

# Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Mexico office: July, 2013

Country Name	Strengthening of Air Monitoring Program in the Mexico
Mexico	

## I. Project Outline

Project Cost	457 million yen	
Project Period	October, 2005 - October, 2008	
Implementing Agency	National Institute of Ecology (INE: Instituto Nacional de Ecología), National Center of Environmental Research and Training (CENICA: Centro Nacional de Investigación y Capacitación Ambiental), Secretariat of Environment and Natural Resources (SEMARNAT: Secretaria de Medio Ambiente y Recursos Naturales)	
Cooperation Agency in Japan	Ehime University	
Related Projects (if any)	<p><u>Cooperation by Japan</u></p> <ul style="list-style-type: none"> <li>• The National Center for Environmental Research and Training (Technical Cooperation, Phase I 1995-97, Phase II 1997-2002)</li> <li>• The Joint Research Project on Formation Mechanism of Ozone, VOCs and PM2.5 and Proposal of Countermeasure Scenario (Technical Cooperation of Science Technology, 2011-15)</li> </ul> <p><u>Cooperation by Other Donors</u></p> <ul style="list-style-type: none"> <li>• Transport Air Quality (World Bank, 1993-99)</li> <li>• Environmental Program jointly implemented by USA, Canada and Mexico (North American Commission for Environmental Cooperation, 2005 -)</li> <li>• Border 2012 Program (USA, 2002-12)</li> </ul>	
Background	<p>In Mexico, since air pollution and hazardous waste in urban areas where the population concentrate, including the Metropolitan area of Mexico City, have been deteriorating, solutions of such pollutions was the national agenda. In 1993, the government of Mexico established CENICA to cope with environmental protection. JICA supported human resource development as well as research and training capacity of CENICA through technical cooperation. Although CENICA enhanced their research and training capacity for air pollution control, further development of institutional capacity was needed to promote "the National Air Quality Monitoring Program 2003-08 (PNMA: Programa Nacional de Monitoreo Atmosférico)". Under this circumstance, the government of Mexico requested the government of Japan to support capacity development of CENICA for improving air quality monitoring.</p>	
Inputs	<p><u>Japanese Side</u></p> <ol style="list-style-type: none"> <li>1. Experts 10 Short term experts</li> <li>2. Trainees Received 6 persons</li> <li>3. Equipment 73 million yen</li> <li>4. Local Cost 30 million yen</li> </ol>	<p><u>Mexican Side</u></p> <ol style="list-style-type: none"> <li>1. Counterpart 16 persons</li> <li>2. Local Cost 9.78 million pesos</li> <li>3. Land and facilities Project Office</li> </ol>
Project Objectives	<p><u>Overall goal</u> Capacity of the Mexican society to manage air quality is strengthened.</p>	
	<p><u>Project Purpose</u> The Mexican society recognizes importance of air quality monitoring and capacity of the local governments to provide and utilize reliable air quality information for policy planning and evaluation is strengthened.</p>	
	<p><u>Outputs</u></p> <ul style="list-style-type: none"> <li>• Capacity to collect reliable air quality monitoring data in Mexico is strengthened.</li> <li>• The existing air quality monitoring equipment calibration system in Mexico is improved.</li> <li>• Studies that complement existing air quality monitoring are carried out.</li> <li>• Capacity to conduct management and analysis of air quality monitoring data in Mexico is strengthened.</li> <li>• Accessibility of the general public and policy makers towards information about air quality is increased.</li> <li>• The National Air Quality Monitoring Program 2007-2010 is prepared.</li> </ul>	

## II. Result of the Evaluation

Summary of the Evaluation
<p>According to PNMA 2003-08, air quality monitoring has been promoted based on the existing system. However, since data obtained through the existing system was not reliable enough to utilize for planning for mitigation and control of air</p>

pollution, it was necessary to build accurate Quality Assurance and Quality Control (QA/QC) and data management system for standardizing air quality monitoring.

This project has fully achieved the objectives, improving provision and utilization of reliable air quality monitoring data by the local networks for the project purpose, and promotion of air quality control and contingency plan by the local governments for the overall goal. As for sustainability, there was no problem observed since the air quality monitoring activities by CENICA has been endorsed by the national policy, the budget allocation, the technical capacity and expansion of the air quality monitoring networks. For relevance, the project has been highly relevant with Mexico's development policy, development needs, as well as Japan's ODA policy. For efficiency, the project cost exceeded the plan.

In the light of above, this project is evaluated to be highly satisfactory.

## 1 Relevance

The Project has been highly relevant with the Mexico's development policy ("prevention and control of pollution" in the Sector Program for Environment and Natural Resource 2007-2012 (Programa Sectorial de Medio Ambiente y Recursos Naturales)), development needs ("establishment of air quality monitoring system to mitigate and control air pollution"), as well as Japan's ODA policy to support global environmental issues including air pollution control, at the time of both ex-ante evaluation and project completion. Therefore, relevance of this project is high.

## 2 Effectiveness/Impact

The Project has achieved the project purpose of strengthening of capacity of local governments to provide and utilize reliable air quality information. More than 18 local networks, the target value of the Project, were confirmed by CENICA that they had provided reliable data through the National Information System of Air Quality (SINAICA : Sistema Nacional de Información de la Calidad del Aire) and utilized them for policy planning and evaluation. Also, the capacity to control air quality in Mexico has been enhanced through PROAIRES (Programs of improvement and management of air quality), establishment of air quality contingency plan and budget allocation for air quality monitoring as well as utilization of studies by local governments on impacts of air quality

After project completion, the local networks confirmed by CENICA have increased to 38, Applying air monitoring manuals developed under project framework, local networks have staff trained by CENICA and have started to implement appropriate maintenance and calibration programs of monitoring equipment, and audit on monitoring station. As a result of the air quality monitoring by the Project, the coverage of air quality monitoring in the country has been expanded. For example, a new fixed workstation for atmospheric monitoring was installed in the metropolitan area of the Valley of Puebla. Furthermore, programs for improvement of air quality have been promoted in Salamanca and Leon of the Guanajuato state. While risk of sulfur dioxide and PM10<sup>1</sup> were reduced in Salamanca, emission of PM10 was also reduced in León. Also, CENICA purchased a mobile station and set up 18 teams for air quality monitoring.

Therefore, effectiveness/impact of this project is high.



(Working at CENICA)

Outcome	Indicator (Target Value)	Actual
Overall Goal: Capacity strengthening of the Mexican society to manage air quality	The number of the local networks whose air quality monitoring data are utilized in policy planning or evaluation by the federal government is increased.	(At the time of ex-post evaluation in 2012) . PROAIRES (Management programs to improve air quality ) with coordination between federal and local governments were established in 10 cities with local network, namely, Ciudad Juárez, Salamanca, León, Monterrey Metropolitan Area, Metropolitan Zone of Cuernavaca, Victoria de Durango, Región Comarca Lagunera, Mexicali, Jalisco, Metropolitan Zone of Valle de México (under development in 5 more cities with network)
	The number of research papers on health risk, impacts on ecosystems, and economic losses due to air pollution that can be utilized for policy planning or evaluation is increased.	19 studies developed for supporting local government under the PNMA 2008-12 A study paper of VOCs, two of PMs were presented respectively in European Geosciences Union General Assembly and in American Geophysical Union, and also two papers for VOCs and PM were published in Scientific Journal. These studies provide the evidence for the public development policy such as 'Mexican standard (Norma Mexicana)' draft for health risk protection focused on benzene and hydrocarbons.
	The number of local governments that have established an air pollution contingency plan is increased.	4 local governments established their air pollution contingency plan (Mexico City and Metropolitan area, Guadalajara City and Metropolitan area, Monterrey City and Metropolitan area, and Salamanca in Guanajuato State.)

<sup>1</sup> PM10 and PM2.5 are particulate air pollutants. PM 10 is particulate matter less than 10 micrometer (µm) and PM 2.5 is particulate matter less than 2.5µm.

	Budgets for air quality management measures at the federal and local levels are increased.	Achieved. The total budget for air quality monitoring allocated by the state governments from 2009 to 2012 was 254 million pesos.
Project Purpose: Strengthening of capacity of local government to provide and utilize reliable air quality information.	At least 18 local networks are confirmed by CENICA as providing reliable air quality monitoring data through SINAICA	(At the time of project completion in 2008) Achieved. 19 networks of Tijuana, Rosarito, Tecate, Mexicali (Baja California), Ciudad Juarez, (Chihuahua), Monterrey (Nuevo Leon), Durango, Gomez, Placio (Durango), San Luis, Potosi (San Luis Potosi), Guadalajara (Jalisco), Celaya, Salamanca, Irapuato, Silao, Leon (Guanajuato), Toluca (Mexico), Puebla (Puebla), Villahermosa (Tabasco) and Mexico City are confirmed by CENICA.
	At least 18 local networks are confirmed by CENICA as utilizing air quality monitoring data for policy planning or evaluation.	Achieved. 20 networks of Tijuana, Rosarito, Tecate, Mexicali (Baja California), Ciudad Juarez (Chihuahua), Monterrey (Nuevo Leon), Durango, Gómez Palacio (Durango), San Luis Potosi, (San Luis Potosi), Guadalajara (Jalisco), Celaya, Salamanca, Irapuato, Silao, Leon, Mexico City (Guanajuato), Tlucá (Mexico), Puebla (Puebla), Cuernavaca (Morelos) and Villahermosa (Tabasco) is confirmed by CENICA.
	Awareness of those who are responsible for environmental programs of the State governments towards importance of air quality monitoring is increased.	Achieved. According to the results of the questionnaire surveys at the terminal evaluation, all the respondents have observed increase in the awareness of stakeholders in environmental programs.
	Access counts per month to SINAICA are increased.	Achieved. In average, the number of visit to the SINAICA website on monthly basis has increased from 11,514 in 2005 to 16,674 in 2007.

(Source) Terminal Evaluation Report and information provided by CENICA

### 3 Efficiency

While the inputs were appropriate for producing the outputs of the project and the project period was as planned (ratio against the plan: 100%), the project cost was higher than the plan (ratio against the plan: 118%). Therefore, efficiency of this project is fair.

### 4 Sustainability

The air quality monitoring and control of air pollution has been promoted under the federal program of PNMA 2008-12 and PROAIRES by the local governments. CENICA assigns 8 staff for air quality monitoring activities, including the director. The local networks cover 82 locations in 28 states of the country equipped for air quality monitoring. While 38 locations have automatic equipment, 44 locations are equipped by manual ones. For maintenance of air quality monitoring equipment, the Directorate of Research on Characterization Analysis of Pollutants and Atmospheric Monitoring (DIMACAC: Dirección de Investigación en Monitoreo Atmosférico y Caracterización Analítica de Contaminantes), prepares an annual program of inspection visits in support and by request of the local networks, In terms of air quality monitoring data, SINAICA links 28 systems of air quality monitoring in 27 cities covering the population of 37.9 million in the country. CENICA has been delivering national and regional workshops and trainings for the local networks, including the newly integrated networks in the national air quality information system through the courses at the CENICA's laboratory, on-site trainings, and on-line trainings. Owing to the enhanced capacity by the Project, CENICA has been expanding their scope of services. For example, the number of services related to dissemination of the standards which enable trace measurements of air quality by the monitoring systems in the country. Furthermore, since 2007, a program to assess technical achievement, which should lead more achievement in the next year, has been continued. Also, because of the Project, the number of monitoring systems has been continuing to expand and has been requiring more number of personnel and resources.

Also, the annual budget of CENICA increased after the Project from 13.1 million pesos in 2008 to 71.6 million pesos in 2012.

Since no problem in policy background, structural, technical and financial aspects has been observed, sustainability of the effects of this project is high.