Indonesia • The Philippines

Supporting Pollution Controls and Sustainable Environmental Monitoring

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Field Survey:
Indonesia: August 2003
Philippines: November 2003 and February 2004

Outline and Objectives

Approximately 500 thousand people in developing countries die of respiratory diseases caused by environmental pollutants every year. Added to which, roughly half of the world's rivers are severely polluted. Recognition of the importance of pollution control and environmental monitoring has increased accordingly, but many developing countries lack the necessary systems and resources. For this evaluation, data availability for air and water pollutants, etc. was investigated, hearings held with local residents, and the social impacts and sustainability of three ODA loan projects undertaken in Indonesia and the Philippines were surveyed.

Outline of the three projects covered

	Indonesia: Banjarmasin Coal-fired Steam Power Plant Project	Indonesia: The BAPEDAL Regional Monitoring Capacity Development Project	Philippines: Environmental Equipment for Power Plants Project
Loan Amount	6,464 million yen	2,935 million yen	457 million yen
Loan Disbursed Amount	6,440 million yen	2,743 million yen	214 million yen
Loan Agreement	November 1994	November 1994	December 1994
Final Disbursement Date	December 2001	December 2001	April 1999

The Banjarmasin coal-fired steam power plant. This power plant is located in Kalimantan in the province of South Kalimantan and is an important power base for the region.

Incinerated coal ash around the ash dump

Asam-Asam coal field

Evaluation Result

❶ Indonesia: Banjarmasin Coal-fired Steam Power Plant Project

The following report and recommendations were made subject to a field survey conducted by Prof. Shimomura and other external evaluators (Asam-Asam, Jorong, Tana Laut, South Kalimantan and surrounding areas).

Report Concentrations of the atmospheric pollutants sulfur dioxide (SO2), nitrogen dioxide (NO2) and ozone measured at sites on plant premises and in the surrounding area are measured and compared against environmental standards. The results were found to be within acceptable levels. Water quality on plant premises will need to be monitored to check the effects of highly alkaline water on plant equipment. Although the sulfur content of coal supplied to the plant is higher than that measured at the ex-ante assessment it is within regulatory standards. While outside the scope of the project, coal at the Asam-Asam coal field, located near the plant and providing coals to the plant, is mined using open techniques and there are concerns about the effects of dust produced during grinding and transportation on the health of local residents. It was confirmed that the lifestyles of the families (36 household) have not been adversely affected by the resettlement.

Recommendations In terms of measures to deal with dust and discharge from the incinerated coal ash being stored in the ash dump, which are currently insufficient, if possible, the construction of a dike, which was stated in the initial plans, should be investigated, and improvements, such as using the ash to fill abandoned coal mines, putting it to effective use in the manufacture of cement or reinforcing materials should also be looked into. The matter of the State Electricity Corporation (PLN), the project's executing agency, conducting the study into measures to deal with incinerated coal ash was discussed at the feedback seminar.

❷ Indonesia: The BAPEDAL Regional Monitoring Capacity Development Project

The following report and recommendations were made subject to a field survey conducted by Prof. Fuwa and other external evaluators (laboratories (research institutes) in North Sumatra, South Sulawesi, and East Java).

Report The project involved the provision of environmental monitoring equipment for laboratories under environment ministry jurisdiction; however, decentralization laws entered into force in 2001, after the project was completed (October 2000), and the ministry for the environment issued an edict to the effect that ownership and use rights for the equipment was to be transferred to the regional environmental management agencies (BAPEDALDA) within provincial governments. Broadly speaking, project equipment is being utilized and there are no operational or managerial issues. Since Indonesia is in the process of transferring authority to the regions, it will be necessary to check that the relocation of equipment is appropriately executed, to improve personnel training and the financial bases of the provincial governments and to ensure that there are smooth supplies of reagents and spare parts.

Recommendations On the basis of guidelines formulated by the ministry for the environment, if possible, monitoring plans should be developed and implemented by the central and provincial governments, environmental monitoring data shared at the central and provincial level, and a system for developing, implementing, analyzing and assessing environmental policy constructed. The matter of investigating expediting the smooth transition of equipment to the provincial governments and of conducting appropriate capacity building was discussed at the feedback seminar.

One of the labs that was supplied with equipment (Medang, South Sumatra)

The significance of region-led environmental monitoring has increased with decentralization.

❸ Philippines: Environmental Equipment for Power Plants Project

The following report and recommendations were made subject to a field survey conducted by Prof. Fujikura and other external evaluators (Masinloc coal-fired power station and Backman geothermal power station).

Report Broadly speaking, the monitoring equipment procured via this project is being used continuously. Environmental monitoring activities are being undertaken by the Philippine National Power Corporation (NPC) because they are one of the prerequisites for acquiring operational permit (PO) by the Department of Environment and Natural Resources (DENR) that is required to operate power plants. By contrast, since meteorological data are not required for PO acquisition, some of this equipment is not being appropriately operated and maintained. Monitoring that is being jointly undertaken by NPC, DENR, local governments and non-governmental organizations (NGO) is fulfilling a certain role in helping to gain the understanding of local organizations in respect to the power plants. However, there is little awareness that the monitoring is being undertaken and that equipment has been installed among local residents.

Recommendations In order to ensure that NPC continues to undertake environmental monitoring, if possible, incentives should be confirmed in advance (permit acquisition, information disclosure, etc.). Added to which, NPC needs to reaffirm the importance of disclosing information to local residents and make greater efforts to obtain their understanding. Measures to improve the disclosure of environmental monitoring data (the creation and distribution of data summaries to local residents by local governments, etc.) were discussed at the feedback seminar.

The Masinloc coal-fired power plant (300MW×2 generators) became operational in 1998; monitoring is undertaking on a regular basis.

The environment monitoring station that was built near the Masinloc coal-fired power plant

What type of atmospheric pollutants are out there?

Sulfur dioxide (SO_2) is generated when sulfur contained in fuel such as oil and coal is burned and reacts with oxygen in the environment. In high concentrations it affects the respiratory organs and causes acid rain which affects forests, lakes and marshes.

Nitrogen oxide (NO_2) is a compound of nitrogen and oxygen that is generated from numerous sources, including factories, automobiles and residential homes. In high concentrations it affects the respiratory organs and is one of the causes of acid rain and photochemical oxidants.

The majority of **photochemical oxidants (Ox)** is ozone (O3); this pollutant is generated when nitric oxides and hydrocarbons in the atmosphere receive ultraviolet light from the sun causing a chemical reaction. In high concentrations it affects the respiratory organs and is one of the causes of photochemical smog.

Suspended particulate matter (SPM) is the particulate matter smaller than 10μm that is generated by the exhaust fumes produced by boilers and automobiles, etc. It remains for long periods in the atmosphere, and in high concentrations adheres to the lungs and bronchial tubes affecting the respiratory organs.