

Summary of Evaluation Results

1. Outline of the Project	
Country: Mongolia	Project Title: Capacity Development Project for Air Pollution Control in Ulaanbaatar City
Sector: Planning/Government-Government-Environment Issue	Cooperation Scheme: Technical Cooperation Project
Division in Charge: Global Environment Department	Total Cost: Approx. 480 million yen
Period of Cooperation: March 2010 - March 2013 (three years) (R/D): December 2009	Partner Country's Implementation Organizations: Counterpart (C/P): Air Quality Department of the Capital City (AQDCC) Counterpart Working Group (C/P-WG): 19 organizations working with the AQDCC
	Supporting Organization in Japan : None
	Related Cooperation Scheme: Issue-based Training: Countermeasure against Automobile Pollution in Urban Area, Two-step-loan Project for Small and Medium-scaled Enterprise Development and Environmental Protection Phase II
1-1 Background of the Project	
<p>As Mongolia is endowed with rich coal resources, the country is heavily reliant on coal for an energy source. Most of the coal consumed in Ulaanbaatar City is characterized by its high moisture and ash content, which is subject to heavy dust emission during combustion. The sources of the pollution are three thermal power plants, approximately 200 HOBs (Heat Only Boilers), CFWHs (Coal Fired Water Heaters), and 200,000 - 300,000 Ger stoves in more than 130,000 households in the Ger areas in Ulaanbaatar City. Air pollution is especially severe in winter when much coal is burned for heating. The most problematic pollutants at present are particulate matters like dust, PM₁₀ and PM_{2.5} emitted from these heating facilities and power plants.</p> <p>The Ulaanbaatar City government established the Air Quality Division under the Nature Environmental Protection Department of the Capital City in 2006, which was later upgraded to the "Air Quality Department of the Capital City (AQDCC)" in February 2009. The AQDCC's staff members did not have sufficient knowledge and experiences to deal with this complicated issue.</p> <p>The Government of Mongolia requested the Government of Japan to provide technical assistance to tackle air pollution problems in Ulaanbaatar City in 2007. JICA conducted the Project Formulation Study in April 2008, the first Detailed Planning Survey in December 2008, and designed the overall framework for the assistance. The survey confirmed that large and medium emission sources including power plants and HOBs were contributing to the degradation of the air quality in Ulaanbaatar City. The survey also confirmed the efficacy of the enforcement of the emission standards in improving air</p>	

quality. Along with this process, relevant agencies and personnel at national and city level are identified to develop the Mongolian side capacity in those aspects in air pollution control above mentioned. In order that the project could transfer various expertise to the most adequate agencies and personnel and to accommodate the Mongolian side institutional collaboration, the survey team proposed the establishment of the counterpart working group (C/P-WG) consisting of 19 relevant agencies and sections identified, in addition to the project counterpart (C/P) and the Joint Coordination Committee (JCC). Finally, the contents of the technical assistance and the assignment of personnel for JCC, C/P and C/P-WG were agreed during the third Detailed Planning Survey in August 2009, and the Record of Discussions (R/D) was signed in December 2009.

1-2 Project Overview

To strengthen the capability of administrative countermeasures against air pollution, JICA has implemented a technical cooperation project by focusing on the power plants and HOBs as major air pollutant sources.

(1) Overall Goal

Measures for emission reduction of air pollutants will be strengthened in Ulaanbaatar City.

(2) Project Purpose

Capacity for air pollution control in Ulaanbaatar City is strengthened, paying special attention to the human resource development of the Municipality of Ulaanbaatar and other relevant agencies among other aspects of the capacity development.

(3) Outputs

1. Capability of AQDCC and the other relevant agencies to evaluate emission inventory and impacts on air quality is developed.
2. Stack gas measurements are periodically implemented in Ulaanbaatar City.
3. Emission regulatory capacity of AQDCC is strengthened under the cooperation with the relevant agencies.
4. Emission reduction measures to major emission sources are enhanced by AQDCC.
5. AQDCC and the relevant agencies can integrate the results from output 1 to 4, and take them into the air quality management, and disseminate them to the public.

(4) Inputs

【Japanese side】 Total amount of inputs: approximately 480 million yen

Experts: 14 experts (102.33 MM in total for three years) in nine (9) areas such as stack gas measurement, emission inventory, database, energy saving technology, and simulation

Number of trainees received: 25 (Training theme: stack gas measurement, environmental administration, and air pollution control)

Equipment: 30.42 million yen

Local expenditure borne by the Japanese side: 38.54 million yen (As of October 2012)

【Mongolian side】

Number of C/P personnel including C/P-WG : 41

Land and facilities: storage and office space

Local operation cost borne by the Mongolian side: approximately 19.18 million tugrik for renting offices, etc. (As of October 2012)

2. Evaluation Team

【Japanese side】

Mr. Nobuhiro Ikuro	Team Leader	Deputy Director General and Group Director for Environmental Management, Global Environment Department, JICA
Mr. Taizo Yamada	Air Pollution Control	Senior Advisor in Environmental Management, JICA
Mr. Koji Maeshima	Evaluation Planning	Deputy Assistant Director, Environmental Management Division1, Global Environment Department, JICA
Ms. Noriyo Aoki	Evaluation Analysis	Consultant, IC Net Limited

【Mongolian side】

Mr. Chultemsuren Tsogtsaikhan	Team Leader	Officer, Urban Development Policy Department of the Mayor's Office of Capital City (UDPDMOCC)
Ms. Sarangerel Enkmaa	Evaluation member	Officer, Environment Monitoring Strategy and Planning Division, National Agency for Meteorology and Environment Monitoring (NAMEM)

Period of Evaluation: November 25 – December 8, 2012

Evaluation Type: Terminal Evaluation Study

3. Results of Evaluation

3-1 Confirmation of Results

(1) Achievement of Outputs

Almost all the Outputs have been achieved. Therefore, the achievement of the Outputs is moderately high. Compared to the situation prior to the Capacity Development Project for Air Pollution Control in Ulaanbaatar City (hereinafter the "Project"), the capabilities of C/P and C/P-WG to analyze sources of air pollution and evaluate the air quality have been enhanced. Technology has been transferred to measure stack gas continuously in Ulaanbaatar City. In order to strengthen the ability of the AQDCC to control emissions, the Project began the Boiler Registration Management System. The results of the Outputs 1 to 4 have been documented to issue measures to control emission sources of air pollutants. The Project provided the scientific data and information on air pollution control to the decision makers and tried to release them to the general public and disseminate them, although more efforts should be made.

(2) Achievement of the Project Purpose

The indicators of the Project Purpose have been mostly achieved. Therefore, the achievement of the Project Purpose is moderately high. The AQDCC has conducted emission inventory data collection, evaluation of air quality and stack gas measurements, and released the annual report concerning the results of these undertakings in cooperation with the other relevant organizations. Then the AQDCC proposed the measures on air pollution control. The Mayor Order on the Boiler Registration Management System was also issued. From now on, agreements among the relevant organizations at the national and municipal levels must be made, and an institutional framework to promote measures to control air pollution must be developed.

3-2 Summary of Evaluation Results

(1) Relevance

The Project is highly consistent with the Mongolian policies on the air pollution control measures as well as Japan's ODA policy towards Mongolia. It is also addressing properly the needs of the capacity development for air pollution control measures. The Project's approach is to utilize Japan's comparative advantage in the area of air pollution mitigation measures. The range of the Project activities is appropriately designed to avoid overlapping with the projects by the other donor agencies. Thus it is fair to say that the relevance of the Project is high.

(2) Effectiveness

The capabilities on stack gas measurement, data collection, and analysis of C/P and C/P-WG have improved because of the technology transfer by the Project. The Project came up with eleven air pollution control measures and three of them were adopted as part of Ulaanbaatar City's Operational Program. The remaining measures are to be discussed among the AQDCC and the related organizations for possible implementation. More efforts are required to discuss the measures by involving the organizations concerned, and clarify an institutional framework for strengthening pollution control measures for making them more feasible. Thus the effectiveness of the Project is moderately high.

(3) Efficiency

At the time of the Mid-term Review, it was pointed out that delays in delivery of the necessary equipment affected the progress of the Project. The C/P and the JICA experts strived to minimize the negative effects of the delays by continuing training courses, on-the-job training (OJT), seminars, and workshops. Despite the influence of the change of government, most of the planned activities have been implemented. The training courses in Japan have been carefully designed to make the Project activities practical and effective. Local human resources have also been utilized as necessary. The AQDCC's staff turnover has decreased and the number of staff members has increased. The inputs produced the expected outcomes in an adequate fashion. Accordingly, the efficiency of the Project is moderately high.

(4) Impact

The prospects for achieving the Overall Goal are fair. Various ripple effects of the Project were

confirmed in the terminal evaluation study. Therefore, it is fair to say that the impact of the Project is moderately high.

In order to achieve the Overall Goal, it is required for C/P and the stakeholders to upgrade the quantity and quality of their activities to a satisfactory level, and develop their capacity to present persuasive recommendations and suggestions based on data and information with solid technical foundation for the elaboration of necessary pieces of legislation and the implementation of air pollution control measures. The Overall Goal will be achieved as long as the AQDCC and other stakeholders keep strengthening such capacity.

(5) Sustainability

The sustainability in the policy aspect is moderately high, because the direction of Mongolia's policies on air pollution control measures is favorable. However, from the institutional aspect of the AQDCC, the collaboration with C/P and C/P-WG must be strengthened. As for technical capacity, the sustainability of stack gas measurements is high, but other areas such as simulation modeling, boiler inspection, and energy saving measurements require further enhancement to acquire enough sustainability. In relation to the financial aspect, due to the recent trend of policy formulation on air pollution reduction, it has become easier than before to secure budget allocation. Therefore, the overall sustainability of the Project is fair.

3-3 Factors contributing to realization of effects

(1) Factors related to planning

Before the inception of the Project, several preparatory surveys were conducted to identify and plan precisely the necessary inputs such as Japanese experts, implementing agency, technical areas and their levels, and required equipment. C/P-WG helped the AQDCC make up for its personnel constraints, enhancing the Project's effectiveness through a comprehensive partnership.

(2) Factors related to the implementation process

The training courses in Japan matched the contents of the Project, helping the trainees build teams and extract and consider solutions to problems. The SCDM (Sustainable Capacity Development Matrix) has been used to clarify the roles of divisions of the relevant organizations, and the collaboration framework in order to ensure the sustainability of the Project. Moreover, three interpreters have been employed to play a pivotal role in the technical transfer.

3-4 Factors that impeded realization of effects

(1) Factors related to planning

The decision makers were not included in the personnel of C/P and C/P-WG, which caused some difficulties in the capacity development and institutional building that the Project intended to promote. The Project had to be started before winter because most of the activities in relation to air pollution were concentrated in winter. Because of the timing of the inception, the Project missed the opportunity for the first winter measurement.

(2) Factors related to the implementation process

Since the various organization has been involved as C/P and C/P-WG member and the overlapped period of Japanese experts has been limited, C/P-WG meetings have been not periodically held. Therefore, although the technical transfer of each technical team has been progressed, air quality control measures based on scientific data has been delayed to propose through the relevant organizations.

3-5 Conclusion

Almost all the Outputs have been achieved during the Project period by the efforts of both the Mongolian and Japanese sides. Since the contents of the Project's cooperation meet the policies and needs, it is fair to say that the relevance is high. The effectiveness of the Project is moderately high because the Project Purpose has been almost achieved. With regard to the efficiency of the Project, it is high in terms of the amount of inputs and achievement of the Outputs. However, because submission was delayed on recommendations on air pollution reduction on the basis of scientific data with the involvement of the relevant organizations, it is fair to say that the efficiency is moderately high. Ripple effects of the Project are emerging. However, the prospects for achieving the Overall Goal in three to five years are fair. If the relevant institutional matters can be addressed and further technical assistance will continue to reinforce the capacities of C/P and C/P-WG, the sustainability of the Project will be enhanced. In conclusion, the sustainability of the Project is fair.

3-6 Recommendations

I. Tasks to be completed by the end of the Project

(1) Strengthening the institutional framework on air pollution control

The AQDCC shall conclude an official agreement in relation to collaboration with relevant organizations at the national and municipal levels in order to establish an institutional framework for air quality management. Such agreement should clarify the roles, responsibilities and division of work among the parties. In order to proceed with the undertaking above, the training titled the "Air Pollution Administration Course," which is to be held in December 2012 in Japan, should be utilized.

(2) Communicating with the decision makers on air quality management

By the time of the terminal evaluation, several measures to combat air pollution have been formulated. For any implementation in the future, the proposed measures shall be discussed and examined among the stakeholders, then go through the relevant upper-level organizations for their endorsement. The proposed measures will be then submitted to the decision makers by the termination of the Project.

(3) Implementing the capacity assessment on air quality management of the Mongolian side

SCDM shall be updated and the capacity on air quality management of C/P and C/P-WG shall be assessed. By comparing the initial status with the updated one at the end of the Project, the progress of capacity development brought by the Project will be analyzed. This will reveal issues to be tackled in continued assistance in the future.

(4) Utilizing the Final Seminar in January 2013 to share the Project results with stakeholders and to raise public awareness

The Final Seminar is to be held in January 2013. The seminar will have around 100 participants, such as members of the National Committee on Air Pollution Reduction and the Donor and Mongolian Joint Meeting. On this occasion, the outcomes of the Project so far will be shared with the participants, and the recognition on the Project will be enhanced among the stakeholders and the general public.

II. Tasks to be undertaken hereafter

(1) Strengthening the AQDCC's institutional framework for air quality management

1) Promoting the AQDCC's specialization

The AQDCC should become a specialized organization with substantial expertise on air quality management in order to provide scientific data and information to support the relevant decision-making process. Moreover, the QA/QC (Quality Assurance and Quality Control) system as well as the personnel system for necessary tasks in air quality management should be firmly established.

2) Continuing human resource and institutional development in terms of quality and quantity

The number of the AQDCC staff members is small for the organization's enormous tasks. Moreover, the expertise of the staff members should be improved. Although the Project has been contributing to the latter issue, it should be addressed in such a way that the AQDCC will become an effective organization for air quality management.

3) Clarifying responsibilities among the AQDCC, Municipality of Ulaanbaatar, District and Khoroo

As the AQDCC is a relatively new agency, the relationship is not clearly defined between the AQDCC and other parts of Ulaanbaatar City such as District and Khoroo in activities on air quality management. At present, the AQDCC is undertaking a substantial amount of work that should be done at the District and Khoroo levels. Ulaanbaatar City should make clear the division of responsibilities and duties related to air quality management. A better co-working system for the AQDCC, District and Khoroo should be sought.

(2) Enhancing contribution of the AQDCC to the National Committee on Air Pollution Reduction

The National Committee for Air Pollution Reduction is an organization endowed with the authority to give directions to organizations dealing with air pollution reduction. The committee is able to officially identify and to distribute the roles and responsibilities of each organization in order to tackle air pollution through an official partnership among the relevant organizations. Therefore, the AQDCC should increase contribution to the committee and work hard to gain more support from it.

3-7 Lessons Learned

(1) Project formulation for more effective technology transfer

The Project has been formulated through the project formulation studies and the detailed planning

surveys. The Project activities and C/P and C/P-WG member agencies and personnel have been identified and selected through the process above. Both the Mongolian C/P personnel and the Japanese experts have been properly selected. In case of technical transfer involving a high level of expertise, it is essential to understand the situation on the ground and the existing resources in order to make proper plans and implement them.

(2) Consistent supervision on project implementation

For a project in which various experts with a high level of expertise are periodically dispatched like this Project, the total number of months for the experts' dispatch is limited. Moreover, the experts mainly engage in activities specified in TOR. Integration of the project should be sustained with substantial efforts and attentions. JICA internal resources such as staff member and senior advisors at JICA headquarters should be dispatched continuously to perform advisory and supervisory works from a strategic view point with a longer time-frame for the involved sector of the project. Through proper interventions and follow-ups, JICA would be able to make the project bring about substantial progress and achievements.

(3) Utilization of SCDM

The Project used the SCDM to clarify the division of roles and the ways of collaboration with the relevant organizations for ensuring the sustainability of the Project. The SCDM describes the personnel in the relevant technical areas, content of technical transfer, activities, and skills for each output of a project, as well as required equipment, information sources, manuals, budget, team building, and institutional framework. Since a PDM is not able to describe activities of the organizations required for collaboration, the SCDM is useful for stakeholders to understand the institutional framework and contents of relevant activities.

(4) Expert dispatch MM and technical transfer

A total of 14 experts have been dispatched for three years. The duration of the dispatch is approximately 102 MM in total. Among several technical teams, the flue gas measurement team has achieved a credible effect in transfer of skills and knowledge. An analysis on the team's achievement shows that four experts in the team have been dispatched for a total of 33 MM. The training by the team has been undertaken for 90 days in total for three years. Following the precisely designed training plan, the team has conducted lectures in the classroom and on-site demonstrations to provide the trainees with opportunities to strengthen skills from both the theoretical and practical aspects for a long period. The participation rate of training by members of C/P and C/P-WG is relatively high. It indicates that transferring technical skills needs a substantial dispatch period and inputs of experts.

(5) Need for involvement of decision makers in a capacity development project

A capacity development project deals with institutional development in addition to human resource development. It is important for such project to include decision makers as C/P or stakeholders because the understanding and collaboration by decision makers is indispensable for institutional development.

(6) Timing of inception of a project

Since most of the relevant activities are concentrated in winter, the appropriate timing of the project inception must be identified. The donor side should carefully prepare a project before sending experts and equipment so that those inputs become timely and effective.

(7) Sufficient number of interpreters

The Project employed three interpreters based on the proposal by the detailed planning surveys. An interpreter plays an important role for technical transfer. The Project educated them so that they would have a good command of required specialized terminology and technical words. When the dispatch period of several experts overlapped, the Project needed additional interpreters. It is clear that a technical cooperation project requires a sufficient number of interpreters.