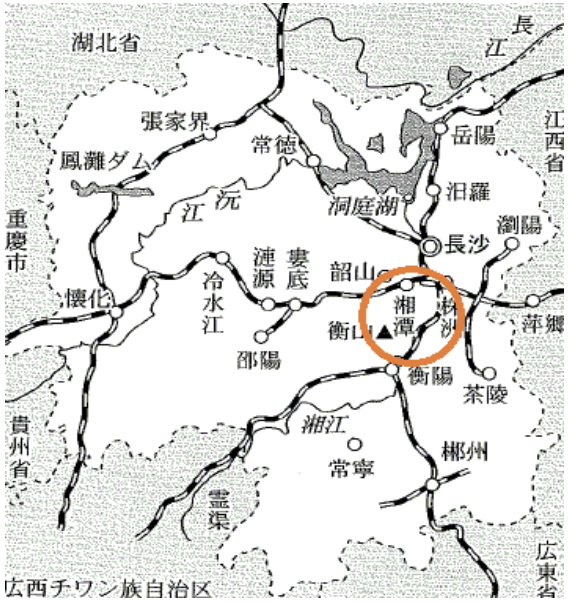
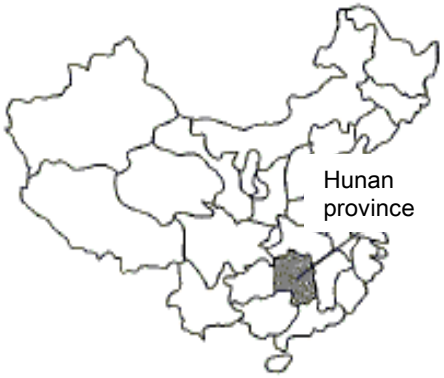
Survey on co-benefits approach to preventing environmental pollution in China

1. Outline of the model project (2nd phase)

Survey to consider the feasibility of introducing the technology to treat sludge at cement plants





- **Studied city: Xiangtan in Hunan province**

Population of Xiangtan is about three million. Covering an area of 5,015 km2, it lies slightly to the east of the central part of Hunan province and is located about 40 km south of Changsha. Heavy industry has been thriving in Hunan province, and Xiangtan hosts coal-fired power plants, steel plants, cement plants, chemical factories and other facilities. The GDP of the city is 36.703 billion yuan.

- **Considered technology**

Sludge treatment technology to be used for cement plants (Although there are direct and after-drying methods, only the former is examined in the project).

- **Site for project: Hunan Shaofeng South Cement Co.**

Outline: The wet cement plant has started its operation in 1958 using technology provided by the Soviet Union. It is currently an affiliated factory of South Cement which invests 50% of the capital, while the remaining 50% is paid by Shaofeng Group - a local company in the region.

Location: About 100 km west of the central part of Xiangtan as the crow flies

Facility overview

Production of clinker	Start of operations	Operating rate	Countermeasures against NOx
2,000 tons/day	1996	Under suspension	Denitrification equipment (that uses ammonia water) has been introduced on the line with a production capacity of 2,500 tons per day. An oxygen control system or a regenerative burner have yet to be installed (as of March 2012) to reduce NOx emissions.
2,500 t/d	2006	50%	
5,000 t/d	December 2009	70%	

2. Results of the activities (FY2011-FY2014)

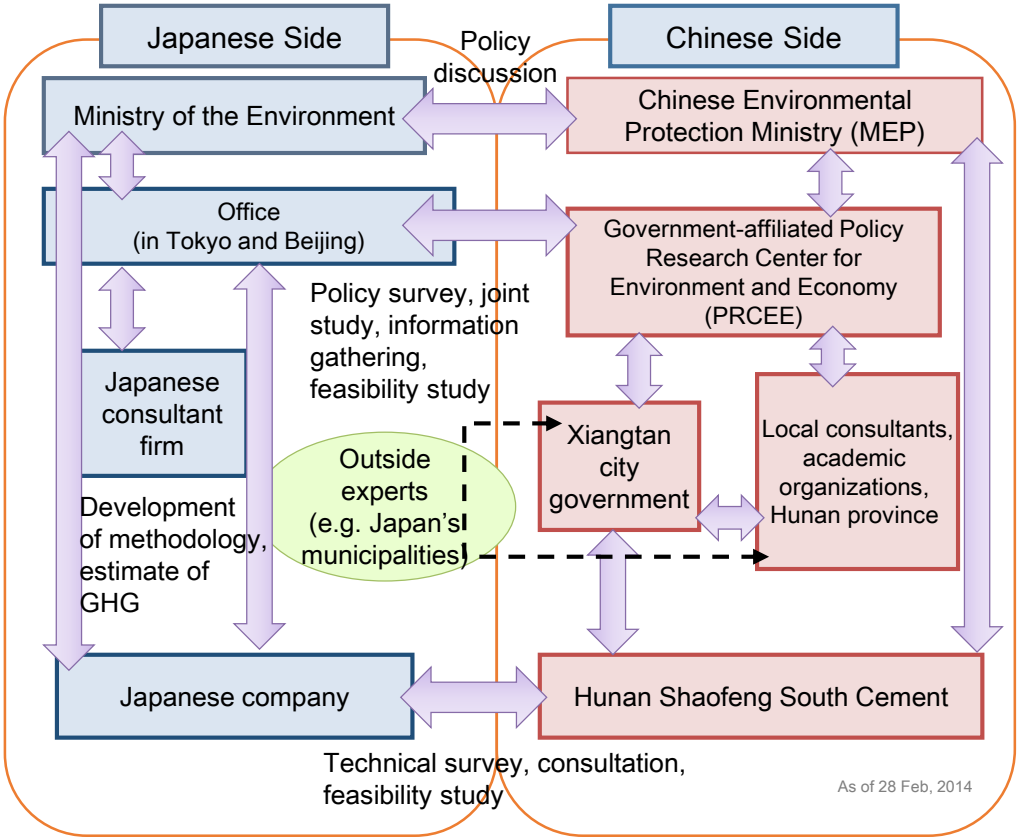
1). Model project

(1) Development of the feasibility study (FS) plan
- Development and agreement of the Japan-China cooperation formation (see the right figure)
- Development of the draft survey plan for the second phase

(2) On-site survey
- On-site survey conducted several times for the project
- Surveys carried out on sludge composition and relevant policy in the city

(3) Technological superiority proposal
- Development of a (draft) guideline for introduction of the technology to utilize sludge at cement plants
- Consideration of a basic plan to introduce the technology to utilize sludge at cement plants

Organizations involved in the model project (draft plan)

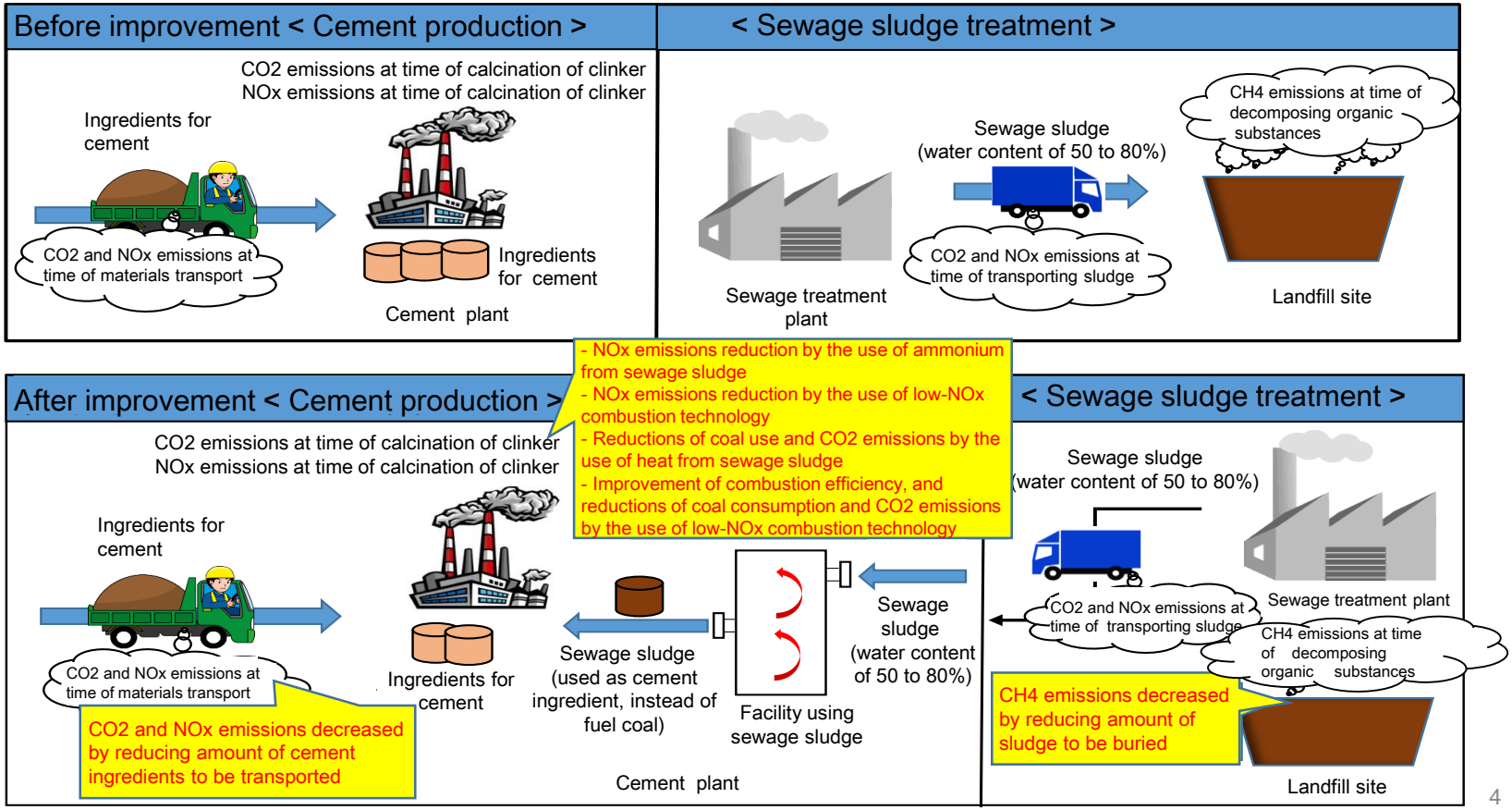


2. Results of the activities (FY2011-FY2014)

2). Joint survey

(1) Policy proposals on co-benefits approaches
- Analysis of policy survey on co-benefits in Japan and China
- Summary of the findings of the second phase

(2) Quantitative evaluation of co-benefits
- Survey on activity data and sludge composition
- Consideration of quantitative evaluation methods to reduce NOx and GHG emissions (see the figure below)
- Development of a (draft) co-benefit guideline



2. Results of the activities (FY2011-FY2014)

3). Capacity building

(1) Dissemination of co-benefits technologies

○ Objectives
- Report the findings of the model project and the joint research through publications, seminars, and disseminate and promote co-benefits approaches
- Hold discussion between Japanese and Chinese government officials

○ Contents
- Bilateral governmental meetings
  (Held in Beijing in November 2013 and in Xiangtan in Hunan province and elsewhere in January and February 2014)
- Briefing sessions and workshops
  (Held in Beijing and elsewhere in February 2014 and in March 2015)

(2) Promoting understanding of co-benefits technologies and policies

○ Objectives
- Promote understanding of co-benefits technologies and policies in Japan

○ Contents
- Training tours in Japan targeting officials being involved in the model project, Chinese government officials and researchers
  (in February 2012 and June 2014)

3. Outline of the project for this fiscal year

1) Model project

○ Policy proposals on co-benefits technologies
- Development of a (draft) guideline for introduction of technologies to utilize sludge at cement plants
- Consideration and proposal on co-benefits technologies for the third phase

2). Joint research

○ Policy proposals on the co-benefits approaches
- Development of a (draft) co-benefits guideline
- Issuance of a publication to summarise findings of the second phase
- Consideration and proposal on cooperation system for the third phase

3). Capacity building

○ Dissemination and promotion of co-benefits technologies
- Government talks (to be held in Tokyo in February 2016)
- Briefing sessions and workshops (to be held in Beijing and elsewhere in March 2016)
- Training tour in Japan targeting Chinese government officials and researchers (planned to be held in February 2016)