

TECHNICAL ASSISTANCE COMPLETION REPORT

Division: ECAE

TA No. and Name TA 3891-PRC: Study of Control and Management of Rural Nonpoint Source Pollution			Amount Approved: US\$600,000	
			Revised Amount: US\$597,549	
Executing Agency: State Environmental Protection Administration (SEPA)	Source of Funding: Japan Special Fund	TA Amount Undisbursed US\$32,890.51	TA Amount Utilized US\$564,658.49	
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<p>Description Over the past two decades, the People's Republic of China (PRC) has made some progress in the control and prevention of point-source pollution, especially in the area of industrial pollution reduction. Despite this, water pollution levels are extremely high and worsening in most areas of the country. Management of non-point source pollution (NSP), primarily in rural areas, is becoming increasingly significant for improving the quality of the PRC's water bodies (especially lakes, bays, reservoirs, rivers, canals and wetlands). Government policies that have traditionally focused on industrial point source pollution control need to be complemented by measures to address rural NSP. The PRC's huge agriculture sector generates very high volumes of solid waste and is the leading source of NSP. The PRC is also one of the world's largest producers and consumers of agricultural pesticides and fertilizers, and average farm usage per unit area widely exceeds international standards for recommended application rates. These factors contribute to (i) eutrophication of surface waters; (ii) nitrate pollution in groundwater caused by excessive nutrients (primarily agricultural runoff and waste from livestock breeding, as well as village sewage waste) and (iii) the accumulation of toxic chemicals. Irrigation using wastewater from rural industries and livestock production has generated soil and water contamination and degradation. Rural NSP has caused direct and indirect adverse impacts on human health and other economic losses. The Government is aware of the NSP problem and is addressing it. Rural environmental management is one of the six main aspects addressed in the National Tenth Five-Year Plan (FYP, 2006-2010) for Environmental Protection. Among others, control and prevention of NSP caused by livestock production, agricultural wastes, and pesticide and fertilizer uses are specified as priority tasks for environmental management in rural areas.</p>				
<p>Objectives and Scope The objectives of the TA were to (i) help prepare national policies, plans, and programs for the control and prevention of rural nonpoint source pollution (NSP) based on better understanding of the status and trends of the problem; and (ii) strengthen national and local institutional capacity for controlling and managing rural NSP. The outputs of the TA were to include (i) a report on the main problems and underlying causes of rural NSP; (ii) a report on international experience with rural NSP control and implications for the PRC's policies, plans, and programs; (iii) a medium-term national action plan for the control and management of rural NSP, with a focus on pollution generated from livestock production; and (iv) dissemination of materials reporting the TA findings.</p> <p>The TA design took into account the TA's potential long-term impact on rural NSP control and management. The TA was to emphasize the development of a medium-term action-oriented framework that prioritizes key subject areas for NSP control and management in rural areas, and identifies needed and sustained support for implementing the recommended actions. The TA scope covered three main tasks: (i) assessing and identifying the key problems and underlying causes of rural NSP; (ii) setting priorities to control and prevent rural NSP, and preparing a medium-term national action plan with a focus on livestock pollution, in consultation with all key stakeholders; and (iii) building institutional capacity and improving Government expertise in NSP control and management. An analysis of existing databases, documents, and report; dialogue with the Government and other key stakeholders through meetings, seminars, and workshops, and development of case studies will be adopted as a comprehensive approach for carrying out these tasks. Two geographical areas will be selected for the development of the case study. Criteria for the selection of the case study areas are (i) status and trends of NSP, (ii) accessibility of information and data, (iii) national Government priority and local government commitment, and (iv) cost effectiveness. A minor change in scope and implementation arrangement was approved In April 2004, where drafting of a Regulation on Pollution Prevention and Control on Livestock Production became one of the TA outputs to be submitted to the State Council for review.</p> <p>The TA formulation and design were adequate with respect to gaining a broad understanding of the magnitude and trends in NSP and outlining an initial understanding of the contributing industries and sources. Stakeholder participation and ownership were satisfactory; e.g., good use was made of secondary sources relating to the human health implications of NSP, the lack of reliable longitudinal data, and the need to address this issue more substantively in future Government plans and programs. The terms of reference (TOR), scheduling, and executing arrangements were also adequate.</p>				
<p>Evaluation of Inputs The consultants undertook their tasks in a satisfactory manner overall.¹ The international consultants performed well, providing sound advice based on overseas best practices (primarily from European</p>				

¹ Satisfactory performance in the PER, dated 9 December 2004.

experience), and provided excellent assistance in organizing the overseas study tour. The domestic consultants also performed well as a team, with some high quality inputs by several key consultants. Having a domestic consultant as team leader facilitated good dialogue with the EA. The EA was satisfied with the work of the consultants. The consultants reacted well to the comments made by ADB in reviews and at workshops. The EA (SEPA) interacted well with the consultants, and organized the workshop well. SEPA was very interested in the work, especially with respect to developing proposals for the upcoming 11th FYP, and actively contributed to the action plan in the final report. SEPA's interaction with other agencies, in terms of sharing information on the work, or seeking comments on the draft final report, complied with the requirements set out in the TA paper. ADB's performance was also satisfactory, with timely feedback, approvals and management guidance to the consultants and the EA.

Evaluation of Outputs The final report contains an excellent presentation on the status and trends in NSP throughout the country. The report states: "unless control measures for rural NSP are effectively enforced, the overall pollution levels will continue to rise dramatically over the next 20 years, and the potential discharges will more than double by 2020". A set of maps is included, along with statistics for the main indicators of NSP pollution, namely, chemical oxygen demand (COD), total nitrogen (TN), and total phosphorus (TP). The group of provinces with the worst NSP is those with better-developed economies (Guangxi, Hunan, Hubei and Guangdong), and very limited available land for cultivation and pasture, and therefore very limited capacity to absorb existing pollutants. For these provinces the report states, "the sustainable balance of crop farming and grazing has been destroyed, and the environment is under significant pressure from NSP". The ten worst affected provinces are: Shandong, Henan, Sichuan, Jiangsu, Hebei, Hunan, Guangxi, Anhui, Hubei and Guangdong. The least polluted provinces/autonomous regions, mostly located in the western region, are those with low discharges and low pollution loadings, including Ningxia, Qinghai, Inner Mongolia, Tibet, Shanxi and Shaanxi. These areas are described as "having larger land areas, lower populations, less developed economies and consequently less pressurized environments". Factors identified as the key drivers of NSP pollution were – intensive livestock raising in areas that cannot absorb livestock wastes, excessive application of fertilizers and pesticides (up to 6 times the world average), and agricultural solid wastes from crop and vegetable residues. Rural domestic solid waste and rural sewage makes a relatively small contribution to total rural NSP, and so far is not an important source of pressure on water bodies. The report also contains information from secondary sources relating to NSP and the potential damage to human health from contamination of source waters for urban areas and groundwater contamination. The studies cited show groundwater contamination in excess of World Health Organization standards, linked to the type of contaminants; however, to the present time, there are no systematic case studies to show the quantitative relationship between rural NSP and human health in the PRC. Similarly, the negative impacts of rural NSP on agricultural productivity through soil pollution, compaction, soil texture decline and salinity, reduced use of organic fertilizers and more reliance on chemical fertilizers, and the buildup in chemical residues in vegetables, for example, with adverse impacts on food safety are also listed. Adverse impacts on aquatic ecosystems are noted with rapid loss of biodiversity; again, there are no comprehensive studies in the PRC. The economic loss due to rural NSP is estimated as being in the order of 1% of GDP.

The report contained a detailed analysis of the current institutional arrangements, budget, and staffing to address NSP, and made wide-ranging and detailed recommendations for reform, in line with the requirements of the TOR. A draft Regulation on Pollution Prevention and Control on Livestock Production was also provided. A national action plan and projects for the 11th FYP was also given. These aspects were developed through close working relationship between the consultants and SEPA, and appear most likely to be introduced for implementation under the forthcoming 11th FYP. International experience, primarily from Western Europe in the 1970s, increasingly recognized that drinking water contamination was rising, caused by fertilizer runoff and the increasingly industrialized nature of pig and poultry production. An integrated approach across sectors is now recognized as the best way to control and reduce NSP, combining (i) changes in farmer behavior through the market; (ii) pollution charges; (iii) tradable permits; (iv) product charges; (v) user charges; and (vi) selective subsidies. Selective subsidies are the most widely used and effective tool in Europe and USA for changing farmer behavior. The EA was satisfied with the quality of the outputs of the TA.

Overall Assessment and Rating The TA was successful as it fully achieved two of its three main tasks, namely, assessing and identifying the key problems and underlying causes of rural NSP, and setting priorities to sustainably control and prevent rural NSP, and preparing a medium-term action plan. The third task, building institutional capacity and improving Government expertise in NSP control and management, was partially completed. This is a long-term process and it has been significantly assisted by the work of the TA. The TA, taken as a whole, was successful.

Major Lessons Learned The TA coincided with SEPA's intended plan to incorporate NSP issues in its 11th FYP, which resulted in their strong participation in TA activities. Country ownership and EA interest require not just the right match between the TA scope and the in-country priority, but the timing to be appropriate. Capacity building is a long-term goal, and for the TA to effectively assess its impacts, specific indicators that are measurable within the TA duration need to be established.

Recommendations and Follow-Up Actions The damage to human health from water pollution and NSP's role as a contributory risk factor has been proven internationally, and this TA has helped to bring this to the attention of the Government. Collaboration between SEPA and the Ministry of Health, as well as other key agencies (especially the Ministry of Agriculture) is essential. Further ADB assistance in this area is justified by the increasing trend in rural NSP and its high cost to the economy, and by the success, albeit partial, in controlling this problem through an integrated long-term approach in other countries.

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