

## **SAMUT PRAKARN WASTEWATER MANAGEMENT PROJECT INDEPENDENT REVIEW PUBLIC WORKSHOP**

On 3 May 2001, a public workshop was held in Bangkok to discuss the interim findings of the Independent Review team commissioned to assess the Samut Prakarn Wastewater Management Project. The workshop was attended by about 100 people from a cross section of civil society, including representatives from the affected community in Klong Dan. Feedback from the workshop and other consultations will be taken into account when the Independent Review completes its work and finalizes its report at the end of May. Here is a summary of the workshop:

### **Introductory Sessions**

1. Dr. Kevin Boland, Workshop Chairman and leader of the Independent Review (IR) team, introduced the objectives of the review, the composition of the IR team, and the manner in which the team conducted its work. The IR team comprised Dr. Kevin Boland, Environmental Specialist; Dr. Scott Bamber, Public Health Specialist; and Dr. Pichai Sonchaeng, Aquatic Ecology Specialist. All three were present at the workshop.
2. About 100 people participated in the workshop. A broad section of civil society was represented. These included the Mayor of Klong Daan village, an affected community under the Samut Prakarn Wastewater Management Project (the Project), the provincial administration of Samut Prakarn province, nongovernment organizations (NGOs), academic and research organizations, the media, and Government agencies. Representatives of ADB and the Japan Bank for International Cooperation, a Project cofinancier, also attended the workshop.
3. Dr. Boland requested the Pollution Control Department (PCD) to make a brief presentation of the overall objectives and description of the Project. Mr. Sirithan Piroj-Boriboon, Director General of PCD and Dr. Yuwaree In-na, Project Director, presented the Project's outlines. Thereafter, the development of the draft Environmental Management Plan (EMP) was presented by Ms. Vipapunraw, Project Manager in PCD.

### **Thai Experts EMP Review Report**

4. Dr. Boland advised the participants of the presence at the workshop of Thai experts who had undertaken a review of the draft EMP on behalf of JBIC. The results of the review had been submitted to PCD. However, Dr. Supichai made a presentation on behalf of the team of Thai experts summarizing the results of the review. The basic objective of the review was to evaluate the extent to which the draft EMP correctly identified and responded to the likely environmental impacts from the Project. The key aspects of the review included: (i) the physical condition of the Project area including surface water hydrology, surface water quality, odor, sludge, mangrove ecosystems, and marine wildlife resources. Because of the short time available to the team, only the draft EMP document was reviewed and data sources on which the draft EMP was developed were not reviewed.

5. No obstructions of water flows were anticipated during the construction period. For the operation period, the design of the pipe and diffuser for the outfall, including the rate of effluent discharge were considered adequate. Surface water quality was not assessed as problematic. The impacts in the economic exclusion zone (EEZ) – an area around the marine outfall – were considered moderate. The dilution of the treated effluent by seawater, together with measures to control sedimentation, would ensure that impacts on marine ecology (especially on the seabed) would not be adverse. While the EEZ was necessary as a temporary measure to monitor changes in water quality, and the impact of pathogens on marine life, there would not be an unacceptable decline in salinity that would affect marine fisheries. However, Dr. Supachai cautioned that it was necessary to monitor the treatment process carefully to ensure that water quality standards were met.

6. Some key areas where further work was required on the draft EMP were listed as:

- (i) Sludge management. The draft EMP needed to discuss measures required to manage sludge properly.
- (ii) Management of heavy metal and toxic substances.
- (iii) Assessment of suspended solids in sediment.
- (iv) Additional data for planktons and other marine life should be obtained to judge impact on marine resources.

7. The odor specialist, Dr. Winai, advised that impacts from odor were not life threatening but impacted on the quality of life of the community concerned. He felt that the draft EMP had done a good job of simulating ammonia and hydrogen sulfide odor (the two main odor agents); however, overall odor measurement in terms of odor unit should be applied. He believed that odor should not be a problem if the number of units was less than 10. He advised that the EMP should provide information on measures such as enzyme spraying during sludge removal to address short term odor problems.

### **Report of the Independent Review Team**

8. The IR team indicated that:

- (i) The Project will bring major benefits to the Project area given that wastewater has serious morbidity and mortality impacts that affect the disadvantaged sections of population.
- (ii) A comprehensive sewer collecting network plus high quality treatment will ensure that major public health benefits occur. A significant health risk already exists in the Klong Daan and Bang Poo areas of Samut Prakarn province where wastewater parameters are already in excess of Thai Government standards. In fact, the Klong Daan community is undergoing rapid development; environmental problems will be even more acute in future. Ministry of Health officials should be involved in the Project.
- (iii) Aerosols are not a significant issue in the Project area. Airborne bacteria or pathogens are unlikely. There are likely to be high concentrations of heavy metals, pathogens, and toxic material. However, no problems are likely if the sludge is disposed of properly. The EMP should contain clear plans of sludge removal and management.

- (iv) There is a significant existing odor problem in the Klong Dan area due to mussel shells and stagnant waters. The EMP should address this issue in the context of connecting the community to the Project facilities.
- (v) No significant health risk from heavy metals and toxic substances are anticipated in the marine outfall. However, careful monitoring is needed to ensure compliance with current or revised standards. It is likely that pathogens will not pose significant problems because of low survival rates due to high salinity and sunlight in the Samut Prakarn area.
- (vi) The EEZ should be increased to 1000 meters from the current 500 meters (a total area of 5.2 square kilometers). Coliform concentrations projected in the draft EMP are only averages – there is need to cater to peaks. Under projected load conditions, predicted average coliforms are hardly in conformity with current Thai standards. This can be taken care of by expanding the EEZ. The size can be reduced if monitoring shows lower impact than projected.
- (vii) Hazardous waste tracking systems are adequate. There are new technologies coming on stream and these will be of use later.
- (viii) The Project ought to form part of a broader project since improvements in the Bangkok Metropolitan Region and the lower areas of Chao Phraya River were badly needed.
- (ix) The draft EMP does not make a clear distinction between baseline data and monitoring programs. Baseline data needs to be interpreted and not just collected. The data has to be put into context of the plan and the operations of the system. Monitoring and feedback within the plant proper needs to be addressed in the EMP.
- (x) It was possible that the population of mussels harvested in the Samut Prakarn area had been underestimated in the draft EMP. This required to be confirmed in the context of likely impact on marine resources. The team advised that fishing output in the Samut Prakarn area had declined by 30 percent over the last decade mainly as a consequence of the increasing pollution of the upper Gulf of Thailand.
- (xi) It might be worth revisiting the model adopted for determining impact of sedimentation. Tidal conditions are important and should be factored in. Similarly, it was necessary to accurately determine the characteristics of the coastal area. It may be worthwhile collecting water samples from areas (such as Bang Pakong) further away from the marine outfall to assess quality.
- (xii) It would be difficult to determine changes in biological resources in coastal areas for several years. Soil and mussel samples taken by the IR team in three areas in the province did not show excessive heavy metal traces.

- (xiii) The key to managing the environmental impacts of the Project lay in the reliability of the monitoring system. The system outlined in the draft EMP was essentially adequate with improvements in some areas as suggested in the detailed reports.

## **Open Discussion**

9. The data on fishing volume in the Klong Daan area produced by the IR team was contested within the team, and by PCD and representatives of the Klong Daan community. It was agreed that the data required further verification. In this context, the Project Director in PCD showed a satellite photograph of the mussel farming areas in the vicinity of the marine outfall that indicated that less than 5 per cent of the total mussel farming area would be affected.

10. A representative of the Klong Daan community said that he agreed with the proposed measures to address the environmental issues arising from the Project. However, his community was not worried about fresh water resources but about contamination from heavy metals. He added that it was important for PCD to ensure that industry treated its waste in accordance with prescribed standards. In fact, if this were possible, there would be no need for the Project. Odor was also an issue since five schools in the area were exposed to the prevailing wind from the treatment plant site. He maintained that ADB was in breach of its own policies and was destroying the environment in the Asia-Pacific region.

11. Dr. Boland responded and maintained that the plant was designed to remove heavy metals in excess of 95 per cent. Far from contaminating the area, the plant would clean it up. However, sludge management was a weak area in the draft EMP and a proper sludge management program required development. Further, odor from the plant was unlikely to be a problem. The more serious problem was with the environmental conditions in Klong Daan. He added that the Klong Daan community would benefit most from the Project.

12. The Mayor of Klong Daan said that while the community agreed that the treatment plant was needed, it should have been located where the wastes arose. He alleged that ADB had put its money in the wrong place and that the Project was being implemented without supporting research.

13. Dr. Boland clarified that location of the treatment plant was not part of the terms of reference of the IR team. The Director General, PCD added that the location was chosen because it was the only place close to the sea where the contractor could buy land sized at 300 hectares. He also explained that the increase in Project costs was only due to the use of trenchless technology and lining of the pipeline; it had nothing to do with the reported "change" in location.

14. The IR team was asked by participants (academician and general public) to discuss the question of sedimentation and salinity in the EEZ. The team clarified that a sedimentation study was needed and should be done. Dr. Supichai from the Thai Experts Team added that while sedimentation may travel far, the 500 meter radius around the EEZ should be adequate.

15. Dr. Boland reiterated that the situation in Klong Daan is extremely volatile in an environmental sense. Water quality in the klong is extremely poor. The IR team suggested that Klong Daan connect up to the system under the Project. Quality of life in Klong Daan will improve significantly since public health is intimately connected with social behavior.

16. Dr. Surapong Sudara, a member of the Thai Experts Team, spoke in his capacity as a member of an NGO. He expressed doubt whether the industry would be willing to use the facilities or whether they would want to do the treatment themselves. He believed that lack of demand would affect Project sustainability. He stressed the sludge management question. He also felt that the plant should be located in the place where the wastewater arises. The Project had nothing to do with wastewater in Klong Daan and this was unusual.

17. The IR team agreed that bringing the industries in Samut Prakarn province on line was crucial. A critical part of the Project is legislation, regulations, and enforcement by Thai Government. Domestic sewerage was also important, especially in the Klong Daan area. If used in educational terms, it can have enormous educational potential and huge spin-offs at the national level.

18. The Chairman of the Provincial Administrative Council for Samut Prakarn province said that there was considerable misinformation about the Project. He sympathized with the Klong Daan community and said that it was necessary to convince the community that heavy metals and other toxic substances would not pose threats to the community. He suggested that the treated water could be used for a variety of purposes and does not have to be pumped out to sea.

19. The IR team undertook to examine issues of reuse of treated effluent. Dr. Boland said that the team would ask that the EMP specifically address questions of reuse.

20. The representative of the Klong Daan community said that the community was concerned about its public health aspects. While industrialization has been rapid, the Government had not enforced the law adequately. He suggested that a two pronged approach be followed. One should focus on the introduction of cleaner production technologies. The polluter-pays principle should be followed.

21. The IR team said that the polluter-pays principle is part of the Government's responsibility. The Deputy Manager of the project on cleaner production and industrial efficiency technologies said that her team was working on the subject of mitigating pollution and toxicity at the point at which it is generated. She was appreciative of the discussion in support of getting the industrial plants to use the Project facilities.

22. A university representative made three comments that echoed broader sentiments expressed by the participants. One was that the IR team's recommendations should have flexibility in terms of priorities. Secondly, there should not be any question of stopping the Project at this juncture but more discussion on ways to enhance benefits such as extending the marine outfall or reusing the treated effluent. A third point related to determining how the Klong Daan community could benefit from the Project or how it could be compensated.

23. The IR team agreed with these comments. However, it cautioned participants on the issue of extending the marine outfall. The current configuration of the outfall had been optimized and further extending it would impose costs disproportionate to benefits. The team also received a comment from the audience that all sectors and professions had a role to play in developing a country's economy and there was little point in blaming the industry for environmental ills.

24. The IR team summed up the discussion and indicated that it would evaluate all comments made at the workshop. The team was inspired by the contribution of all participants. While finalizing its report, the team would look at:

- (i) sludge management;
- (ii) expanded EEZ;
- (iii) baseline monitoring and modeling;
- (iv) flexible approach to recommendations such as issues of reuse of treated effluent, and
- (v) mitigation measures in respect of factors that may impact on the Klong Daan community.