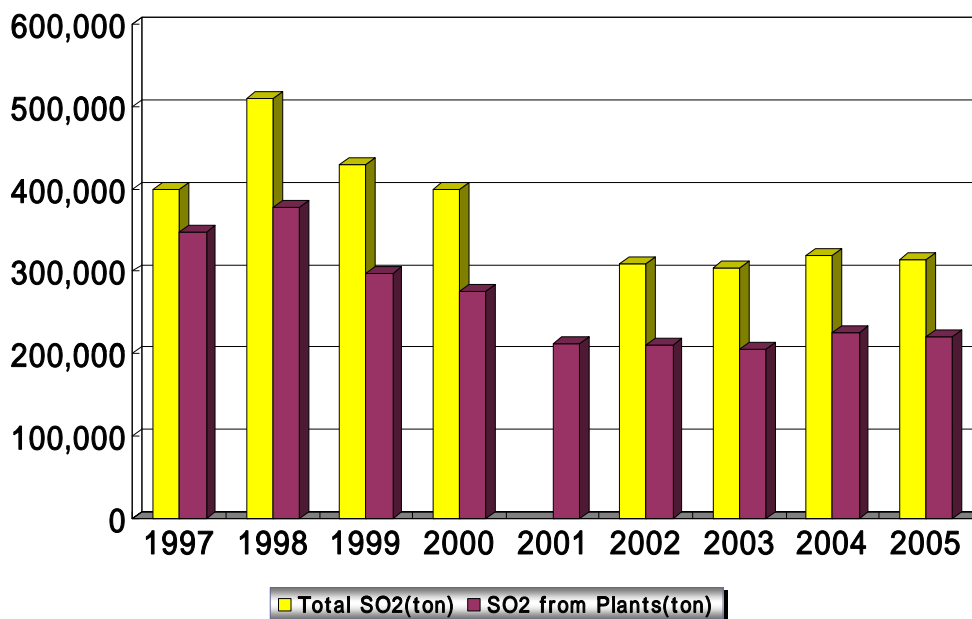
Comparison with 1996 Emission Level (PM + Dust)



Result of Model City Cooperation Program

Emission change of SO₂ in Guiyang city

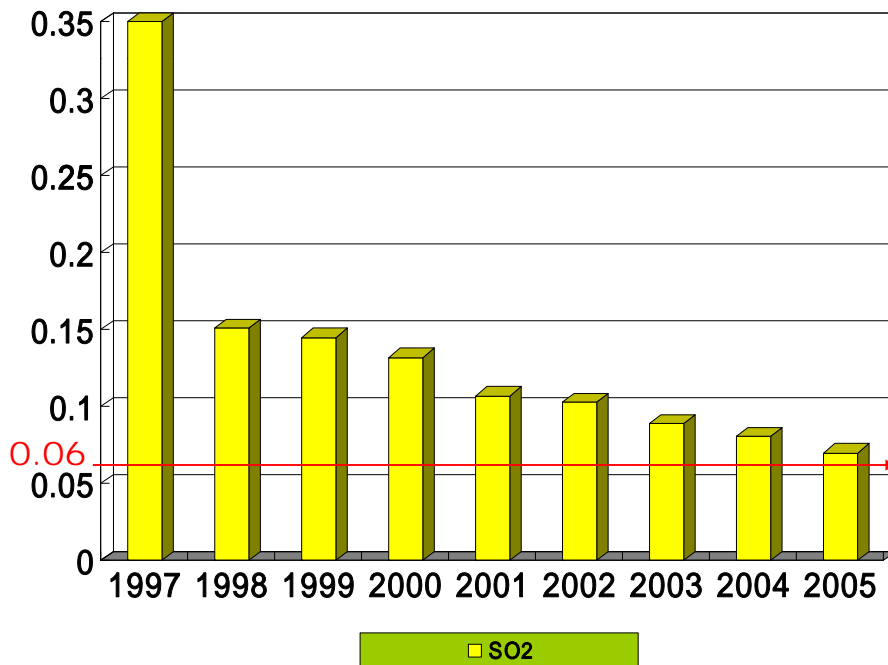
unit: ton



Change of Concentration of Sulfur Dioxide in Urban Area of Guiyang City

Standard Level (AVG./Yr : SO₂ 0.06 mg/m³)

Unit : mg/m³



Co-benefit effects by model city cooperation program

- **Emission reduction of carbon dioxide(CO₂)**

→ 1.07million t/year

Source: City of Guiyang

Environmental Problems in China

- Air Pollution
- Water Pollution
- Hazardous wastes
- Soil pollution
- Toxic chemical compounds
- Desertification
- Acid rain
- Yellow sand storm, etc.
- Climate change is not an urgent and prior issues for China!

Effectiveness of Co-benefits

- Promotion of program for climate change integrating with air pollution measures in such Guiyang city

may be quite effective in developing countries including China

