

**ASIAN DEVELOPMENT BANK**

**TPA: PRC 2003-23**

**TECHNICAL ASSISTANCE PERFORMANCE AUDIT REPORT**

**ON**

**SELECTED ENVIRONMENTAL ADVISORY TECHNICAL ASSISTANCE**

**IN THE**

**PEOPLE'S REPUBLIC OF CHINA**

**August 2003**

## ABBREVIATIONS

ADB	–	Asian Development Bank
ADTA	–	advisory technical assistance
CESTT	–	Center for Environmentally Sound Technology Transfer
CP	–	cleaner production
EA	–	Executing Agency
EPB	–	environmental protection bureau
EPRCC	–	Environment Protection and Resources Conservation Committee
EST	–	environmentally sound technology
MBI	–	market-based instruments
MOA	–	Ministry of Agriculture
MOST	–	Ministry of Science and Technology
NEPA	–	National Environmental Protection Agency (later renamed SEPA)
NPC	–	National People's Congress
OEM	–	Operations Evaluation Mission
PCR	–	project completion report
PPC	–	Provincial People's Congress
PRC	–	People's Republic of China
SDPC	–	State Development Planning Commission
SEPA	–	State Environment Protection Administration (formerly NEPA)
SEPB	–	Shaanxi Environment Protection Bureau
SETC	–	State Economic and Trade Commission
SPPC	–	Shaanxi Provincial Planning Commission
TA	–	technical assistance
TCR	–	technical assistance completion report
UK	–	United Kingdom
US	–	United States

## NOTE

In this report, "\$" refers to US dollars.

## CONTENTS

	Page
BASIC DATA	ii
EXECUTIVE SUMMARY	vii
I. BACKGROUND	1
A. Introduction	1
B. Rationale, Objectives, and Scope of the TAs	1
C. Completion and Self-Evaluation	2
D. Operations Evaluation Department Evaluation	3
II. ASSESSMENT OF IMPLEMENTATION PERFORMANCE	3
A. Design of the Technical Assistance	3
B. Engagement of Consultants	4
C. Organization and Management	5
D. Implementation Schedule and Financing Arrangements	5
E. Supervision	6
III. EVALUATION OF OUTPUTS AND IMPACTS	6
A. Adequacy and Quality of Reports and Services Provided	6
B. Training and Transfer of Technology	12
C. Institution Building	15
D. Performance of Consultants	15
E. Impact of Technical Assistance	16
F. Other Aspects	16
IV. OVERALL ASSESSMENT	16
V. KEY ISSUES, LESSONS, AND FOLLOW-UP ACTIONS	20
A. Key Issues	20
B. Lessons Identified	21
C. Follow-Up Actions and Recommendations	24
APPENDIXES	
1. Environmental Technical Assistance in the People's Republic of China	26
2. Scope of the Environmental Technical Assistance	29
3. TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology	30
4. TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province	35
5. TA 2906-PRC: Leadership Training in Urban Environmental Management in Key Cities	41
6. TA 2951-PRC: Promotion of Market-Based Instruments for Environmental Management	46
7. TA 3079-PRC: Technical Assistance Cluster for the Promotion of Clean Technology	52
8. TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation	64

## BASIC DATA

### TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$442,000	
Local Cost	\$108,000	
<b>Total</b>	<b>\$550,000</b>	<b>\$549,800</b>

**Executing Agency:** State Science and Technology Commission (subsequently renamed the Ministry of Science and Technology)

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	31 Oct 1995
Signing of TA Agreement	29 May 1996
Fielding of Consultants	5 Jan 1997
TA Completion: Expected	Apr 1997
Actual	30 Nov 1998
TCR Circulation	24 Dec 1998

#### **Missions**

<b>Type</b>		
Fact-Finding	1	15–18 Aug 1995
Consultative	1	29 Jan–1 Feb 1997
Inception	1	14–15 July 1997
Review	1	9–16 Nov 1998
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

### TA 2505-PRC: Strengthening the Environmental Standards and Enforcement Policies

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$400,000	
Local Cost	\$200,000	
<b>Total</b>	<b>\$600,000</b>	<b>\$575,500</b>

**Executing Agency:** National Environmental Protection Agency (subsequently renamed State Environmental Protection Agency)

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	22 Dec 1995
Signing of TA Agreement	7 Aug 1996
Fielding of Consultants	7 Oct 1996
TA Completion: Expected	30 Jun 1998
Actual	28 Sep 1998
TCR Circulation	14 Jan 1999

#### **Missions**

<b>Type</b>		
Inception	1	12–14 Nov 1996
Review	1	27–30 Apr 1998
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

**TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province<sup>c</sup>**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$620,000	
Local Cost	\$315,000	
<b>Total</b>	<b>\$935,000</b>	<b>\$921,400</b>

**Executing Agency:** Shaanxi Provincial Planning Commission and Shaanxi Environment Protection Bureau

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	24 Sep 1997
Signing of TA Agreement	31 Jan 1999
Fielding of Consultants	28 Apr 1998
TA Completion:	31 Jan 1999
Expected	
Actual	Jun 1999
TCR Circulation <sup>d</sup>	

**Missions**

<b>Type</b>		
Fact-Finding	1	31 Mar–13 Apr 1997
Inception	1	30–31 May 1998
Review	2	16–20 Nov 1998
		26–28 May 1999
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

---

**TA 2906-PRC: Leadership Training on Urban Environmental Management in Key Cities**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange cost	\$398,000	
Local Cost	\$202,000	
<b>Total</b>	<b>\$600,000</b>	<b>\$567,100</b>

**Executing Agency:** National Environmental Protection Agency (renamed State Environmental Protection Administration)

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	3 Nov 1997
Signing of TA Agreement	7 Jan 1998
Fielding of Consultants	2 Jun 1998
TA Completion:	30 Sep 1999
Expected	
Actual	31 Dec 1999
TCR Circulation	20 Jun 2000

**Missions**

<b>Type</b>		
Fact-Finding		7–11 Jul 1997
Inception		9–16 Nov 1998
Review	4	14–19 Dec 1998
		22–24 Mar 1999
		20–21 Jun 1999
		10–21 Dec 1999
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

**TA 2951-PRC: Promotion of Market-Based Instruments for Environmental Management**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$491,000	
Local Cost	\$206,000	
<b>Total</b>	<b>\$697,000</b>	<b>\$649,300</b>

**Executing Agency:** National Environmental Protection Agency (renamed State Environmental Protection Administration)

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	16 Dec 1997
Signing of TA Agreement	22 Jan 1998
Fielding of Consultants	1 Jun 1998
TA Completion:	31 Mar 1999
Expected	28 Feb 2001
Actual	27 Jun 2002
TCR Circulation	

**Missions****Type**

Fact-Finding	1	7–11 Jul 1997
Inception	1	11 Jun 1998
Review		20–21 Jan 1999
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

**TA 3079-PRC: TA Cluster for the Promotion of Clean Technology**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$2,360,000	
Local Cost	\$1,140,000	
<b>Total</b>	<b>\$3,500,000<sup>e</sup></b>	<b>\$2,370,700<sup>f</sup></b>

**Subproject 1: Policies for Promotion of Clean Technology**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$405,000	
Local Cost	\$192,000	
<b>Total</b>	<b>\$597,000</b>	<b>n.a.</b>

**Subproject 2: National Network for Clean Technology Transfer**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$489,000	
Local Cost	\$250,000	
<b>Total</b>	<b>\$739,000</b>	<b>n.a.</b>

**Subproject 3: Legislative Support for Clean Technology**

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$198,000	
Local Cost	\$108,000	
<b>Total</b>	<b>\$306,000</b>	<b>n.a.</b>

### Subproject 4: Clean Technology Department

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$414,000	
Local Cost	\$157,000	
<b>Total</b>	<b>\$571,000</b>	<b>n.a.</b>

### Subproject 5: Environmental Management for Clean Technologies in Township and Village Enterprises

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$185,000	\$157,000
Local Cost	\$117,000	\$123,000
<b>Total</b>	<b>\$303,000</b>	<b>\$280,000</b>

### Subproject 6: Financing Mechanism for Clean Technology in Township and Village Enterprises

<b>Cost<sup>a</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$226,000	
Local Cost	\$101,000	
<b>Total</b>	<b>\$327,000</b>	<b>n.a.</b>

<b>Coordinating Agency:</b>	State Development Planning Commission
<b>Executing Agency:</b>	Subproject 1: State Development Planning Commission
	Subproject 2: Ministry of Science and Technology
	Subproject 3: Environment and Resource Protection Committee of the National People's Congress
	Subproject 4: State Economic and Trade Commission
	Subproject 5: State Environmental Protection Administration
	Subproject 6: Ministry of Agriculture

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	29 Sep 1998
Signing of TA Agreement	3 Feb 1999
Fielding of Consultants	26 Jul 1999
TA Completion:	
Expected	Jun 2003
Actual	Ongoing <sup>g</sup>
Subproject 1	Oct 2001
Subproject 2	Jan 2003
Subproject 3	Dec 2002
Subproject 4	Mar 2003
Subproject 5	Ongoing <sup>g</sup>
Subproject 6	Ongoing <sup>g</sup>

TCR Circulation<sup>d</sup>

### Missions

<b>Type</b>	<b>Date</b>
Fact-Finding	17–27 Jun 1998
Subproject 2	15–25 Mar 2001
Subproject 4	15–25 Mar 2001
Subproject 5	29 Nov–7 Dec 2001
Subproject 6	Jun 2002
Reconnaissance/Consultation	27–29 Jun 1998
Subproject 2	10–21 Dec 1999

Inception			
Subproject 1			Nov 1999
Subproject 2			Mar 2000
Subproject 3			4–7 Jun 2001
Subproject 4			25 Feb 2002
Review	8		27–30 Apr 1998 17–19 Mar 1999 15–21 Dec 1999 24 Jul 2000 1–3 Nov 2000 20–25 Mar 2001 31–31 Oct 2001 5–9 Jun 2002
Operations Evaluation <sup>b</sup>	1		3–22 Mar 2003

---

**TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation**

<b>Cost<sup>h</sup></b>	<b>Estimated</b>	<b>Actual</b>
Foreign Exchange Cost	\$158,000	
Local Cost	\$142,000	
<b>Total</b>	<b>\$300,000</b>	<b>\$209,400</b>

**Executing Agency:** Environmental Protection and Natural Resources Conservation Committee of the National Peoples' Congress

<b>Milestones</b>	<b>Date</b>
President's/Board Approval	15 Dec 1998
Signing of TA Agreement	2 Feb 1999
Fielding of Consultants	May 1999
TA Completion:      Expected	Dec 2000
Actual	31 Mar 2001
TCR Circulation	9 Feb 2001

<b>Missions</b>		
<b>Type</b>		
Fact-Finding	1	7–11 Sep 1998
Inception		19–20 Jul 1999
Review		n.a.
Operations Evaluation <sup>b</sup>	1	3–22 Mar 2003

---

n.a. = not available, TA = technical assistance, TCR = technical assistance completion report.

<sup>a</sup> Financed by the Japan Special Fund. Does not include Government counterpart financing.

<sup>b</sup> The Operations Evaluation Mission comprised C.C. Yu (Evaluation Specialist and Mission Leader), D. Arthur and Li Dongming (Consultants).

<sup>c</sup> Attached to Loan 1543-PRC: *Xi'an-Xianyang-Tongchuan Environment Improvement*.

<sup>d</sup> TA Completion Report has not been prepared. For TA 2873, the loan to which the TA was attached is still ongoing. TA 3079 is still ongoing.

<sup>e</sup> The sum of individual subprojects will not add to total cost of entire TA cluster because of contingencies.

<sup>f</sup> Disbursements as of 5 May 2003.

<sup>g</sup> As of May 2003.

<sup>h</sup> Financed by the Government of Norway. Does not include Government counterpart financing.

## EXECUTIVE SUMMARY

Rapid economic development and years of neglect of environmental protection in the People's Republic of China (PRC) resulted in severe environmental degradation in the forms of heavy pollution, deforestation, and soil erosion. Against this background, a priority area for Asian Development Bank (ADB) assistance in the PRC, since it joined ADB in 1986, has been the provision of technical assistance (TA) in environmental management and capacity building. As of December 2002, 65 TAs have been provided in this area for a total amount of \$38.4 million, including 46 advisory TAs (ADTAs) amounting to \$28.6 million, and 19 project-preparatory TAs. Seven ADTAs were selected for evaluation in this technical assistance performance audit report. The seven TAs, for a combined amount of \$7.2 million, were all approved during or after 1995. Technical assistance completion reports (TCRs) were completed for five of the TAs covered in this paper, and all five TCRs gave a rating of generally successful or successful. The other two TAs have no TCR yet because, in one case, the loan to which it was attached is still ongoing even though the TA has been completed, and the other consists of a cluster of six subprojects, of which not all are yet completed.

The TAs selected generally shared the same objective—to improve environmental management and/or to build capacity—but with very diverse scope, covering all the key approaches to and aspects of environmental management and capacity building, i.e., standards and laws, enforcement and implementation, planning and financing, market-based instruments/policies, institutional training, and cleaner technology, at both central and local (provincial or municipal) levels. They also included both brown-side and green-side environmental issues. The Operations Evaluation Mission (OEM), which visited the PRC in March 2003, found that the degree of achievement varied significantly across different TAs. There are important lessons to be learned from the evaluation.

**TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology.** The main output of the TA was the establishment of a Center for Environmentally Sound Technology Transfer (CESTT), with the objective of increasing the capacity of PRC industry sectors and enterprises to select, evaluate, import, and employ environmentally sound technology. The Executing Agency (EA), the Ministry of Science and Technology (MOST), indicated that it was satisfied with the quality of the outputs and services rendered by the consultants. MOST provided strong and engaged leadership, encouraging the international consultants to guide the MOST team and provide on-the-job training. CESTT continues to be operational, although the focus has evolved significantly toward working with industrial associations, rather than individual companies, to disseminate cleaner production technologies. However, it continues to rely on government budget and other external financial support for its operation.

**TA 2505-PRC: Strengthening the Environmental Standards and Enforcement Policies.** Main outputs from the TA included (i) updating of effluent and emission standards and developing appropriate environmental standards, (ii) developing enforcement policies, (iii) formulating selected environmental laws and implementing regulations on the management of toxic chemical products, and (iv) establishing pollutant control standards based on total load modeling. However, the EA, State Environment Protection Administration (SEPA), could not arrange a meeting for the OEM with the department responsible for executing the TA and, thus, the OEM could not independently confirm these outputs or assess their impact.

**TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province.** The main outputs from the TA were the external and domestic training programs and a consultant's report, which provides a series of recommendations and time-bound action plans to

improve Shaanxi's environmental management. The EAs, Shaanxi Provincial Planning Commission (SPPC) and Shaanxi Environment Protection Bureau (SEPB), indicated that the consultants' final report was of very good quality and met their needs. Many of the recommendations have been implemented. This satisfactory output appears to have been achieved through good collaboration between the international and domestic consultants, which helped promote detailed discussions on many of the key issues, and active participation in discussions by representatives of both EAs. The training program, which included two international study tours attended by about 20 officials from SPPC and SEPB, and five local training workshops (each attended by about 50 provincial and municipal government officials) have had a significant impact on enhancing the institutional capacities of the Shaanxi provincial government. The TA has substantially achieved its main objective of developing the provincial government's capacity to integrate environmental considerations into the local planning and evaluation process.

**TA 2906-PRC: Leadership Training in Urban Environmental Management in Key Cities.** Key outputs from the TA included (i) developing trainers to train local government officials in 47 priority cities; (ii) training key local government officials in the 47 priority cities, and (iii) developing training methodologies and techniques for local trainers to continue the training program for other local governments after completion of the TA. SEPA indicated that although the main objective of the TA, training of key government officials (such as deputy mayors in charge of infrastructure planning accompanied by directors for municipal environment protection bureaus), was achieved, the training manuals developed by the consultants in English had limited value when it came to compiling a Chinese version suitable for the proposed use. SEPA viewed them as "too technically detailed" and "unsuitable for the high-level officials and the ground realities in the PRC." The English manuals were mainly used to satisfy ADB's requirements. SEPA took a strong ownership of the TA as it viewed the TA as its own initiative, and has been continuing similar types of training since then.

**TA 2951-PRC: Promotion of Market-Based Instruments (MBIs) for Environmental Management.** Key outputs from the TA included (i) documentation of MBI opportunities in the PRC, (ii) case studies on incentive-based approaches to water pollution management, and (iii) an action plan for the implementation of MBIs. However, SEPA could not arrange a meeting for the OEM to interview the department responsible for executing the TA. Instead, the OEM interviewed a domestic consultant who participated in the TA. According to the consultant, the TA has achieved its intended outputs, i.e., case studies, seminars, and proposed action plans. However, the scope of the TA appeared to be too broad and general, and the TA could have been more effective by focusing on a few more practical MBIs rather than a broad overview of all MBIs. Several recommendations of potential MBIs were made by TA consultants, but for the most part, the Government felt that it was "too early" to seriously consider their application.

**TA 3079-PRC: TA Cluster for the Promotion of Cleaner Technology.** This was the first TA cluster approved by ADB. Five out of six subprojects were completed or nearly completed at the time of this evaluation. The TA cluster is likely to run into a delay of more than 2 years due to a combination of factors including start-up delays caused by consultants' reorganization and the resultant staffing difficulties, ADB's slow approval of work order changes, the travel ban due to the recent outbreak of Severe Acute Respiratory Syndrome, and lack of the coordination on the part of the six EAs. The State Development and Planning Commission, the EA for Subproject 1 (and the coordinating agency for the cluster), did not claim full ownership of the subproject, and regarded its recommendations as "too general and too late to be useful." After the completion of Subproject 1, the commission lost interest in the cluster and did not play the coordinating role as expected. Despite this setback, under subprojects 2 and 3, two regional cleaner production centers were established (in Chengdu and Tianjin) and a

cleaner production law was drafted and passed, which laid a very important legal foundation for the promotion of cleaner production in the PRC. In addition, under Subproject 4, a decision was taken to narrow the original work scope to focus on specific cleaner production projects and investigation of project financing mechanisms, and under Subproject 6, also to give a focus to financing mechanisms but with small and medium-size enterprises as a target. Overall, however, in spite of some useful outcomes from individual subprojects, the TA cluster has so far delivered limited synergies as the main rationale for adopting the cluster approach.

**TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation.** Key outputs from the TA included (i) a manual for use by Provincial People's Congress (PPC) personnel in drafting natural resources legislation, (ii) Sichuan training program attended by 40 officials, (iii) seminar in Beijing attended by 51 representatives from the PPCs of 29 provinces and special administrative regions, and (iv) assisting Sichuan legislative drafters in preparing local legislation implementing the Land Use Administration Act. Although the OEM was unable to meet the EA (until the wrap-up meeting) and Sichuan PPC due to the mission's coincidence in time with the preparation for and opening of the National People's Congress, the questionnaire completed by the EA indicated that the TA has achieved its main objective, and the provincial laws drafted under the TA have been adopted.

In sum, despite the seven TAs sharing high relevance by supporting the Government's sustainable development strategy, their achievements and impacts varied, with TA 2434 (CESTT), TA 2873 (Shaanxi Province), and TA 3123 (Provincial Legislation) having achieved their respective objectives. Although TA 2906 (Leadership Training) achieved its main objective, the TA's main output was of limited use due to its design and implementation problems. Taking into account other criteria including efficiency, sustainability, and institutional development and other impacts, these TAs were rated as: TA 2434: successful; TA 2873: highly successful, TA 2906: partly successful, and TA 3123: successful. No ratings were given to the remaining three TAs due to the fact that the OEM could not have access to official information for TA 2505 (Environmental Standards) and TA 2951 (MBIs), and because TA 3079 (cluster for Cleaner Production) is still ongoing (although tentative ratings have been given to the completed individual subprojects). Nevertheless, their impacts and lessons learned were explored to the extent possible based on available information.

The unique experience of the OEM in evaluating both completed and ongoing TAs together highlights the relevance and advantage (in terms of information availability) of carrying out real-time evaluation and feedback compared to postevaluations. The OEM also identified some important lessons at each key stage of a TA cycle including theme selection, TA design and implementation, and follow-up/dissemination activities. The essence of these lessons is how to best meet the real needs of the Government, rather than the perceived needs or the needs of ADB. Several TAs evaluated were more supply-driven than client-oriented in the aforementioned aspects.

The experience and lessons learned from TA 3079, which are summarized below, are of particular importance as it was the first TA cluster approved by ADB. First, clusters may only be appropriate where there is very clear synergy between the various subprojects. The synergy achieved in this case was compromised by the difficulties in bringing different government agencies together and by the severe interagency rivalry in the PRC. Second, timescale is a particularly crucial factor for the success of a TA cluster, and work should be ideally completed within a relatively short period, e.g., 2–3 years. Longer time spans may make it difficult to maintain the momentum, and some of the tasks and even objectives may be rendered obsolete by the fast-changing ground realities. Third, to improve the potential efficacy of the cluster approach, there should be a single overall coordinating agency within government for a cluster

TA, and ADB should pay particular attention to ensuring that this coordinating body is fully engaged in all formulation processes leading up to the TA and during its implementation. Fourth, perhaps more so than for a regular TA, the recruitment of consultants and their performance are instrumental for the success of a TA cluster. Compared to the multi-firm approach, the single-firm approach as adopted by TA 3079 has both advantages (e.g., saving time and efforts in procuring consultants for different subprojects, easier feedback from earlier subprojects to subsequent ones) and disadvantages (e.g., difficulties in maintaining a high level of commitment and strong efforts from the consultants, risks of getting stuck when the single firm is not performing up to the expected standards, lack of capacity for the single firm to simultaneously carry out project works for two or more subprojects). The OEM feels that by “putting all eggs (subprojects) in one basket (the winning consortium/firm),” the single-firm approach is more risky and less flexible than the multiple-firm approach. ADB needs to carefully evaluate the pros and cons of alternative approaches on a case-by-case basis for future TA clusters.

In view of the increasing constraints on TA resources, ADB should be more selective with its TA operations in terms of technical and policy areas, target recipients, and TA modalities to achieve better impact and greater value-added. On selection of recipients, ADB may consider gradually increasing its assistance focus on those concerned “nontraditional” central and (particularly) provincial agencies for which the marginal impact and value-added could be much higher. Although SEPA has been a primary recipient in the past, the OEM did not detect as strong a sense of ownership and appreciation of ADB’s TAs from SEPA as those of other EAs interviewed. Furthermore, SEPA, particularly its Foreign Economic Cooperation Office, suffers from understaffing, bureaucracy, and a funding structure that depends on the number of incoming projects and TAs. These factors are likely to hinder the effectiveness of further TAs to SEPA. ADB, through its resident mission, should continue to intensify the ongoing dialogue with SEPA but with greater depth with respect to reforming the current institutional setup of its foreign cooperation office to make it more responsive to the needs of SEPA’s operation and technical departments and less dependent on external financing.

Finally, the cost effectiveness of TA cluster as a modality is doubtful, based on the experience of TA 3079. ADB may conduct a wider-scale evaluation of cluster TAs to reach a more definite conclusion, and to identify the most suitable areas for its improved application.

## I. BACKGROUND

### A. Introduction

1. Rapid economic development and years of neglect of environmental protection in the People's Republic of China (PRC) resulted in severe environmental degradation in the forms of heavy pollution, deforestation, and soil erosion. Against this background, a priority area for Asian Development Bank (ADB) assistance in the PRC, since it joined ADB in 1986, has been the provision of technical assistance (TA) in environmental management and capacity building. As of December 2002, 65 TAs have been provided in this area (Appendix 1)<sup>1</sup> for a total amount of \$38.4 million, including 46 advisory TAs (ADTAs) amounting to \$28.6 million, and 19 project-preparatory TAs. Despite the high level of assistance, to date only one TA performance audit report<sup>2</sup> has been completed for environmental TAs in the PRC; it evaluated TA 987, TA 1436, and TA 1690, all of which were approved before 1992. As a result, knowledge about the effectiveness and impacts of environmental TA in the PRC is limited, especially for later ones.

2. To fill this significant knowledge gap and derive useful lessons, seven ADTAs were selected for evaluation in this report, including one TA cluster.<sup>3</sup> In terms of thematic and geographical coverage, the seven TAs were selected to broadly reflect the key areas and sectors that the 46 ADTAs attempted to cover. For a combined amount of \$7.2 million, all of the selected TAs were all approved during or after 1995. While most of them stood alone, TA 2873 was attached to a loan for environment improvement.<sup>4</sup> Technical assistance completion reports (TCRs) were completed for five of them, and in all five cases the TAs were rated as generally successful<sup>5</sup> or successful.<sup>6</sup> The other two selected TAs do not have TCRs because one of them was attached to a loan that is still ongoing even though the TA has been completed, and the other was a TA cluster (the first cluster to be approved by ADB) consisting of six subprojects, of which one is not yet completed.

### B. Rationale, Objectives, and Scope of the Technical Assistance

3. A common rationale for all seven TAs lies in the gradual recognition by the Government that environmental degradation had become a key obstacle to the PRC's long-term economic development. The physical investments in environmental infrastructure (e.g., air emission reduction, wastewater treatment) must be accompanied by improvement in environmental management in order to achieve maximum impact. The areas identified for improvement included, *inter alia*, environmental standards and legal framework, technology development and

---

<sup>1</sup> Environmental TAs refer to TAs with a clear environmental objective, although not necessarily the only objective. Many other TAs not included here may also have environmental implications, but are not considered as environmental TAs.

<sup>2</sup> ADB. 1998. *Technical Assistance Performance Audit Report on Selected TAs in the Environment Sector to the People's Republic of China*. Manila.

<sup>3</sup> TA 2434-PRC: *Establishing a Center for the Transfer of Environmentally Sound Technology*, for \$550,000, approved on 31 October 1995; TA 2505-PRC: *Strengthening the Environmental Standards and Enforcement Policies*, for \$600,000, approved on 22 December 1995; TA 2873-PRC: *Improvement of Environmental Management in Shaanxi Province*, for \$935,000, approved on 24 September 1997; TA 2906-PRC: *Leadership Training on Urban Environmental Management in Key Cities*, for \$600,000, approved on 3 November 1997; TA 2951-PRC: *Promotion of Market-Based Instruments for Environmental Management*, for \$697,000, 16 December 1997; TA 3079-PRC: *TA Cluster to the PRC for the Promotion of Clean Technology*, for \$3.5 million, approved on 29 September 1998; and TA 3123-PRC: *Provincial Legislation on Environmental Protection and Natural Resources Conservation*, for \$300,000, approved on 15 December 1998.

<sup>4</sup> Loan 1543-PRC: *Xi'an-Xianyang-Tongchuan Environment Improvement*, for \$156.0 million, approved on 24 September 1997.

<sup>5</sup> Using ADB's earlier three-category scheme: generally successful, partly successful, and unsuccessful.

<sup>6</sup> Using ADB's current four-category scheme: highly successful, successful, partly successful, and unsuccessful.

dissemination, a policy framework conducive to adopting cleaner technologies including market-based policies, institutional strengthening and capacity building, and incorporation of environment protection in economic planning. In the context of the PRC, the provincial and municipal level capacity building, and a balanced policy and legal framework for both “brown” and “green” environmental issues were also given high importance in providing TA.<sup>7</sup> Appendix 2 summarizes the main features of the seven selected TAs. Appendixes 3-8 provide the details of objective, scope of work, and other information for six of the seven TAs included for evaluation. No evaluation could be carried out for the seventh selected TA<sup>8</sup> due to lack of cooperation from the executing agency (EA).

### C. Completion and Self-Evaluation

4. The TCR for TA 2434: Establishing a Center for the Transfer of Environmentally Sound Technology (CESTT), which rated the TA as generally successful (footnote 5), was circulated on 24 December 1998. The TCR stated that the center was fully operational although it was still dependent on continued government budgetary support for its operation. As a positive lesson, the TCR attributed the success to the strong ownership and commitment by the Government and professional commitment shown by the consultant in meeting the requirements of the EA.

5. The TCR for TA 2505: Strengthening the Environmental Standards and Enforcement Policies was circulated on 14 January 1999. It rated the TA as generally successful (footnote 5) as it had achieved its objectives by assisting the State Environment Protection Administration (SEPA) in reviewing environmental standards and implementation constraints, and providing suggestions for their improvement; providing training for officials in compliance monitoring; contributing to the preparation of laws related to toxic and chemical products; and developing the conceptual design of a database information system for chemical management. A lesson learned from the TA was that the key factors that affect compliance with government environmental requirements—i.e., the adequacy of legal basis; appropriateness of environmental standards; and the authority, budget, and capacity of the agency responsible for compliance monitoring and effective enforcement—should be addressed simultaneously.

6. The TCR for TA 2906: Leadership Training on Urban Environmental Management in Key Cities was circulated on 20 June 2000. The TA was rated generally successful (footnote 5). A post-training survey of the participants of the training program carried out by SEPA and the consultant indicated that the participants were highly positive on the concepts, principles, and experiences from case studies as guidelines to them for integrating environment management techniques into urban planning. Major lessons learned included (i) sufficient preparatory work is needed to organize the meeting of high-rank officials, and (ii) it is desirable for international consulting firms to use their permanent staff rather than rely on individual and independent consultants.

7. The TCR for TA 2951: Promotion of Market-Based Instruments for Environmental Management was circulated on 28 February 2002. It stated that, in spite of delays in TA implementation (of almost 2 years) caused by scheduling conflicts among consultants, the TA objectives were achieved. The TA outputs have been reflected in ADB’s ongoing policy dialogue with the Government and have likely contributed to the further evolution of the PRC’s

---

<sup>7</sup> “Brown” environmental issues refer to pollution-related issues, e.g., air pollution, water pollution, while “green” environmental issues refer to environment degradation related to depletion of biodiversity, deforestation, soil erosion, desertification, etc.

<sup>8</sup> TA 2505-PRC: *Strengthening the Environmental Standards and Enforcement Policies*, for \$600,000, approved on 22 December 1995.

environmental policy. The TA was rated successful (footnote 6). Main lessons identified from the TA included the need to focus on a few opportunities to apply market-based instruments (MBIs), rather than adopt a broad-spectrum approach, and the need to collect more credible data on environmental damage that would allow calculation of marginal damage functions.

8. The TCR for TA 3123: Provincial Legislation on Environmental Protection and Natural Resources Conservation was circulated on 9 February 2001. According to the TCR, the manual developed under the TA was used in drafting natural resources legislation and for reference in law schools. Officials from less developed provinces found the training and the manual provided under the TA to be useful. The TA was rated generally successful (footnote 5) from the point of view of (i) resulting in improvements in the quality of land laws at the provincial level, (ii) capacity building for drafters of provincial and municipal legislation, and (iii) improvements in the level of performance of the TA's domestic consultants through the TA. No substantive lessons were identified by the TCR.

9. TCRs for TA 2873: Improvement of Environmental Management in Shaanxi Province and TA 3079: TA Cluster to the PRC for the Promotion of Clean Technology are not yet available (para. 2).

#### **D. Operations Evaluation Department Evaluation**

10. This report focuses on evaluating relevance, efficacy, efficiency, long-term sustainability, and impacts, as well as key issues involved and lessons learned in the TA execution. To accomplish this, various aspects of TA formulation, design, implementation, inputs/outputs, and outcomes/impacts were assessed. The assessment is based on a review of ADB documents, discussion with ADB staff, and findings of the Operations Evaluation Mission (OEM), which visited Beijing, Xi'an, Chengdu, Guangzhou, and Tianjin during the period 3–21 March 2003. The following approaches were used in the evaluation: (i) reviewing existing information, including TA documents, back-to-office reports of TA review missions, and correspondence between ADB, the EAs, and consultants; (ii) interviews/questionnaire survey with the EAs; (iii) interviews with the participants of the training programs; and (iv) site visits and facility inspection. A caveat may be made that, despite the strong efforts made by the OEM to reach a wide coverage during field missions and in-house research, the evaluation was constrained by limited institutional memory of the TAs by both ADB and the EAs, and by poor or no collaboration from the EA in some cases. Extensive consultation was conducted with concerned ADB staff throughout the evaluation process. Copies of the draft TA performance audit report were sent to the EAs, the Government, and the concerned ADB staff for review, and all comments received were taken into consideration in finalizing the report.

## **II. ASSESSMENT OF IMPLEMENTATION PERFORMANCE**

### **A. Design of the Technical Assistance**

11. As discussed in greater detail in Appendixes 3-8 and in the following sections, several design-related issues emerged that appeared to have influenced the effectiveness of the TAs. First, while the TAs were generally relevant in terms of their conformity with the Governments' goals and priorities, such relevance was much lower for some TAs than others. There also seemed to be a direct relationship between the compatibility of a TA's objective with the Government's work agenda and the TA's likelihood of success (para. 71). While most EAs indicated that they contributed to the formulation of the TAs, it was clear that the degree of participation was low. Several EAs indicated that, compared to World Bank TAs, ADB TAs are

more dominated by ADB's own agenda, or in other words, are "supply-driven," and have exhibited less flexibility in accommodating the Government's needs (paras. 72 and 82). Second, even if a TA's general theme is in line with Government's needs, sometimes an overstretched work scope could also reduce the usefulness of the outputs (para. 28). Third, provision of training was a common positive feature for all the TAs, with TA 2906 (Leadership Training) almost exclusively devoted to such a purpose. Although generally well received by the EAs and participants, the training programs seemed to have had variable effectiveness and impact. In particular, international study tours were widely used in the TAs. The overall cost effectiveness may still be relatively low compared to domestic training seminars and other options. Finally, sustainability of the TA outcomes and impact was not explicitly addressed for some TAs/subprojects, e.g. TA 2434 and Subproject 2 of TA 3079 (para. 33).

12. The design and implementation of TA 3079 (Cleaner Production), ADB's first cluster TA to be approved, are of particular interest since they offer valuable lessons and experience for future TA formulation and design. The OEM identified several key factors affecting the degree of success of the TA cluster, including (i) high synergy between various subprojects, (ii) relatively a short timeframe, (iii) a strong and engaging EA that will coordinate with other participating EAs, and (iv) consultants with strong organization capabilities who can deliver on time and implement more than one subproject simultaneously (para. 75).

## **B. Engagement of Consultants**

13. In all except one case, a consulting firm or a consortium of firms was recruited to execute the TAs in accordance with ADB's *Guidelines on the Use of Consultants*. For TA 3123 (Provincial Legislation), two individual international consultants were engaged. Engagement of individual consultants allowed more direct control of the expertise and experience of the consultants to meet the demands of the EA in addition to some cost savings. For TA 3079 (Cleaner Production), it was decided to engage one consortium of firms for all subprojects, instead of one for each subproject. The advantage of the single-firm approach, as envisaged at the time, encompassed time and efforts saved in procuring consultants for different subprojects, easier coordination between different subprojects, and better utilization of findings from earlier subprojects as inputs to the subsequent ones. With hindsight, while these perceived advantages may have been true to some extent, they have become less significant when compared to their drawbacks, e.g., difficulties in maintaining a high level of commitment and strong efforts by the consultants, or difficulties and reluctance on the part of ADB in recruiting different consultants even if the incumbent consultants do not perform to a satisfactory standard. In this case, the principal partner in the chosen consortium experienced a reorganization and several staff on the originally proposed team including the team leader left the company. As a result, the consortium had to rely on other partners and freelance consultants to fill all the positions.

14. A common complaint emerging during the evaluation of the seven TAs was that the Government has had little input into the selection of consultants.<sup>9</sup> Some EAs argued that this reduces the accountability of the consultants to the EAs since the consultants naturally view ADB as their client. This may have adversely affected the ownership of ADTAs by the Government in general. Another issue relates to the recruitment of domestic consultants. Particularly for earlier ADTAs in the PRC, the EAs typically insisted on putting forward their own

---

<sup>9</sup> The current guidelines require that ADB, through its Consultants Selection Committee, play a dominant role in the consultant selection. The role of the TA recipients, the governments, or EAs was limited to providing comments or objections, if any, to the firms included in the shortlist and participating in the contract negotiation as an observer. The minimal participation by the governments in consultant selection could have been one of the factors that contributed to the low ownership of the TAs in some cases.

choices of domestic consultants for acceptance by the winning international consultants. This approach, as it was argued, would ensure the consultants' familiarity with the institutions and local conditions, thereby reducing the initial learning curve for the consulting team as a whole. While this is a valid argument, ADB has been concerned about some adverse implications of this approach, including payment procedures and timeliness for domestic consultants (some EAs insisted on paying the domestic consultants through their accounts), and their impact on work incentive and quality.

### **C. Organization and Management**

15. The organization and management of the TAs was generally efficient. In particular, TA 2434 (CESTT) and TA 2906 (Leadership Training), which received close attention and oversight from senior ministerial-level officials (a vice minister and SEPA's administrator, respectively), were well organized and managed. Similarly, for TA 2873 (Shaanxi Province), under the direct leadership of a deputy governor, the two participating EAs worked closely and the organization and management were efficient, despite the fact that the TA was the first ADB TA for both agencies. In contrast, the organization and management of TA 3079 (Cleaner Production) was much less efficient partly due to the fact that it had six EAs, and that the coordinating body, the State Development and Planning Commission (SDPC), had lost interest in the cluster after the completion of Subproject 1, and thereafter neglected its coordinating role (para. 31 and Appendix 7). When SDPC's participation in the TA cluster ended upon completion of Subproject 1, the project management office was moved from SDPC to the Beijing office of the British consulting firm in the consortium, which took on the coordinating role for the subsequent subprojects.<sup>10</sup>

16. Besides ADB, there are many other bilateral and multilateral development agencies providing environmental assistance to the PRC. However, coordination among them seems to be weak (para. 69). There also appears to be substantial differences in the approaches that these agencies use to administer their assistance. Some EAs interviewed, SEPA for example, noted that the World Bank tends to be more flexible in accommodating the EA's needs by putting it in the driver's seat (para. 82).

### **D. Implementation Schedule and Financing Arrangements**

17. All seven TAs experienced delays of different degrees, ranging from 2 months to more than 2 years. The reasons included unrealistic original scheduling, EAs' poor preparation, consultants' staffing difficulties, and ADB's slow approvals of work order changes. In some cases, delays reduced the relevance and impact of TA since the TA missed a key target date (para. 31). In other cases, the delays were actually desirable for accommodating more training/dissemination activities, which strengthened the TAs' impacts.

18. The seven TAs had a combined value of \$7.2 million. With the exception of TA 3123 (Provincial Legislation), which received \$300,000 financing from the Government of Norway, ADB financed the TAs from the Japan Special Fund. Generally, the EAs indicated that the budget was either appropriate or somewhat tight for the respective tasks. For the cluster TA, which is ongoing, the EAs indicated that the funding was generally adequate for earlier subprojects. However, the agencies responsible for subprojects 4 and 6 reported that their scope of work had to be reduced due to budget constraints. ADB officers indicated that this was mainly done to ensure that the subprojects' goals would be consistent with the main goal of the

<sup>10</sup> Many attempts made to move the implementation responsibilities and the project management office from the consultants' office to SDPC were not successful due to disagreement over rental charges and other reasons.

TA cluster. It was also partly caused by the rising costs of domestic consultants and other expenses in the PRC over the period of 4 years.

## **E. Supervision**

19. ADB generally provided adequate supervision for the TAs through correspondence and TA review missions. However, there was a general tendency for these TA review missions to focus on administrative issues, e.g., payments, work order variations, and relocation of project management offices, rather than on bigger-picture issues such as interim assessment of TA outcomes and impact and poor performance of the consultants or EAs.

20. Of the seven TAs evaluated,<sup>11</sup> the EAs for TA 2434 (CESTT), TA 2873 (Shaanxi), and TA 2906 (Leadership Training) expressed a high level of satisfaction with the supervision and assistance from ADB project officers. For the cleaner production cluster TA, the EAs for subprojects 4 and 6 reported that they found it difficult to find out who within ADB was responsible for their subprojects. This could be partly caused by the fact that there have been several ADB officers handling different subprojects over time due to ADB's own organizational structure and restructuring. They also reported that the responsible officers were sometimes not accessible, through email or other means, for addressing their concerns.<sup>12</sup> ADB was also very slow in approving work order and contract changes (para. 38).

21. Since its establishment in 2000, ADB's resident mission in the PRC has been playing an increasing role in project/TA supervision particularly in between review missions, and TA 3079 benefits greatly from this arrangement. However, some EAs pointed out that because the Resident Mission officers have such a wide-ranging responsibility in helping overseeing a large portfolio of projects/TAs, they can only complement, rather than replace, the role of the responsible project officer at ADB headquarters, particularly in addressing specific implementation and technical issues.

## **III. EVALUATION OF OUTPUTS AND IMPACTS**

### **A. Adequacy and Quality of Reports and Services Provided**

#### **1. TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology**

22. The main output of the TA was the establishment of the CESTT, with the objective of increasing the capacity of PRC industry sectors and enterprises to select, evaluate, import, and employ environmentally sound technology (EST). A survey was conducted to determine the need for and barriers to the development, transfer, and application of EST; based on the results, an information system and databases, together with a computerized network for exchanging and disseminating information, were established. The Ministry of Science and Technology (MOST) indicated that it is satisfied with the quality of the outputs and services rendered by the consultants. It specifically indicated that it had intensive discussions at both the design and final

<sup>11</sup> Due to differences in complexities of the TAs and information availability (generally more memories with relatively recent TAs), the quantities of feedback received from the EAs on the adequacy of supervision for different TAs varied substantially and are not always reflective of the true circumstances. There may even be systematic bias in favor of completed TAs since with ongoing TAs there are often many unsolved issues, which may dominate the interviews. The feedback is nonetheless useful since perceptions are sometimes as important as, if not more than, facts in influencing the EAs' decision making and level of participation.

<sup>12</sup> The concerned ADB officer suggested that the EAs' queries have always been responded to and the delays are usually within a reasonable processing time.

reporting stage of the TA to ensure that its concerns and considerations were taken into account by the TA consultants and found the consultants quite responsive to its suggestions. However, they felt that the team was relatively weak in terms of EST development and was “learning as it went,” although it was stronger in terms of institutional capacity building. MOST provided strong and engaged leadership, encouraging the international consultants to guide the MOST team and provide on-the-job training, and developed good personal relationships with both ADB and with the consultants. Because of the manner in which the CESTT now operates, the procedures manual developed under the TA is found to be only “somewhat useful.”

## **2. TA 2505-PRC: Strengthening the Environmental Standards and Enforcement Policies**

23. The main outputs from the TA included (i) update of effluent and emission standards and development of appropriate environmental standards, (ii) development of enforcement policies, (iii) formulation of selected environmental laws and implement regulations on the management of toxic chemical products, and (iv) establishment of pollutant control standards based on total load modeling. However, the OEM was unable to confirm these outputs and assess their achievement vis-à-vis TA objectives as SEPA failed to arrange an interview with the department responsible for executing the TA.

## **3. TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province**

24. The main outputs from the TA were the external and domestic training programs and a consultant’s report, which provides a series of recommendations and time-bound action plans to improve Shaanxi’s environmental management. In addition, a range of computer and other office equipment was provided under the TA.

25. Discussions at a joint meeting with Shaanxi Provincial Planning Commission (SPPC) and Shaanxi Environment Protection Bureau (SEPB) indicated that the consultants’ final report was considered to be of very good quality and met the needs of the provincial government. This satisfactory output appears to have been achieved through good collaboration between the international and domestic consultants, which helped promote detailed discussions on many of the key issues, and active participation in discussions by representatives of both EAs. The fact that many of the domestic consultants were from government research institutions enabled all the major concerns of the government to be taken into account and addressed in the report. The TA was considered by the EAs to have achieved its main objectives, including development of the provincial government’s capacity to integrate environmental considerations into the local planning and evaluation process and updating and implementation of the medium- and long-term environmental protection plans for Shaanxi Province, and improving the implementation and enforcement of environmental laws and regulations in consonance with the recent changes adopted by the National Government.<sup>13</sup> The equipment provided under the TA was considered appropriate and of good quality. Overall, the TA appears to have largely achieved its targeted outputs and objectives.

---

<sup>13</sup> SEPB indicated that Shaanxi Province has recently passed three pieces of provincial legislation relating to water pollution and solid waste management, which was partly attributable to the TA.

#### **4. TA 2906-PRC: Leadership Training in Urban Environmental Management in Key Cities**

26. Key outputs from the TA included (i) developing trainers to train local government officials in 47 priority cities, (ii) training key local government officials in the 47 priority cities, (iii) developing training methodologies and techniques for local trainers to extend the training program to other local governments after completion of the TA, and (iv) strengthening the library and information system of SEPA's office in Beijing. The first output included preparation of four volumes of an urban environmental management manual in English.

27. However, according to the SEPA official interviewed, although the basic concepts and principles of the four volumes of the training manual remained valid, they had limited value when it came to compiling a Chinese version suitable for the proposed use because SEPA viewed them as "too technically detailed" and "unsuitable for the high-level officials and the realities in the PRC." The OEM reviewed the training manuals and generally concurred with SEPA's view. The TA consultants decided to continue compiling the English version, mainly in order to satisfy ADB's requirements as specified in the consultants' term of reference. The manuals eventually used for the training were compiled in Chinese by SEPA and incorporated some of the concepts included in the English version. In addition, the trainers trained through an international study tour and other means did not work as "trainers" *per se*. Rather, they functioned as discussants during discussions. Finally, as envisaged, the TA has strengthened the library and information system of SEPA's office in Beijing by providing environmental references and training materials to its library and information system.

#### **5. TA 2951-PRC: Promotion of Market-Based Instruments for Environmental Management**

28. Key outputs from the TA included (i) documentation of MBI opportunities in the PRC; (ii) case studies on incentive-based approaches to water pollution management in the Minjiang Basin in Fujian Province, sulfur dioxide air pollution in Shaanxi Province, and mobile source emissions in Beijing; and (iii) an action plan for the implementation of MBIs. However, the Foreign Economic Cooperation Office of SEPA could not arrange a meeting for the OEM to interview the department of SEPA responsible for executing the TA. Instead, the OEM interviewed a domestic consultant who participated in the TA. According to ADB documentation and to the consultant, whose views did not necessarily represent those of SEPA, the TA produced its intended outputs. The reports and other TA outputs, such as the case studies, proposed piloting activities and proposed action plans are viewed as of good quality, although the extent to which the TA has contributed to the application of MBIs for environmental management in the PRC was not clear from the interview. The consultant suggested that the scope of the TA appeared to be too broad and general. Instead of a broad overview of all the possible MBIs, the TA could have been more effective by focusing on a few MBIs that were either being used in the PRC but with various design and implementation flaws (e.g. pollution levy) or have a potential to be used in the PRC, for example, emission trading, reforms of water tariffs, and energy pricing.

29. A series of recommendations vis-à-vis potential MBIs were made by TA consultants. The adoptive status of the recommendations and the Government's view of them, according to the consultant interviewed (but not necessarily the official view), are summarized in Appendix 6. While the Government has started to experiment with some of them, e.g., emission trading, it claimed that it was too early to seriously consider applying many of the recommendations.

## **6. TA 3079-PRC: TA Cluster for the Promotion of Cleaner Technology**

### **a. Subproject 1: Policies for Promotion of Cleaner Technology**

30. Under Subproject 1, the consultants identified and analyzed various barriers and constraints in utilizing cleaner production technology, and the role and capacity of various government agencies in the transfer and use of such technology. A medium-to-long-term action plan to promote cleaner production and improve the environment based on market demand was drafted. A tripartite meeting was held with the Government and other stakeholders to discuss the findings and recommendations.

31. However, the SDPC officials interviewed revealed that SDPC as the EA for the subproject, as well as in its coordinating role for the TA cluster, did not claim full ownership of the report. According to the officials, the TA report was not submitted until the spring of 2001, too late for the drafting of the tenth 5-year plan in the fall of 2000, which was intended as the main objective of the subproject (para. 55 describes the cause of delay). Also, SDPC judged that the findings and recommendations of the report were either too general to be of use or were descriptive of initiatives already being taken by SDPC. The lack of ownership was also apparently triggered in part by a dispute that developed between the ADB project officer and the director general of the department within SDPC responsible for the TA over a relatively minor issue regarding contract negotiation. This dispute made life at the working level somewhat difficult and effectively terminated SDPC's role as the coordinating agency for the TA cluster and its responsibility for the overall coordination with other participating EAs through a steering committee. SDPC's participation ended with the completion of Subproject 1 (para. 15).

### **b. Subproject 2: National Network for Cleaner Technology Transfer**

32. Under Subproject 2, two regional cleaner production technology transfer centers were established in Tianjin (northern) and Chengdu (southern). With the center in Beijing formed under TA 2434 (CESTT), there is now a network of technology transfer centers. The Chengdu center is located in a commercial information technology company while the Tianjin center is operated as a government-sponsored entity. Under the TA, the consultants (i) identified and developed environmental audit procedures for small- and medium-scale enterprises; (ii) tested audit procedures, provided personnel training, and installed a management information system in the two centers; and (iii) carried out financial training and disseminated information.

33. The visits by the OEM to both centers revealed that while the hardware (e.g., computers) and personnel are in place, the centers have not been able to make much headway in carrying out cleaner production auditing and disseminating related information since the completion of the TA.<sup>14</sup> The legal framework put in place, i.e., the cleaner production law drafted under Subproject 3 and passed in 2002, lacks clarity on the exact role of MOST and its affiliated technology transfer centers. The centers' long-term sustainability is unlikely without further assistance from development agencies or the Government. In particular, the Chengdu center was established using a commercial model, in other words, requiring co-investment from a commercial company to cover costs and provide the physical premises for the center. In this case, an information technology company provided the investment and location. According to the center's key personnel interviewed, the subproject was formulated and implemented before the burst of the internet bubble. The decision by the information technology company to invest in the center was

<sup>14</sup> Neither center has been able to carry out any cleaner production auditing, although the Tianjin center seems to be quite active in disseminating cleaner production information among industries and the general public as supported by the Tianjin municipal government.

largely based on the expectation that the center would go public one day and the company could more than recover its investment. This has not materialized, and the center has not generated any revenue from providing cleaner production auditing for industries except some small contracts from CESTT on information gathering.<sup>15</sup> Full commercial operation of the Chengdu center does not appear to be feasible at this particular time given the present legal, policy, and macroeconomic environment in Chengdu.<sup>16</sup>

### **c. Subproject 3: Legislative Support for Cleaner Technology**

34. On Subproject 3, the OEM was unable to meet the EA, the Environment Protection and Resources Conservation Committee (EPRCC) of the National People's Congress (NPC), until the final wrap-up meeting due to the mission's coincidence in time with the preparation for and opening of the NPC. EPRCC completed the questionnaire and provided a written assessment of the subproject's implementation. In general, EPRCC has had a major participation in the design of the subproject, and the subproject is highly relevant to other subprojects of the TA cluster (as confirmed by OEM's meetings with other EAs).

35. The subproject started with training of local legislative drafters. A cleaner production law was drafted and a seminar on related legislation was organized to discuss the first draft of the law. The legislative drafters from EPRCC had further discussions and actual field observations on the development and implementation of cleaner production in the United States. Another workshop was held to review the proposed cleaner production law, which was approved by NPC on 29 June 2002 and became effective on 1 January 2003. EPRCC is highly satisfied with the consultants' outputs, including seminars, international study tours, and the drafted cleaner production law. The law mandates that those enterprises whose emissions exceed applicable national and regional standards must carry out cleaner production auditing. However, the law does not specify how often the audits should be conducted and who will carry out the audits, except by indicating that the Government agencies responsible for economy and trade shall be responsible for the overall coordination of cleaner production promotion, assisted by agencies responsible for environmental protection, planning, science and technology, water conservation, and standards and supervision. More detailed implementation guidelines are needed, but not yet in place, to enforce the law.

### **d. Subproject 4: Cleaner Technology Development**

36. The original objective of Subproject 4 was to help State Economic and Trade Commission (SETC) identify institutional and policy measures to promote cleaner technology development, including sustainable financing mechanisms for investments in cleaner technology. However, a consensus was reached prior to the commencement of the subproject, based on lessons learned from the first three subprojects, to focus on specific cleaner production projects and investigation of project financing mechanisms rather than technology development. Project selection criteria were developed that included technical, environmental, financial, social, and institutional aspects. Three locations—Changzhou, Chengdu, and Tianjin—were selected as pilot applications. Although the adjustment to the original broader (and vaguer) work scope appeared to be beneficial and programmatic (given the budget and time constraints), it has created a great deal of

<sup>15</sup> Under the subproject, computer servers were provided to both centers with an aim to establish their own website for better dissemination of cleaner production information. This has not materialized due to the high costs of setting up and maintaining a website in the PRC.

<sup>16</sup> According to the MOST official interviewed, it was suggested to establish the commercial center in one of the eastern cities where more commercial opportunities exist for the center. This was declined by ADB on the basis that ADB's assistance should focus on the western, less developed regions including Chengdu.

overlap with Subproject 6 (para. 38). Interviews with SETC indicated that although the subproject has not achieved its original outputs and objectives, it has produced some useful outputs including recommendations on specific financing mechanisms. However, the SETC official interviewed had an impression that the consultants may have focused too much on identifying projects suitable for ADB's own financing, with which the responsible ADB officer disagreed, pointing out that neither the consultants nor SETC delivered any project concepts suitable for ADB financing.

**e. Subproject 5: Environmental Management for Cleaner Technologies in Township and Village Enterprises**

37. ADB documents indicated that the revised schedule for the completion of Subproject 5 was June 2003. At the inception meeting held in June 2002, it was decided that its main objectives were to assist SEPA and provincial and local environmental protection bureaus to enforce environmental rules and regulations related to ecological industry partnerships and cleaner production policies. The new focus represents a significant deviation from the original broader work scope. The new work scope included three policy areas: (i) command and control systems, (ii) market-based instruments, and (iii) voluntary measures. However, as of the OEM's visit, no work had been carried out and the revised completion date is unlikely to be met. There is considerable disagreement between ADB's responsible department and SEPA as to the reasons for the delay. According to the concerned ADB officers, the main reason for the stall was disagreement between ADB and SEPA over some implementation arrangements (including issues related to the recruitment of domestic consultants), and more recently the travel ban related to the outbreak of Severe Acute Respiratory Syndrome in the PRC. SEPA, on the other hand, stressed that it has made repeated requests to start the subproject in 2000 or 2001, but the requests were not accepted on the basis either it could not start until the completion of the preceding four, which had lagged seriously behind the original schedule, or because the international consultants had no time to start the subproject. In the meantime, SEPA pointed out that because of the delay, many tasks set in the original design were outdated.

**f. Subproject 6: Financing Mechanism for Cleaner Technologies in Township and Village Enterprises**

38. As of the OEM's visit, all activities (except the submission of the final report) had been completed and a tripartite meeting was held to discuss the subproject's findings and recommendations. While the main objective remains unchanged: to promote cleaner production in small and township and village enterprises, the work scope has been reduced to focus on (i) conducting a survey of financial needs and mechanisms appropriate for such enterprises, and (ii) identifying potential cleaner production projects in decentralized and rural areas suitable for external financing. This was done to reorient the subproject into being fully consistent with the Government's programs and new initiatives. The EA, the Ministry of Agriculture (MOA), indicated that it is generally satisfied with the outcome of the subproject and with the performance of the consultants. However, the reduced work scope included only one workshop to discuss the findings and recommendations, and the previously scheduled international study tour was also cancelled. In addition, the subproject focused on township and village enterprises in industrial zones rather than on individual ones as previously envisaged. Both MOA and the consultants expressed their dissatisfaction with the fact that ADB's Central Operations Consulting Service Division had still not officially endorsed the change of the work scope as of the OEM's visit, even though the work had already been completed.<sup>17</sup>

---

<sup>17</sup> The Consulting Services Division indicated that the main reason for the delay was the unusually high workload beginning the third quarter of 2002.

## **7. TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation**

39. Key outputs from the TA included (i) a manual for use by Provincial People's Congress (PPC) personnel in drafting natural resources legislation, (ii) Sichuan training program attended by 40 officials, (iii) seminar in Beijing attended by 51 representatives from the PPC of 29 provinces and special administrative regions, and (iv) assisting Sichuan legislative drafters in preparing local legislation implementing the Land Use Administration Act. Although the OEM was unable to meet the EA (until at the wrap-up meeting) and Sichuan PPC due to the mission's coincidence in time with the preparation for and opening of the NPC, the questionnaire completed by the EA indicated that the TA has achieved its main objective, and the provincial law drafted under the TA has been adopted. The EA expressed high degree of satisfaction with the international consultants' performance and ADB's assistance, but indicated that both the time schedule and budget were somewhat tight for completing the tasks.

### **B. Training and Transfer of Technology**

40. With the exception of TA 2951 (MBIs), all the other TAs had knowledge transfer and capacity development as one of their objectives. Consequently, the TAs generally attached high importance to training and transfer of and technical know-how. While the training programs have generally had positive impact, the effectiveness of their achievement of the objectives varied substantially across different TAs in accordance with the forms and quantity of training.

#### **1. TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology**

41. A number of training and knowledge/ technology transfer opportunities were built into the TA and MOST encouraged working arrangements with the international consultants that promoted good technology transfer to its own staff. A train-the-trainer workshop was held and also a seminar for EST intermediaries. They were both seen as useful in relation to their objectives. In addition, international training trips were organized for three officials of MOST; to the Hong Kong Productivity Council in Hong Kong, the Asia-Pacific Center for Environmental Technology in Thailand, and the Regional Institute of Bio-Technology in Singapore. These training trips were viewed by MOST as highly effective in achieving the objective of improving its capacity in this field. The individuals involved were sent to one of the three centers for a period of about a month to work within the center and learned as much as possible about the work they were involved with and their function. All of the international training participants are still with MOST.

#### **2. TA 2505-PRC: Strengthening the Environmental Standards and Enforcement Policies**

42. The TCR and an interview with the consultants' team leader indicated that several international study tours were organized for a total of eight officials to the United States (on environmental standards), as well as Singapore and the Philippines (on laws and regulations related to toxic chemicals). In addition, several training workshops were held that were attended by 70 participants from 34 provincial and municipal environmental protection bureaus (EPBs) in addition to other government and industry participants. These workshops covered a wide range of topic and issues including environmental law, standards, total pollutant load strategy, and environmental auditing. Unfortunately it was not possible to assess the effectiveness of the

training activities vis-à-vis the objectives due to unavailability of knowledgeable personnel from SEPA for an interview (para. 23).

### **3. TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province**

43. Training and other activities for the transfer of technical know-how can be summarized as follows: (i) two international study tours were organized, one for SPPC and one for SEPB, attended by 20 senior officials from the two agencies;<sup>18</sup> (ii) five local training workshops were organized, each attended by about 50 provincial and municipal government officials;<sup>19</sup> and (iii) a tripartite meeting consisting of two days of workshops was held at the close of the TA to allow the consultants' findings and recommendations to be presented to and discussed with provincial and municipal government officials. The majority of those participating in the training programs are still with the same agencies. Both SPPC and SEPB indicated that the international training significantly raised the knowledge base of those who attended and, therefore, substantially achieved the TA's objective in knowledge transfer and capacity development. However, the EAs felt that perhaps too much time had been spent at lectures at the host organization and not enough in meeting government and other officials. Also, with hindsight, it appears that the two international training trips had consumed a significant portion of the TA budget, a larger part of which could have been more effectively spent on providing additional local training.

44. In addition to the formal training programs, very good working relationships were established between the international and domestic consultants, with the latter undertaking much of the day-to-day work guided by the international consultants. Also, there was continued dialogue between the consulting team and officials of the EAs. These activities were seen to play an important role in the success of the TA and clearly facilitated the high level buy-in of the findings and recommendations.

### **4. TA 2906-PRC: Leadership Training in Urban Environmental Management in Key Cities**

45. Unlike the other six TAs, TA 2906 had upgrading knowledge of senior government officials through training as the primary objective. However, a major shortcoming of the TA was that the training materials produced under the TA were essentially unused for the training purpose (para. 27). The "training" was mostly done by the chairman of EPRCC, the administrator of SEPA, and three professors from Tsinghua University, together with other experts. The training took the form of speeches and presentations during the morning sessions and discussions during the afternoon sessions. Although the approach deviated somewhat from the original design, the two workshops appeared to have achieved their objectives by raising the participants' awareness of environmental issues and upgrading their environmental knowledge. An interview with the former director of the Guangzhou Municipal EPB, who participated in the training with Guangzhou's deputy mayor, and suggested that the training has been very beneficial for him personally and for the city's planning and environmental management. The areas that were particularly useful for him included new project financing mechanisms (such as build, operate and transfer, World Bank and ADB financing, etc.). He felt that including deputy mayors in the training program was beneficial because they are the key decision makers on

---

<sup>18</sup> The delegates visited various government and private institutions within the UK including AEA technology, the UK Government's Department of Environment, Transport and Regions, Environment Agency for England and Wales, and Thames Water.

<sup>19</sup> These workshops were run by members of the domestic consulting team who had attended the international study tours, and the workshop materials were translated into Chinese to aid local understanding.

environmental issues. He suggested that this type of training can make the job of EPB directors easier because of the mayors' increased awareness of environment protection. On this basis, he considered that such training should be continued, since the mayors and EPB directors change at least every 5 years in most cities. Building on the experience and lessons learned from the TA, SEPA has been continuing its training activities with other provincial/municipal officials.

#### **5. TA 2951-PRC: Promotion of Market-Based Instruments for Environmental Management**

46. Although the TA did not include knowledge transfer and capacity building as an explicit objective, workshops and two high-level policy roundtable discussions were held as part of the TA. The Beijing workshop was attended by various agencies, including SDPC, the Ministry of Finance, and the People's Bank of China, and it was useful in informing these agencies of the variety of MBIs being used in different parts of the world to promote environmental protection. Three case studies were developed: one for SEPB focusing on air emissions trading, one for Fujian EPB focusing on incentive-based approaches to water pollution management, and one in Beijing focusing on vehicle emissions. According to ADB documentation and the interview with the domestic consultant, the Shaanxi case study and workshop was considered to be the most useful of the three, although the OEM could not independently confirm this due to lack of institutional memory by SEPB.

#### **6. TA 3079-PRC: TA Cluster for the Promotion of Clean Technology**

47. Improving the institutional capacities of the participating EAs for promotion of cleaner production was an explicit objective of the TA cluster. To achieve this objective, various training programs, including both international and domestic training, were devised for different subprojects.

48. Subproject 1 included a study tour to the United Kingdom (UK), which incorporated visits to relevant government departments, factories, and workshops. Five officials from the departments of regional economy, comprehensive economy, price, and other related departments of SDPC attended this training program and all are still working in the same organizations. The training was generally considered useful and provided the participants with a view of how cleaner production technology is being encouraged in a developed economy. Of particular interest was the fact that much of what was being implemented within the UK was driven by the European Commission. It was considered that a similar situation existed in the PRC, and the training provided greater confidence that it was appropriate for central government to apply increasing pressure to the provinces to incorporate cleaner production initiatives into their planning processes.

49. Subproject 2 included a study tour, which incorporated visits to the National Research Council in Canada and a cleaner production promotion center in the UK. Six officials from MOST participated in the training program and all are still working in the same organizations. The participants considered the training to be somewhat useful but found that language difficulties were a barrier to them being able to take full advantage of the training opportunity. The training program was less than effective in achieving its objective.

50. Subproject 3 included a participatory 4-day seminar to review international and PRC regulatory systems and help scope the planned cleaner production law. A training tour was organized, attended by four legislation drafters, to visit the United States Congress, United

States Environmental Protection Agency, and other environmental law institutions. The objective was to help the law drafters to understand the approaches to promoting the adoption of cleaner production in the United States and to gather information related to legislation on pollution prevention. The returned questionnaire and a written assessment of the subproject indicated that the international tour was useful and its objective was substantially achieved.

51. Subproject 6 was to have included workshops and a study tour. However, due to budget constraints, the international study tour was cancelled and the only workshop held was at the end of the project to present the findings and recommendations of the subproject. This workshop occurred just before the visit of the OEM and was well received by MOA. It was also successful from the consultant's point of view in providing them with feedback, which they could use to finalize their final report. However, insufficient training and dissemination activities could have hindered the achievement of the subproject's objective in enhancing the EA's capacity in promoting cleaner production.

## **7. TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation**

52. The TA's main objective was to assist in upgrading the knowledge and skills of provincial legislative drafters in related areas. Evidence provided by the EA suggested that this objective has been substantially achieved, and the training workshops (para. 39) have benefited Sichuan and other provincial legislation drafters in upgrading their knowledge and skills. The legislation prepared for Sichuan has also acted as a template for similar legislation in other provinces.

### **C. Institution Building**

53. For most TAs, their incremental impact on institutional building was mainly achieved through the training programs (paras. 40–52), as well as through working together to accomplish TA tasks, such as drafting a law or reviewing policies. Two good examples of this kind were TA 2873 (for Shaanxi Province) and TA 2906 (Leadership Training). For TA 2434 (CESTT) and Subproject 2 of TA 3079 (Cleaner Production), the institutional impact was more significant than others since their main objectives were to create new institutions, i.e., CESTT and two regional centers, although the long-term sustainability of the technology transfer centers particularly the two regional centers may still be uncertain. In general, the TAs had positive but modest impact on institution building.

### **D. Performance of Consultants**

54. The performance of the consultants was mixed. The EAs for TA 2434 (CESTT), TA 2873 (Shaanxi Province), and TA 3123 (Provincial Legislation) expressed satisfaction with their consultants and, in the case of TA 2873, the EA and the consultants appeared to have nurtured a good working relationship that facilitated the buy-in of the findings and recommendations. On the other hand, for TA 2906 (Leadership Training), TA 2961 (MBIs), and TA 3079 (Cleaner Production), the performance of the consultants was less satisfactory due to various problems described in the following paragraph.

55. The case of TA 2906 (Leadership Training) was particularly revealing, highlighting the consultants' insensitivity to the needs of SEPA (para. 27). The training manuals developed under the TA were mostly done to meet ADB's demand as specified in the terms of reference with ADB, and were essentially unused for compiling the Chinese version for the training purpose. In the case of TA 3079 (Cleaner Production), the principal contractor in the consortium

was acquired by another consulting firm shortly after the TA commenced, and the originally proposed team leader and a host of other team members left the new company. The replacement team leader had no PRC experience and eventually had to be dismissed. This incident caused a major delay in the TA cluster and compromised the quality and usefulness of the outputs (Appendix 7). Several of the cluster's EAs pointed to the fact that very few consultants fielded were actually from the principal contractor, and most of them were either from the other partners in the consortium or freelance consultants.

#### **E. Impact of Technical Assistance**

56. The long-term developmental impacts of the TAs were mainly achieved through (i) physical outputs of the TAs, such as final reports, legislation drafted under the TA, and technology transfer centers; and (ii) training and improved capacities of the EAs in environmental management. The immediate and direct impacts of these outputs have been assessed in paras. 22–52, but the accumulative and long-term impacts are more difficult to assess. Compared to situation in the early 1990s, the PRC has made some progress in the areas that these TAs jointly attempted to improve, including environmental standards and legal framework, market-based and incentive-based policies, information dissemination, and cleaner production adoption. However, this is likely the result of accumulative efforts by the Government and international development agencies including ADB through its TAs. Overall, however, the TAs have had a positive, albeit moderate, impact in helping the PRC achieve long-term sustainable development.

#### **F. Other Aspects**

57. Generally the TAs have not had significant unintended impacts. However, ADB needs to be aware that badly implemented TAs have the potential to tarnish the relationship between ADB and the Government. Furthermore, in selecting TA recipients, ADB should attempt to avoid inadvertently strengthening the monopolistic positions of some key agencies.

### **IV. OVERALL ASSESSMENT**

58. **Relevance.** Generally the TAs were and continue to be relevant through supporting a key element of the PRC's sustainable development strategy, i.e., environmental management and capacity building. They are consistent with ADB's operational strategy in the PRC, which emphasizes the protection of the environment and resource conservation. However, the relevance of individual TAs varied. In some cases, the TA's relevance appeared to have been adversely affected by poor TA design and delayed implementation. For example, TA 2951 (MBIs) may have had an overly ambitious scope, which, to some extent, reduced the usefulness of the report and recommendations contained in the report.

59. **Efficacy.** The efficacy of the TAs varied substantially. The two provincial TAs, TA 2873 (Shaanxi Province) and TA 3123 (Provincial Legislation), together with TA 2434 (CESTT) and Subproject 3 (Cleaner Production Law) of TA 3079 have achieved their respective objectives, and can therefore be deemed efficacious or highly efficacious. TA 2873 significantly strengthened the environmental management capacity of the Shaanxi provincial government. The marginal "value-added" of the TA was high as the government was still at a relatively early phase on the learning curve. The government viewed the TA as the most comprehensive effort in consolidating its various environmental policies, legal framework, and institutional capacity building. TA 3123 also achieved its main objective of upgrading the knowledge and skills of provincial legislative drafters in the review and formulation of local legislation related to

environment protection and conservation through hands-on training and two training workshops. For TA 2434, the objective of increasing the industry sectors to select, evaluate, import, and employ the cleaner production technologies through the establishment of the CESTT has been substantially achieved, although the form of the center's assistance to industries has changed from working with individual industries as initially envisaged to working with industrial associations.

60. Among the three TAs executed by SEPA, TA 2906 (Leadership Training) has substantially achieved its objective by raising the environmental awareness of the deputy mayors who participated in the training, although the TA could have made a larger contribution with a better design. The achievement of TA 2505 (Environmental Standards) vis-à-vis its objective, to improve environmental protection and natural resources management by strengthening the institutional capacity of SEPA to develop and implement appropriate environmental standards and enforcement policies, cannot be assessed due to lack of official information. The efficacy of another SEPA-executed TA, TA 2951 (MBIs), cannot be fully assessed as the OEM was only able to interview a domestic consultant for the TA. Last, although the cluster TA has not yet been completed, it has suffered from a number of design and implementation problems, and the expected synergy from different subprojects has not materialized to the extent envisaged. Nevertheless, useful outcomes have been generated from some completed subprojects. Most notably, through drafting a cleaner production law (which was passed by NPC) and related capacity building, Subproject 3 has contributed significantly to the achievement of the overall goal of the TA cluster, i.e., to help improve national level policies, institutional capacity, and financing mechanisms for the promotion and application of cleaner technologies to achieve sustainable development. Subprojects 2 and 4 have also made a moderate contribution to the achievement of the overall goal by establishing two regional cleaner production centers and helping to investigate financing mechanisms for cleaner production projects. However, the efficacy of Subproject 1 was low since it essentially did not achieve the objective of improving the national level policies for promotion of cleaner production due to delays and less-than-useful outputs. At the time of the OEM's visit, most of the activities under Subproject 6 had been completed except the submission of the final report, and works for Subproject 5 were yet to start. The efficacy for these two subprojects was not assessed due to inadequate information.

61. **Efficiency.** All seven TAs experienced delays of various degrees, which partly reflected the overly optimistic and unrealistic timeframe envisaged at TA formulation. For TA 2951 (MBIs) and TA 3079 (Cleaner Production), the delays were and are likely to be 2 years or more, respectively, caused by consultants' staffing difficulties, poor start-up preparation by the EAs, and slow approvals of contract variations by ADB, among other factors. The budget of the TAs was generally appropriate for their scope of work.

62. **Sustainability.** Evidence gathered by the OEM suggests that the sustainability of a TA is affected by the type of its outputs. For example, the TAs that generated legal outputs, i.e., TA 3123 (Provincial Legislation) and Subproject 3 (Cleaner Production Law) of TA 3079, are likely to be more sustainable than the others due to the nature of laws. On the other hand, CESTT established under TA 2434 in Beijing and the two regional centers (in Chengdu and Tianjin) established under Subproject 2 of TA 3079 may be less certain. This is particularly true for the two regional centers since, unlike the Beijing center that has been receiving financial backing from both the Government and international agencies, such financial support is less available. In particular, the Chengdu center was an experiment by basing such a center in a commercial company so as to achieve its financial sustainability. This is unlikely because of the fact that the

legal, policy, and macroeconomic environment necessary for the center's operation are not yet in place.

63. **Institutional Development and Other Impacts.** All seven TAs attached, appropriately, high priority to institutional strengthening and capacity building through various domestic and international training programs, as well as hands-on training through jointly performing TA tasks by consultants and EA officials. TA 2873 (Shaanxi Province) was a good example. Under the TA, two international study tours and five domestic training seminars were carried out attended by more than 250 environmental and planning officials throughout Shaanxi. The majority of the trainees are still in the same government agencies and some of them have since become the backbone of Shaanxi's environment and planning agencies. TA 2906 (Leadership Training) specifically targeted deputy mayors in charge of infrastructure planning for training and achieved substantial progress on integrating environment protection in infrastructure planning. In general, the provision of training by all the TAs was well regarded by the EAs although the cost effectiveness of some training activities, e.g., international study tours, could have been improved. Finally, through addressing policy, legal, technology, financing, and institutional needs, the TAs as a whole have undoubtedly had a positive impact on the PRC's environmental management and capacity building.

64. **Overall Ratings.** Based on these evaluations against different criteria, the overall ratings of the TAs are summarized in the following table.

TA No./Title	Executing Agency	Rating <sup>a</sup>
TA 2434-PRC: Establishing a Center for the Transfer of Environmentally Sound Technology	MOST	Successful
TA 2505-PRC: Strengthening the Environmental Standards and Enforcement Policies	SEPA	Not Assessed <sup>b</sup>
TA 2873-PRC: Improvement of Environmental Management in Shaanxi Province	SPPC and SEPB	Highly Successful
TA 2906-PRC: Leadership Training in Urban Environmental Management in Key Cities	SEPA	Partly Successful
TA 2951-PRC: Promotion of Market-Based Instruments for Environmental Management	SEPA	Not Assessed <sup>c</sup>

TA No./Title	Executing Agency	Rating <sup>a</sup>
TA 3079-PRC: TA Cluster for the Promotion of Clean Technology		Not Assessed <sup>d</sup>
Subproject 1: Policies for Promotion of Cleaner Production	SDPC	Unsuccessful
Subproject 2: National Network for Cleaner Technology Transfer	MOST	Partly Successful
Subproject 3: Legislative Support for Cleaner Technology	EPRCC	Highly Successful
Subproject 4: Cleaner Technology Development	SETC	Partly Successful
Subproject 5: Environmental Management for Cleaner Technologies in Township and Villages Enterprises	SEPA	Not Assessed <sup>e</sup>
Subproject 6: Financing Mechanism for Cleaner Technologies in Township and Villages Enterprises	MOA	Not Assessed <sup>f</sup>
TA 3123-PRC: Provincial Legislation on Environmental Protection and Natural Resources Conservation	EPRCC	Successful

EPRCC = Environment Protection and Resources Conservation Committee (under the National People's Congress); MOA = Ministry of Agriculture; MOST = Ministry of Science and Technology; SDPC = State Development and Planning Commission; SEPA = State Environment Protection Administration; SEPB = Shaanxi Environment Protection Bureau; SETC = State Economic Trade Commission; SPPC = Shaanxi Provincial Planning Commission; TA = technical assistance.

<sup>a</sup> Using the Asian Development Bank's four-category ranking system, i.e. highly successful, successful, partly successful, and unsuccessful. For the subprojects of TA 3079, the ratings are tentative since the TA cluster is still ongoing. The final ratings may vary pending on more information becoming available.

<sup>b</sup> SEPA could not arrange a meeting with the department responsible for executing the TA.

<sup>c</sup> SEPA arranged a local consultant to meet the Operations Evaluation Mission, but the department responsible for TA execution was not available for the meeting.

<sup>d</sup> The TA cluster is not yet completed.

<sup>e</sup> Work for the subproject was yet to start.

<sup>f</sup> Although the work for the subproject was mostly completed and the Executing Agency appeared to be satisfied with the outcome, the final report was still being prepared. It is too early to provide a rating at this point in time.

**65. Assessment of ADB and Executing Agency Performance.** ADB's performance was generally satisfactory by providing close consultations with and supervision for the EAs during TA formulation and implementation, to which most EAs expressed a high level of satisfaction and appreciation. However, the level of supervision required varied substantially across different TAs with different complexities and durations, with TA 3079 (Cleaner Production) being the most demanding one of the seven TAs. This has partly explained the various problems encountered during its implementation (paras. 19–21). The performance by the EAs varied as well, with most of them, particularly SPG, MOST, and EPRCC, taking a very strong ownership of the TAs. On the other hand, such high level of ownership was not evident in the case of TA 2505 (Environmental Standards) and TA 2951 (MBIs), with SEPA as EA. The fact that SEPA has been a major recipient of ADB environmental TAs and, yet, provided insufficient support to the evaluation, particularly compared to the level of collaboration from the other EAs, is in part an indication of such weak ownership and somewhat disturbing. The reasons for the low level of collaboration included the fact that (i) SEPA, with a total permanent staff strength of about 250, is seriously

understaffed;<sup>20</sup> (ii) SEPA receives a large number of TA grants and TA loans, currently more than 20, from other development agencies including the World Bank; and (iii) SEPA, and particularly some individuals within it, is highly bureaucratic. SEPA's capacity, particularly that of its Foreign Economic Cooperation Office responsible for coordinating TAs, appears to be overstretched. The organizational structure of that office within SEPA<sup>21</sup> is such that it has an incentive to retain maximum control over the incoming TA grants and loans. Such constraints and an incentive structure could adversely affect the effectiveness of further TA to SEPA and prevent it from achieving the desired value-added and impact. Overall, SEPA's performance in administering TA 2906 (Leadership Training) was satisfactory. However, the performance was either less than satisfactory or could not be fully assessed with TA 2505 (Environmental Standards) and TA 2951 (MBIs).

## **V. KEY ISSUES, LESSONS, AND FOLLOW-UP ACTIONS**

### **A. Key Issues**

#### **1. Information Availability and Relevance of Evaluation**

66. There is a clear asymmetry of information available about the seven TAs. This was caused by a number of factors, including (i) time lapsed since completion, (ii) different level of collaboration from the EAs, and (iii) the nature of a TA (or type of outputs).<sup>22</sup> The amount of information available is the largest for the cluster TA, which is ongoing, and least for TA 2505 (Environmental Standards), which was approved in 1995 and completed in 1998. It appears that there is a positive correlation between the institutional memory of a TA and its concrete outputs, e.g., establishment of a technology transfer center, and the amount and type of training carried out under the TA. If the consultants of a TA spent most of their time trying to gather information to prepare reports, or worked with only a few EA officials, the TA is likely to have generated minimal institutional memory and, thus, impact.

67. An important lesson for the Operations Evaluation Department in this regard is that TA evaluation should be carried out 1-2 years after completion rather than 3-4 years as for project evaluation. This is partly dictated by the reality that, for most TAs, institutional memories are short. Many EAs interviewed did not appear to keep a good filing system for the TAs or to complete a TCR (one exception being the EPRCC, which prepared a two-page summary of TA implementation to meet its own reporting procedures). The institutional memories sometimes lie entirely in one or a few key individuals' minds. Furthermore, the experience of the OEM in evaluating the cluster TA demonstrates the unique advantages and relevance of real-time evaluation and feedback for ongoing TAs. For example, the information gathered by the OEM on delays of work order approvals, EAs' feedback on the performance of consultants and ADB, and other design and implementation issues could be very useful for improving this and future TAs. Such valuable insights are rarely available from the operational departments that executed the TA, and could be lost if the evaluation were done after the TA is completed.

<sup>20</sup> As a comparison, the United States Environment Protection Agency had more than 10,000 employees in the early 1990s, and about half at the headquarters.

<sup>21</sup> The Foreign Economic Cooperation Office is not funded by the regular budget of SEPA. Depending on workload and projects, the number of staff, who are engaged on a contractual basis, varies and could reach 100.

<sup>22</sup> The asymmetrical information can potentially introduce bias against ongoing projects (footnote 11). Wherever possible, the OEM tried to confirm the information obtained with multiple sources to arrive at a balanced picture.

## 2. Environmental TAs: Need for Rethinking about Strategies?

68. Since joining ADB in 1986, the PRC has received an unprecedented 65 environment-related TAs with a total value of \$38.4 million, and this performance audit was only the second one to evaluate the effectiveness and impact of such TAs. The findings of the OEM suggest that the TAs varied quite drastically in terms of their effectiveness and impact, and there is an urgent need for more comprehensive evaluation of ADB's environmental TAs for the PRC in view of the most recent developments in environmental policies and efforts, and progress in slowing down the trend of environmental deterioration in the country. In particular, since 1986, the PRC has come a long way in its efforts to battle environmental deterioration. It has substantially improved its environment quality in certain areas, particularly air quality, through strengthened enforcement of policy and laws, and heavy investments in environmental remediation. However, continued and unabated efforts are needed to achieve greater success in other areas. The role of ADB's assistance in this achievement needs to be comprehensively assessed. Based on such evaluations, ADB may need to reconsider its strategies and policies for its TA initiatives in the environmental field based on lessons learned from the past, some of which will be outlined in the next section, based on the limited evidence gathered by the OEM.

## 3. Coordination with Other Development Agencies

69. The recommended rethinking and strategizing should be done in close consultation with other development agencies active in the sector, particularly the World Bank, to coordinate the efforts and achieve maximum impact. Despite the existence of some informal forums among the key bilateral and multilateral development agencies on environmental issues, actual coordination of environmental assistance in the PRC has been relatively weak compared to similar efforts in other developing member countries.

### B. Lessons Identified

70. The lessons identified are classified into four categories: topic (theme) selection, TA design, TA implementation, and follow-up activities/dissemination. This is consistent with an evaluation study<sup>23</sup> conducted by ADB's Resident Mission in the PRC of ADB's advisory TAs in the PRC in order to form a useful comparison of lessons learned.<sup>24</sup> The essence of the lessons identified in this report is how to best meet the real needs of the Government, rather than its perceived needs or the needs of ADB, through the ADTAs.

#### 1. Theme Selection

71. Of the seven TAs included in the evaluation, the topic selection was generally done through consultative discussions and exchanges between ADB and the Government. A particularly good example was TA 2906 (Leadership Training) for which the original idea came from the administrator of SEPA in a dialogue with an ADB director. TA 3123 (Provincial Legislation) and Subproject 3 (Cleaner Production Law) were also examples where the objectives of the TAs were compatible with the goal of the Government in that the Government

<sup>23</sup> RSC C00747-PRC: *Improving Effectiveness of Advisory Technical Assistance in the People's Republic of China*, PRC Resident Mission, Beijing.

<sup>24</sup> The Resident Mission engaged a domestic consultant, during 2000 and 2001, to carry out a review of ADTAs in the PRC, which included 261 ADTAs approved during the period between 1986 and 2000 with a total value of \$134.5 million. The report identified four key factors/types of problems that affected the effectiveness of ADTA in the PRC, including topic (theme) selection, TA design, TA implementation, and follow-up activities/dissemination. The views expressed in the report are widely held in the PRC. It is, therefore, important to shed more light in these areas with the information gathered by the OEM.

had decided to accomplish it with or without ADB's help. Under these circumstances, the EAs are more likely to take strong ownership, which improves chances for success. On the other hand, in the case of TA 2951 (MBIs), the original request from SEPA was to look for ways to improve the flawed pollution levy system. However, it appears that ADB may have taken the idea and built it into something much broader and less practical. It shows that although a TA's theme may be broadly compatible with the Government's goals, the specific scope of the TA can be stretched to yield a different but less relevant focus. Compatibility of the TA objectives and the Government's goals appears to be a necessary condition for a TA's success.

72. On a broader note related to theme selection, it appears that ADB attempted to cover a large ground through its ADTAs, perhaps too large to be effective. More importantly, there is a lack of evidence that the selection of the themes was based on a detailed need assessment of the country, rather it seemed to be more dominated by other factors such as the concurrent trend of a particular issue or methodology (e.g., MBI, cleaner production). While most of these themes are undoubtedly beneficial, they are not necessarily the top priority on the Government's agenda. The Government would usually go along with the ideas and concepts for new TAs since they will bring in new resources and international exposure. There is also considerable interagency competition and competition between central government agencies and provincial agencies for such TA grants. This may also influence the choices of TA themes. In general, the findings from the evaluation of the seven TAs provide some support for a key lesson identified in the Resident Mission's report: the thematic selection of ADB's ADTAs tends to be "ad hoc" and is often "supply driven", which addresses concerns more important to ADB than to the Government.

## 2. TA Design

73. Although most EAs indicated that they had reviewed the TA report and terms of reference for consultants and provided comments, it was clear that ADB drafted the documents and played a more dominant role in designing the TA. This echoes a key problem identified in the Resident Mission report, which was limited involvement from EAs in TA design. This situation was partly due to the lack of experience on the part of some EAs, which need to be "stimulated" into grasping their needs, and some EAs did not have appropriate personnel in place until the TAs were approved. The effect of an ADB-driven TA design was best illustrated by TA 2906 (Leadership Training), under which the English version of the training manuals developed by the consultants were mainly used to satisfy ADB's requirements, but they were little used for compiling the Chinese version for the training purpose. In the case of the cluster TA, the design of some subprojects, notably Subproject 4, the original scope of work and terms of reference for consultants were too vague and had to be refocused significantly before implementation.

74. A common feature that characterized all seven TAs was the provision of training for EA officials and other concerned government agencies. It was clear to the OEM that a successful training program affects the institutional memory of a TA and, potentially, generates long-term impact, as best exemplified by the case of TA 2873 (Shaanxi Province). While training activities should be clearly encouraged, the cost effectiveness of the training program should be explicitly assessed through comparing different options. For those EAs, particularly those at the central level that have had substantial international exposure, future TAs may gradually move away from the more costly international study tours or limit their scale. Other innovative yet more cost-effective approaches, e.g., secondment of selected EA staff to a foreign agency for a prolonged period of time, as done in the case of TA 2434 (CESTT), should be given priority.

75. As TA 3079 was the first TA cluster approved by ADB, certain design and implementation problems were expected. The following is a summary of key lessons learned from TA 3079, which would be useful for future TA designs. First, clusters may only be appropriate where there is very clear synergy between various subprojects. In this case, the synergy achieved was not as significant as expected in part because of difficulties in bringing different government agencies together and the severe interagency rivalry. Second, timescale is a particularly crucial factor for the success of a TA cluster and work should be ideally completed over a relatively short period, such as 2-3 years. There should be some or significant overlap in the timescale between the start of one subproject and the completion of another to maximize the potential for one subproject to feed into another, and to maintain the momentum of the overall TA within the designated timeframe. Since delays are very common for ADB TAs (more than 2 years in this case), the delays may cause a more adverse impact on a cluster TA than on a regular TA due to the former's relatively long time span and the chain effects of delays rippled across different subprojects. SEPA, for example, pointed out that as Subproject 5 is yet to start, the original tasks set out 5 years ago may have already become obsolete. Third, to improve the potential efficacy of the cluster approach, there should be a single overall coordinating agency within government for a cluster TA, and ADB should pay particular attention to ensuring that this coordinating body is fully engaged in all formulation processes leading up to the TA and during its implementation. Fourth, perhaps more so than for a regular TA, the recruitment of consultants and their performance are instrumental for the success of a TA cluster. TA 3079 adopted the single-firm approach, which has the advantage of saving time and effort in procuring consultants for different subprojects, easier coordination between different subprojects, and better utilization of findings from earlier subprojects as inputs to the subsequent projects. However, the disadvantages included difficulties in maintaining a high level of commitment and strong efforts from the consultants, and ADB getting stuck in terms of difficulties and reluctance in recruiting different consultants when the incumbent ones were not performing to a satisfactory standard. A single consulting firm may also find it difficult or may not have the capacity to simultaneously carry out project works for two or more subprojects, which may be required by circumstances. In general, the OEM feels that by "putting all eggs (subprojects) in one basket (the winning consortium/firm)," the single-firm approach is more risky and less flexible than the multiple-firm approach. ADB needs to carefully evaluate the pros and cons of the approaches on a case-by-case basis for future TA clusters.

### **3. TA Implementation**

76. The OEM has had similar experience to that of numerous previous ADB missions in hearing the EAs' opinion regarding enlarging the role of domestic consultants and granting greater say to the Government in consultant evaluation and recruitment. Evidence gathered by the OEM points to two key related factors (among others) for a relatively successful implementation of a TA: (i) an international consultant team leader who is experienced and knowledgeable about the PRC, and (ii) a significant role for enthusiastic and knowledgeable domestic consultants who would also have access to information and ability to influence decision making. Again, the experience of TA 2873 (Shaanxi Province) may be a point of interest. The domestic consultants (recommended by the EAs) were dedicated to playing not only a general facilitating role but also committed to more tedious work in translating a large quantity of documents. However, this may have not been a typical situation. More often than not, international consultants may ask domestic consultants to translate a large amount of documents/data, many of which have dubious value as perceived by domestic consultants. The domestic consultants often feel underemployed and unmotivated. As various EA officials interviewed pointed out, the comparative advantage of international consultants were their expertise in advanced know-how and technology, while the domestic consultants were more

familiar with ground conditions and realities. The challenge for TA design and implementation is how to use them in a complementary manner.

77. A seemingly obvious but important fact was that all seven TAs experienced delays of different degrees, from 2 months to more than 2 years. In virtually all cases, the original timeframe appeared to be overly optimistic, making it difficult to meet. In some cases, the delays had serious adverse impact on the usefulness of the TA outputs. In others, it was beneficial to prolong the TA execution period to allow more time for EAs to digest TA findings, recommendations, and for more training/dissemination activities.

#### **4. Follow-Up Activities/Dissemination**

78. There are both positive and negative lessons to be learned from the experience of the seven TAs in this regard. TA 2873 (Shaanxi Province) was highly successful in ensuring the buy-in of its findings and recommendations through workshops, training, close interaction with senior provincial officials, and publication and distribution of its final report across the province. In contrast, little seemed to have been achieved in disseminating the findings and recommendations of TA 2951 (MBIs) within the PRC. The cluster TA was also less than effective in dissemination with some completed subprojects. For example, for Subproject 1, SDPC reported that the consultants' final report was produced without reference to the EA on the cover, but it was anticipated that the document would be taken on board by the EA for dissemination to others.<sup>25</sup> These lessons are generally consistent with those identified in the Resident Mission's report.

#### **C. Follow-Up Actions and Recommendations**

79. All evaluated TAs, except the cluster, have been completed. No particular follow-up actions are needed for the completed TAs except that a TCR is to be completed for TA 2873 (Shaanxi Province) by the East and Central Asia Department's Infrastructure Division during the project completion mission for Loan 1543-PRC (footnote 4) after the loan is closed at the end of 2003 (expected). Furthermore, for the cluster TA, the concerned divisions within ADB need to adopt a more proactive approach in addressing some of the outstanding issues and the needs of the EAs and the consultants. In particular, for Subproject 6, the situation in which all the activities had been completed but the work order variations were yet to be endorsed should be addressed as soon as possible and avoided in the future. For Subproject 5, the outstanding issues appear to have been resolved and the work should start as soon as the health-related travel ban is lifted (para. 37).

80. While ADB should continue the support in the environmental sector in the PRC, it should also be more selective in terms of technical and policy areas, targeted recipients, and TA modalities to achieve better results particularly in view of the increasing constraints on TA resources. On selection of recipients, ADB may consider gradually increasing its assistance focus on those concerned nontraditional central and (particularly) provincial agencies for

---

<sup>25</sup> It was explained to the OEM that if the executing agency was to play such a role, the reports needed to clearly show that they had been prepared under the auspices of the executing agency so that they could prepare a "red-letterhead" document—a phrase used to refer to official documents to be disseminated and implemented—and disseminate it to its provincial and municipal counterparts.

which the marginal impact and value added could be much higher. Although SEPA has been a primary recipient in the past, the OEM did not detect as strong a sense of ownership and appreciation of ADB's TAs from SEPA as from other EAs interviewed. Furthermore, SEPA, particularly its Foreign Economic Cooperation Office, suffers from understaffing, bureaucracy, and a funding structure that depends on the number of incoming projects and TAs. These factors are likely to hinder the effectiveness of further TAs to SEPA. ADB, through its Resident Mission, should continue to intensify the ongoing dialogue with SEPA but with greater depth with respect to reforming the current institutional setup of the cooperation office to make it more responsive to the needs of SEPA's operation and technical departments and less dependent on external financing.

81. Although still ongoing, preliminary evidence gathered by the OEM indicates that the cluster TA has not generated as much synergy as expected despite some significant achievements from individual subprojects. Its overall cost effectiveness, in terms of both time and financial resources, is low. However, there is not enough evidence from one TA's experience to draw any definite conclusions about TA clusters as a modality. Until more TA clusters can be evaluated, more caution should be exercised by ADB's operation departments in designing new TA clusters to ensure that the lessons identified from TA 3079 are fully considered.

82. Finally, current ADB procedures for ADTA formulation, design, and implementation have been a source of contest by developing member countries including the PRC, which feel that they should be in the driver's seat rather than ADB. To address this situation, ADB is presently revising its TA policies to incorporate these concerns.<sup>26</sup> A task force comprising senior staff from different departments of ADB has been formed to design a pilot study using procedures for consultant recruitment and selection that allow developing member countries to recruit and select consultants in a manner similar to that used for World Bank projects.<sup>27</sup> The pilot study is likely to commence later in 2003, and if it proves to be successful, ADB should apply the new approach and procedures to all willing developing member countries.

---

<sup>26</sup> R225-02. *Review of the Management and Effectiveness of Technical Assistance Operations of the Asian Development Bank*, 28 October 2002.

<sup>27</sup> On 17 February 2003, the Office of the President instructed the principal director of Central Operations Services Office to set up an interdepartmental task force for such a purpose. The Task Force started work on 4 March 2003 and comprised representatives of 12 concerned ADB departments and offices.

**ENVIRONMENTAL TECHNICAL ASSISTANCE IN THE PEOPLE'S REPUBLIC OF CHINA**

<b>TA Name</b>	<b>Type</b>	<b>Year of Approval</b>	<b>Amount (\$)</b>
TA 0987: Institutional Strengthening of the National Environmental Protection Agency	ADTA	1988	340,000
TA 1436: Environmental Impact Assessment and Training	ADTA	1990	600,000
TA 1464: Management of Environment and Natural Resources in Hainan	ADTA	1991	600,000
TA 1490: Industry Energy Efficiency and Environment Management	PPTA	1991	100,000
TA 1549: Qingdao Environmental Improvement	PPTA	1991	100,000
TA 1602: Strengthening Management Information System of Environmental Protection Bureaus of Selected Municipalities	ADTA	1991	600,000
TA 1615: Monitoring and Management of Fragile Ecosystems in Shanxi-Shaanxi-Inner Mongolia	ADTA	1991	600,000
TA 1690: National Response Strategy for Global Climate Change	ADTA	1992	600,000
TA 1772: Institutional Strengthening of the Qingdao Environmental Protection Bureau	ADTA	1992	600,000
TA 1831: Tangshan and Chengde Environmental Improvement	PPTA	1992	100,000
TA 1835: Haihe Basin Environmental Management and Planning Study	ADTA	1992	1,240,000
TA 1916: Institutional Strengthening of the Environmental Protection Bureaus in Tangshan and Chengde Municipalities	ADTA	1993	450,000
TA 1917: Beijing Environmental Improvement	PPTA	1993	600,000
TA 1988: Environmental Impact Assessment Training - Phase II	ADTA	1993	900,000
TA 2015: Urban Environmental Improvement Planning	ADTA	1993	480,000
TA 2073: Changjiang Water and Soil Conservation and Environmental Protection	ADTA	1994	600,000
TA 2087: Second Industrial Energy Conservation and Environment Improvement	PPTA	1994	393,000
TA 2090: Legislative Reform for Protecting the Environment and Natural Resources	ADTA	1994	500,000
TA 2156: Improvement of Northern Grassland Ecosystems	ADTA	1994	746,000
TA 2187: Anhui Municipal Wastewater Treatment	PPTA	1994	283,000
TA 2188: Anhui Industrial Pollution Abatement	PPTA	1994	450,000
TA 2192: Energy Efficiency and Environmental Improvement Study	ADTA	1994	150,000
TA 2210: Capacity Building of the Beijing Municipal Environmental Protection Bureau and Affiliated Agencies	ADTA	1994	600,000
TA 2211: Capacity Building of the Beijing Industrial Hazardous Waste Management Center	ADTA	1994	425,000
TA 2298: Improving Coal Efficiency and Reducing Environmental Pollution	ADTA	1995	570,000

<b>TA Name</b>	<b>Type</b>	<b>Year of Approval</b>	<b>Amount (\$)</b>
TA 2337: Coastal Environmental Protection and Institutional Assessment	ADTA	1995	98,500
TA 2398: Improving Environmental Monitoring and Enforcement in Henan Province	ADTA	1995	90,000
TA 2407: Capacity Building for Soil and Water Conservation	ADTA	1995	590,000
TA 2434: Establishing a Center for the Transfer of Environmentally Sound Technology	ADTA	1995	550,000
TA 2445: Xian-Xianyang-Tongchuan Environment Improvement	PPTA	1995	500,000
TA 2456: Pilot Environmental Plans for Selected Medium Size Cities	PPTA	1995	537,000
TA 2494: Sound Safety and Environmental Practices for Offshore Oil and Gas Production	ADTA	1995	600,000
TA 2505: Strengthening the Environmental Standards and Enforcement Policies	ADTA	1995	600,000
TA 2675: Market-Based Energy Conservation and Environmental Improvement	PPTA	1996	597,000
TA 2693: Formulation of an Integrated Environmental Management Plan for the Chao Lake Basin	ADTA	1996	800,000
TA 2695: Coastal Resources Conservation and Environmental Improvement	ADTA	1996	810,000
TA 2726: Water Quality Management Planning for Suzhou Creek	ADTA	1996	600,000
TA 2729: Industrial Pollution Investigation and Assessment in Town and Village Enterprises	ADTA	1996	600,000
TA 2751: Capacity Building of Wastewater Treatment Operations in Anhui Province	ADTA	1997	400,000
TA 2770: Fuzhou Water Supply and Wastewater Treatment	PPTA	1997	598,000
TA 2873: Improvement of Environmental Management in Shaanxi Province	ADTA	1997	935,000
TA 2901: Shanxi Environment Improvement	PPTA	1997	590,000
TA 2906: Leadership Training on Urban Environmental Management in Key Cities	ADTA	1997	600,000
TA 2951: Promotion of Market-Based Instruments for Environmental Management	ADTA	1997	697,000
TA 2975: Environmental Impact Assessment Training and Curriculum Development (Phase III)	ADTA	1997	600,000
TA 2726: Water Quality Management Planning for Suzhou Creek (Suppl.)	ADTA	1998	400,000
TA 3025: Suzhou Creek Environmental Rehabilitation	PPTA	1998	965,000
TA 3036: Power Rehabilitation and Environmental Improvement	PPTA	1998	1,000,000
TA 2675: Market-Based Energy Conservation and Environmental Improvement (Suppl.)	PPTA	1998	150,000
TA 3069: Soil and Water Conservation in the Upper Yangtze River Basin	ADTA	1998	99,000

<b>TA Name</b>	<b>Type</b>	<b>Year of Approval</b>	<b>Amount (\$)</b>
TA 3079: TA Cluster to the PRC for the Promotion of Clean Technology	ADTA	1998	3,500,000
TA 3095: Hai River Basin Wastewater Management and Pollution Control	ADTA	1998	570,000
TA 3123: Provincial Legislation on Environmental Protection and Natural Resources Conservation	ADTA	1998	300,000
TA 3211: Improving Environmental Management in Suzhou Creek	ADTA	1999	840,000
TA 3325: Shanxi Air Quality Improvement	ADTA	1999	700,000
TA 3462: Acid Rain Control and Environmental Improvement	PPTA	2000	964,000
TA 3488: Hebei Province Wastewater Treatment	PPTA	2000	850,000
TA 3497: Global Environmental Facility Partnership on Land Degradation in Dryland Ecosystems	ADTA	2000	100,000
TA 3638: Wuhan Wastewater Treatment	PPTA	2001	500,000
TA 3657: PRC-GEF Partnership on Land Degradation in Dryland Ecosystems	ADTA	2001	800,000
TA 3663: Optimizing Initiatives to Combat Desertification in Gansu Province	ADTA	2001	610,000
TA 3749: National Guidelines for Urban Wastewater Tariffs and Management Study	ADTA	2001	700,000
TA 3638: Wuhan Wastewater Treatment (Supplementary)	ADTA	2002	199,000
TA 3891: Study of Control and Management of Rural Nonpoint Source Pollution	ADTA	2002	600,000
TA 3919: Liaoning Environmental Improvement	PPTA	2002	500,000
<b>Total</b>	<b>65</b>		<b>38,366,500</b>
<b>Of which ADTA</b>	<b>46</b>		<b>28,589,500</b>

ADTA = advisory technical assistance, GEF = Global Environment Facility, PPTA = project preparatory technical assistance, PRC = People's Republic of China, TA = technical assistance.

### SCOPE OF THE ENVIRONMENTAL TECHNICAL ASSISTANCE

	Central (C) or Local (L)	Standards and Laws	Enforcement and Implementation	Planning and Financing	Market-Based Instruments/Policies	Institutional Training	Cleaner Technology
TA 2434: Establishing a Center for Transfer of Environmentally Sound Technology	C					v	v
TA 2505: Strengthening Environmental Standards and Enforcement Policies	C and L	v	v			v	
TA 2873: Improvement of Environmental Management in Shaanxi Province	L	v	v	v	v	v	v
TA 2906: Leadership Training on Urban Environmental Management in Key Cities	C and L	v	v	v		v	
TA 2951: Promotion of Market-Based Instruments for Environmental Management	C and L	v		v	v		
TA 3079: TA Cluster for Promotion of Clean Technology	C and L	v		v	v	v	v
TA 3123: Provincial Legislation on Environmental Protection and Natural Resources Conservation	L	v	v			v	

## **TA 2434-PRC: ESTABLISHING A CENTER FOR THE TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY**

### **A. Background**

1. Technical assistance (TA) 2434 was approved in October 1995. It aimed to increase the capacity of the industry sectors and enterprises to select, evaluate, import, and employ environmentally sound technology (EST) through the establishment of a technology transfer center. The secondary objectives were to (i) support project implementation through dissemination of relevant data, information, and expertise on EST to users; (ii) promote research, development, and transfer of EST in the People's Republic of China (PRC); (iii) attract foreign investment in EST; and (iv) promote EST transfer from the PRC to other developing member countries of the Asian Development Bank (ADB) and vice versa; and (v) promote EST to supplement end-of-pipe technologies for pollution control. The TA was formulated during the time of the PRC's formal adoption of Agenda 21, following the United Nation Conference on Environment and Development in Brazil in 1992, which emphasized EST as a key mechanism for achieving sustainable development. Three priority areas were identified by the conference: (i) access to information on EST, (ii) institutional development and capacity building for managing technological change, and (iii) financial and partnership arrangements. The Government asked ADB to provide assistance to the then State Science and Technology Commission (SSTC) for establishment of an EST center to be managed under the newly established Administrative Center for China's Agenda 21 (ACCA 21).

2. The scope of the TA included (i) undertaking a survey to determine the needs and barriers to the development, transfer, and application of EST; (ii) installing an information system and databases; (iii) establishing a computerized network for exchanging and disseminating information; (iv) conducting training, workshops, and seminars; (v) improving capability to transfer technology to other sectors; (vi) promoting EST in the PRC; (vii) providing guidance in the operation of EST transfer projects; and (viii) establishing institutional linkages with other organizations and countries. The TA was closed in November 1998, about 10 months behind the scheduled closing date (31 January 1998). The TA completion report was circulated in December 1998.

### **B. Assessment of Implementation Performance**

#### **1. Design**

3. The TA was generally well designed in that it covered some key aspects involved in establishing the EST transfer center, including a market study, physical establishment of the information system, development of demonstration projects, and required institutional development, together with training and publicity programs. It should be pointed out, however, that the role of the center has moved away from its original focus of promoting EST to one of institutional development with a focus on small and medium-sized enterprises. In 1995, when the TA was first discussed, such enterprises were not under consideration, but after 1998 they became a prime target for environmental improvement.

4. In addition and with hindsight, an important aspect for the long-term sustainability of the center, which was somewhat overlooked, was its commercialization so that it would be self-supporting. Although it does some research for government and international bodies on a commercial basis, it continues to rely on government budgetary support for its operation.

## 2. Engagement of Consultants

5. A United Kingdom-based consulting firm was engaged to execute the TA in accordance with ADB's *Guidelines on the Use of Consultants*. The firm has a regular office in Beijing, which played an important liaison role and helped communication between ADB, the consultants, and the executing agency (EA). Initially SSTC was not happy with ADB's choice of consultant; the consultant's proposal had not been delivered to the appropriate body within SSTC (although they had received proposals from the other bidding consultants) and they were given little time to familiarize themselves with the contents during contract negotiations. They were also not happy with the international consultant's proposals for engaging domestic consultants, who they felt were not sufficiently knowledgeable about EST. Negotiations therefore became somewhat protracted.

6. However, these initial difficulties were overcome as the TA got under way. Domestic consultants were engaged in line with SSTC's suggestions and good relations were developed between SSTC and the international consultants.

## 3. Organization and Management

7. SSTC, later elevated to the Ministry of Science and Technology (MOST), was the EA. MOST took a strong ownership and engaged leadership of the TA and provided strong administrative support. The vice minister of MOST paid personal attention to the implementation of the TA. MOST set up a project management office for the TA and the consultants worked in the office alongside the MOST team or ACCA21, which worked closely with the consultants in an environment amenable to mutual discussions and exchanges.

## 4. Implementation Schedule and Financing Arrangements

8. The delay of about 10 months in TA closing was largely caused by MOST's request of extending the training programs and adding additional consultative meetings with industries, other ministries, as well as multilateral and bilateral development organizations. A total of \$550,000 from the Japan Special Fund was allocated to fund the entire foreign exchange cost and \$108,000 equivalent of local currency cost. The total undisbursed amount was \$237.42.

## 5. Supervision

9. TA execution received closed supervision from both the Government and ADB as indicated by their correspondence with the consultants. One inception mission and one TA review mission were used to facilitate and monitor the TA. MOST expressed high level of satisfaction with ADB's supervision during TA implementation.

## C. Evaluation of Outputs and Impacts

### 1. Outputs

#### a. Adequacy and Quality of Reports/Services Provided

10. The main output of the TA was the establishment of a Center for Environmentally Sound Technology Transfer (CESTT), with the objective of increasing the capacity of PRC industry sectors and enterprises to select, evaluate, import, and employ EST. A survey was conducted to

determine the need for and barriers to the development, transfer, and application of EST. Based on the results, an information system and databases, together with a computerized network for exchanging and disseminating information, were established. MOST indicated that it is satisfied with the quality of the outputs and services rendered by the consultants. It specifically indicated that it had intensive discussions at both the design and final reporting stage of the TA to ensure that its concerns and considerations were taken into account by the TA consultants and found the consultants quite responsive to its suggestions. Nevertheless, because of the manner in which the CESTT now operates, the procedures manual developed under the TA is found to be only "somewhat useful."

### **b. Training/Transfer of Technology**

11. A number of training and knowledge/technology transfer opportunities were built into the TA, and MOST encouraged working arrangements with the international consultants that promoted good technology transfer to its own staff working in the project management office. A train-the-trainer workshop was held and also a seminar for EST intermediaries. They were both seen as useful in relation to their objectives. In addition, international training trips were organized for three officials of MOST; to the Hong Kong Productivity Council in Hong Kong, the Asia-Pacific Center for Environmental Technology in Thailand, and the Regional Institute of Bio-Technology in Singapore. These training trips were viewed as highly effective. The individuals involved were sent to one of the three centers for a period of about a month to work within the center and learned as much as possible about the work they were involved with and their function. All of the international training participants are still with MOST.

12. MOST indicated that on-the-job training was an important form of training in this case. Consultants worked alongside MOST staff, guiding them through the process of setting up the CESTT. This approach ensured that (i) EA staff got full exposure to western ways of working and problem solving, and were also fully involved in the discussions and processes relating to the various issues that had to be addressed during the TA; and (ii) MOST was able to ensure that the international consultants took into account issues that it considered important and developed outputs that the it felt comfortable that it could implement. This approach by the EA helped to ensure the success of the TA and a good sense of ownership by government. A possible downside was that MOST may have overly exerted its influence over the TA consultants to the point where some of the original objectives, such as the need to develop a business strategy and 5-year plan, were overlooked.

### **c. Institution Building**

13. The TA has helped create a completely new institution in the PRC, CESTT, which has become a focal point within Government for information on EST. It continues to operate and has moved toward forming partnerships with some key industry sectors. The TA, through the development of the center, has generally increased the capacity of the PRC to promote the application of EST within its industries. However, MOST indicated that difficulties of the institutional development aspect of the TA were somewhat underestimated at TA formulation. However, with the strong leadership from MOST, this was corrected during TA implementation through intense interactions between consultants and MOST personnel through working together, discussions, and various on-the-job training activities.

## **2. Performance of Consultants**

14. MOST indicated that it was satisfied with the consultants' high level of commitment and professionalism, despite initial frictions, which occurred during TA negotiation. However, MOST felt that the team were relatively weak in terms of EST development and were "learning as they went."

## **3. Impact**

15. The developmental impact of CESTT was mainly achieved through promoting EST in the PRC, including disseminating data and information relating to EST to potential users; promoting research and the development of technologies to meet local needs; attracting foreign investment in EST development; promoting the transfer of EST from the PRC to other developing member countries; and promoting EST to complement and supplement end-of-pipe technologies for pollution control. Its existence has had a positive impact on Government, especially within MOST, where greater attention is now paid to promoting EST at the highest level.

16. CESTT remains operational today, which is in itself an indication of the success of the TA. However, it has not developed a business strategy as proposed under the TA recommendations and continues to rely on government funding to maintain its operations. With continuing reorganization and shifts in government focus, its future viability therefore cannot be guaranteed. This financial fragility has meant that the center has been unable to carry out some of the functions originally envisaged within the TA scope, including promoting EST at the individual company level. Rather, it has so far restricted itself to working with associations representing different manufacturing sectors.

## **4. Other Aspects**

17. The TA has not had any significant unintended impact.

## **D. Conclusions**

### **1. Overall Assessment**

18. The TA was and continues to be relevant by supporting a key aspect of the Government's sustainable development strategy, EST, which promises both economic and environmental benefits. The relevance of the TA was reinforced through close involvement of the EA, which contributed to the TA design and the terms of reference for engaging consultants. The TA was efficacious as it has largely achieved its main purpose, to increase the capacity of the industry sectors and enterprises to select, evaluate, import and employ EST through the establishment of a technology transfer center (para. 1). The implementation of the TA was generally efficient, and the 10-month delay in TA closing was principally caused by the time needed to extend the training activities and more consultative meetings, and the budget was considered appropriate by the EA for the work scope. On sustainability, CESTT has been unable to find a sustainable means of financing itself and growing its services, relying on funding from MOST and international development agencies to maintain its operations. However, with the current policy and legal environment, it is neither feasible nor desirable (from public welfare point of view) to make CESTT a full commercial enterprise. On institutional

development and other impacts, the training activities undertaken under the TA, both on-the-job training and the international training, were effective. In particular, the secondments of three MOST staff members to work in similar institutions within Asia were useful. Feedback indicated that the participants obtained a far greater depth of understanding of how such institutions operate and the role they play, than would have been possible in the more typical type of international training exercise, where a larger number of participants would have visited a number of such institutions for a few hours each to discuss issues and visit their operations. Overall, the TA is rated as successful.

## **2. Lessons Learned**

19. The following lessons, both positive and negative, may be learned from this TA.

20. First, the experience of this TA demonstrated, in a positive manner, that when the EA is fully engaged in TA initiating, design, and including greater involvement in the evaluation and selection of international and domestic consultants, the TA would have a better chance for success. MOST reported an incident<sup>1</sup> that occurred before contract negotiation and that almost derailed the entire TA. Fortunately, with the good will from all parties, the issue was successfully resolved. However, the incident highlights the urgent necessity to allow greater say by EAs in consultant selection.

21. Second, opportunities for knowledge and technology transfer should be maximized for all TAs but particularly for TAs with institutional development as its primary objective. With this TA, the need for institutional development was initially underestimated but was corrected through the course of implementation. With hindsight, the two main approaches used for training and capacity building, i.e., on-the-job training and in-depth international working training (as opposed to study tour abroad) proved to be highly effective.

22. Third, when TA outputs require continued funding for operation after the TA is completed, the TA should explicitly address the funding issue by identifying appropriate forms of funding. Where the funding is to be obtained through commercial activities, an appropriate business plan indicating target sectors, marketing arrangements, anticipated revenues and expenditures, etc, should be developed under the TA. This may also include some indicative market research.

## **3. Follow-Up Actions and Recommendations**

23. No particular follow-up actions are needed for the TA. As a recommendation, ADB should place greater emphasis on addressing long-term sustainability when devising a TA with institution building as a primary objective.

---

<sup>1</sup> According to the MOST official interviewed, MOST had virtually no involvement in consultant selection to the point that it did not even receive a copy of the winning proposal until they arrived in Manila for negotiation. MOST officials were asked to go back to the hotel, study the proposal, and come back the next day to start the negotiation. This incident was perceived to be highly disrespectful and created an uncondusive environment for TA negotiation and implementation.

## TA 2873-PRC: IMPROVEMENT OF ENVIRONMENTAL MANAGEMENT IN SHAANXI PROVINCE

### A. Background

1. Technical assistance (TA) 2873 was approved in September 1997. The TA aimed to (i) develop the Shaanxi provincial government's capacity to integrate environmental considerations into the planning and evaluation process; (ii) implement and update the medium- and long-term environmental protection plan for Shaanxi Province; (iii) develop planning and market-based pricing policies, management techniques, and procedures for promoting and attracting investments in clean technology, and phasing out of polluting and inefficient processes used in industries and public utilities; and (iv) improve the implementation and enforcement of environmental laws and regulations in consonance with changes adopted by the National Government. The TA was attached to an environmental improvement loan.<sup>1</sup> During the loan preparation, it was felt that there was a strong need to strengthen the environmental management in Xi'an, Xianyang, and Tongchuan, and in Shaanxi Province as a whole. Four key steps were identified to achieve effective environmental management, which included (i) establishing clear and rational policies, (ii) designing least-cost investments, (iii) ensuring effective implementation, and (iv) monitoring compliance and results. At each step, collection and dissemination were deemed crucial. Nevertheless, environmental data on both current conditions and impacts were scarce. In addition, the capability at both municipal and provincial levels to conduct least-cost analyses of different technologies and environmental investments, as well as identifying funding mechanisms, was also sorely lacking.

2. The TA consisted of two parts. Part A involved (i) reviewing the medium- and long-term environmental protection plan; (ii) developing financing and investment programs to implement the medium- and long-term environmental protection plan; (iii) reviewing investment laws relating to the transfer of clean technology to facilitate the flow of capital on clean technology in the province; (iv) developing policies, incentives and strategies for improving market-based instruments for environmental management, and phasing out polluting and inefficient industries; and (v) identifying the constraints and impediments to local and foreign investments in clean technologies in Shaanxi Province. Part B involved (i) revisions to existing provincial environmental management practices to improve enforcement and implementation; (ii) development of appropriate organizational, institutional, and legal changes for the local environmental protection bureaus to improve their management strategies; and (iii) provision of local and international training to the staff of Shaanxi Environment Protection Bureau (SEPB) in the implementation and enforcement of environmental management tools. The TA was closed in March 2000, compared to the scheduled closing date of January 1999. As the associated loan is still ongoing, no TA completion report has been completed.

### B. Assessment of Implementation Performance

#### 1. Design

3. The TA was generally well designed in the sense that the scope was appropriate for the objective. It also addressed relevant issues for improving environmental management at the municipal and provincial levels, including incorporating environmental considerations into planning, environmental regulations, and use of market-based instruments and policies to

---

<sup>1</sup> Loan 1543-PRC: *Xi'an-Xianyang-Tongchuan Environment Improvement*, for \$156.0 million, approved on 24 September 1997.

encourage adoption of cleaner technologies. The training programs included a study tour abroad and some local training. With hindsight, the international study tours could have been scaled down to cut the costs to allow the increase of the more cost-effective domestic training activities.

## **2. Engagement of Consultants**

4. A United Kingdom-based firm was engaged in accordance with the *Guidelines on the Use of Consultants* to execute the TA. The consultants who were experienced in the People's Republic of China (PRC) proved to be committed and effective working with the government to execute the TA.

## **3. Organization and Management**

5. The executing agency (EA) for Part A was Shaanxi Provincial Planning Commission (SPPC) and the one for Part B was SEPB. Each appointed a professionally qualified person as project manager to coordinate day-to-day activities and coordinate with other government agencies. In addition, a coordination committee, chaired by the deputy chairman of SPPC, was formed to oversee and coordinate the implementation of the TA. The TA also received high-level attention from senior provincial officials from the beginning, which ensured full support for the TA and buy-in of TA findings and recommendations.

## **4. Implementation Schedule and Financing Arrangements**

6. The TA's 5-month delay in closing date, in this case, probably had a positive impact on improving the quality of TA outputs by extending more time for training and allowing the EAs to digest TA findings and recommendations. The Asian Development Bank (ADB) allocated \$935,000 from its Japan Special Fund for the TA, which was to cover the entire foreign exchange cost and \$315,000 equivalent local currency cost. Actual disbursement amounted to \$921,455.

## **5. Supervision**

7. ADB provided close supervision throughout the TA through correspondence and through one inception and two TA review missions. The two EAs expressed a high degree of satisfaction with ADB's assistance on various technical and logistic matters.

## **C. Evaluation of Outputs and Impacts**

### **1. Outputs**

#### **a. Adequacy and Quality of Reports/Services Provided**

8. The main outputs from the TA were the external and domestic training programs and a consultant's report, which provides a series of recommendations and time-bound action plans to improve Shaanxi's environmental management. In addition, a range of computer and other office equipment was provided under the TA.

9. Discussions at a joint meeting with SPPC and SEPB indicated that the consultants' final report was considered to be of very good quality and met the needs of the provincial government. This satisfactory output appears to have been achieved through good collaboration

between the international and domestic consultants, which helped promote detailed discussions on many of the key issues, and active participation in discussions by representatives of both EAs. The fact that many of the domestic consultants were from government research institutions facilitated this cooperation and enabled all the major concerns of the government to be taken into account and addressed in the report.

10. In addition to the final report, the TA was considered by the EAs to have made a major contribution to the following objectives of the TA:

- (i) development of the provincial government's capacity to integrate environmental considerations into the local planning and evaluation process;
- (ii) updating and implementation of the medium- and long-term environmental protection plans for Shaanxi Province;
- (iii) planning and development of market-based pricing policies, management techniques, and procedures for promoting and attracting investment in cleaner technology in the province;
- (iv) phasing out of polluting and inefficient processes used in industries and public utilities; and
- (v) improving the implementation and enforcement of environmental laws and regulations in consonance with the recent changes adopted by the National Government.<sup>2</sup>

11. The equipment provided under the TA was considered appropriate and of good quality, although the computers, which are operating on a Windows 98 platform, are now considered rather outdated. However, they remain useable.<sup>3</sup> Overall, the TA appears to have largely achieved its targeted outputs.

#### **b. Training/Transfer of Technology**

12. Training and other activities for the transfer of technical know-how can be summarized as follows: (i) two international study tours were organized by the international consultants, one for SPPC and one for SEPB, attended by 20 senior officials from the two agencies;<sup>4</sup> (ii) five local training workshops were organized, each attended by about 50 provincial and municipal government officials;<sup>5</sup> and (iii) a tripartite meeting consisting of two days of workshops was held at the close of the TA to allow the consultants' findings and recommendations to be presented to and discussed with provincial and municipal government officials.<sup>6</sup> The majority of those participating in the training programs are still employed with SPPC and SEPB, both of which indicated that the international training had significantly lifted the environmental awareness and knowledge of those who attended, however, it was felt that perhaps too much time had been

<sup>2</sup> SEPB indicated that Shaanxi Province has recently passed three pieces of provincial legislation relating to water pollution and the control of solid waste, which was partly attributable to the TA.

<sup>3</sup> The Operations Evaluation Mission experienced the use of a projector, which was part of the other equipment provided under the TA.

<sup>4</sup> The delegates visited various government and private institutions within the United Kingdom including AEA technology; the Department of Environment, Transport, and Regions; Environment Agency for England and Wales; and Thames Water.

<sup>5</sup> These workshops were run by members of the domestic consulting team who had attended the international study tours, and the workshop materials were translated into Chinese to aid local understanding.

<sup>6</sup> The first workshop was attended by about 40 participants representing key government organizations as well as academic and research institutions, and a policy dialogue was held to discuss the relevance and adoption of TA recommendations. The second workshop was attended by senior government officers from SPPC and SEPB.

spent at lectures at the host organization and not enough in meeting government and other officials. Also, the two training trips abroad had consumed a significant portion of the TA budget, and in hindsight it is clear that part of this money could have been more effectively spent on providing additional local training.

### **c. Institution Building**

13. There is little doubt that the training programs and other TA activities have had a significant impact on improving the awareness and the understanding of those involved in terms of managing environmental issues and promoting cleaner technologies. In doing so, they have potentially contributed to the development of the provincial government's capacity to integrate environmental considerations into the planning and evaluation process. Exposure to international experts and other international organizations during the international training programs also had a positive impact in terms of local capacity building. The Operations Evaluation Mission (OEM) noted that most of the participants at the meeting who attended the various training programs are knowledgeable about environmental issues and appear to form the backbones of their respective agencies.

### **2. Performance of Consultants**

14. SPPC and SEPB expressed a high level of satisfaction with both the international and domestic consultants. As assisted by the diligent work of domestic consultants and with a team leader of the international consultants who was experienced and sensitive to local culture, very good working relationships were established between the international and domestic consultants, and the EAs, with the domestic consultants undertaking much of the day-to-day work guided by the international consultants. There was continued dialogue between the consulting team and officials of SPPC and SEPB. These activities were seen to play an important role in the success of the TA and clearly facilitated a high level buy-in of the findings and recommendations.

### **3. Impact**

15. Evidence gathered by the OEM indicates that the TA may have influenced the way in which environmental improvement is perceived in Shaanxi. Previously, although environmental protection was included in Shaanxi's Ninth 5-Year Plan, it was more considered as a divisional planning issue. In the Tenth 5-Year Plan, environmental protection was more integrated with the economic planning process and there were about 20 items relating to the environment. This was partly attributable to the TA. The provincial government recently passed three pieces of legislation relating to water pollution and solid waste management in 2002.<sup>7</sup> Spending on environmental protection rose to 2.4% of the provincial gross domestic product in 2002, which is higher than the national average. One senior government official is said to have completely changed his mind about the importance of environmental protection after attending one of the study tours abroad, and the group who met with the OEM indicated that interdepartmental communication on environmental issues has significantly improved since the inception of the TA. There is also a much greater understanding of the role that environment plays in social and economic planning. There is also a perception that, as the Shaanxi government places increasing importance on environmental considerations, environmental awareness among the general population and the local business sector is also growing.

---

<sup>7</sup> At the meeting with the OEM, the SPPC and SEPB representatives stressed that these are provincial legislations, not implementation guidelines for implementing national legislations.

16. Interestingly, the EAs mentioned that it was initially felt by local officials that some of the recommendations made in the TA were too advanced for the situation in Shaanxi. However, many of them are being implemented and it is now accepted that the recommendations were in fact appropriate. In 1999, the final report was translated into Chinese and was included as a supplement to the magazine “Shaanxi Environment” published by the province’s environment protection bureau and typically read by government officials and local environmental professionals. The supplement carried an introduction written by the then vice-governor (currently the governor) of Shaanxi Province extolling the contents of the report to government officials.

#### **4. Other Aspects**

17. The TA has not had any significant unintended impact.

### **D. Conclusions**

#### **1. Overall Assessment**

18. The TA was timely and highly relevant in addressing the urgent needs of the Shaanxi government in improving its environmental management capacities as physical investments in environmental improvement accelerated. Compared to central government agencies and some of the more developed provinces, Shaanxi’s capacities for environmental planning and management were more constrained and its environmental challenges were and continue to be greater. The TA was comprehensive and covered major issues involved in environmental management at the provincial level, including incorporating environmental considerations in planning, environmental regulations, and the use of market-based instruments and policies to encourage the adoption of cleaner technologies. The TA was highly efficacious as nearly all of the intended outputs were achieved, which jointly contributed to the substantive achievement of the TA’s objectives. The value-added or marginal impact of the TA appeared to be high partly due to the relatively weak base of Shaanxi’s environmental management capacities. On efficiency, although the TA experienced a 5-month delay in closing time, the original schedule appeared to be overly optimistic and unrealistic. From the TA impact point of view, the prolonged implementation period may have even been beneficial since the EAs had longer time to “digest” the findings and positive experience. They considered the budget somewhat tight for the scope of work, but suggested that perhaps too many resources had been spent on international training that could have been better spent on increasing domestic training in a more cost-effective way. Overall, the TA was efficient. The TA impact is likely to be sustainable and it has had a significant impact on the provincial government’s institutional development and environmental improvement. Overall, the TA is rated as highly successful.

#### **2. Lessons Learned**

19. The overall success of the TA can be mainly attributed to several factors. The TA had high relevance (in terms of meeting the government’s needs in a timely fashion), strong ownership by the government, and a high level of commitment from both international and domestic consultants. A key difference between this TA and several others included in this evaluation lay in the good collaborative spirit fostered during the TA implementation among all parties involved. In particular, the eight highly qualified domestic consultants from key research institutes within Shaanxi played a vital role in bridging any communication gaps through

translating documents and providing expert opinions on key findings and recommendations. This ensured that the recommendations were both valid and practicable for the local conditions.

20. Other lessons included the following. First, EAs should be fully engaged in TA development and design to ensure that the TA is relevant to them and to encourage their ownership and subsequent active participation. Second, mechanisms should be in place to allow EA staff to participate in the day-to-day progress of the TA to maximize knowledge transfer and ensure that local circumstances and culture are understood by the international consultants and are adequately addressed in the TA findings and recommendations. Third, the TA scope should incorporate means by which key local decision makers can be engaged in the development of the TA recommendations, particularly where they relate to policy. Fourth, continuing tripartite dialogue between ADB, EAs, and consultants should be maintained on TA progress, and ADB should see the maintenance of positive relations between all parties as a key part of its role.

### **3. Follow-Up Actions and Recommendations**

21. No follow-up actions are needed for the TA except that a completion report should be completed as part of the project completion mission for the associated loan (footnote 1). There was a genuine feeling among the EAs that too much of the TA budget had been spent on the engagement of the international consultants. It would have been more cost effective to allow domestic consultants to do more of the work while maintaining the role of international consultants as a supervisor and coach. As a general recommendation, ADB may consider, in its future TAs to the PRC, increasing the budget and responsibility of domestic consultants while granting greater say for the EAs in the selection of consultants, both domestic and international.

## **TA 2906-PRC: LEADERSHIP TRAINING IN URBAN ENVIRONMENTAL MANAGEMENT IN KEY CITIES**

### **A. Background**

1. Technical assistance (TA) 2906 was approved in November 1997. It aimed to upgrade the knowledge and skills of senior local government officials in the 47 priority cities to plan and implement environmental infrastructure, and to develop and enforce local environmental policies, rules, and regulations in consonance with the national environmental policies and directives in the cities. The other objectives were to (i) develop the capacity of the National Environmental Protection Agency (NEPA, which was later elevated to a ministerial agency renamed as the State Environmental Protection Administration [SEPA]) to train local government officials other than in the 47 priority cities, and (ii) assist local governments in the development of environmental policies and implementation of environmental regulations. The conception of the TA originated from the ongoing dialogue between the Asian Development Bank (ADB) and NEPA on the need to integrate environmental protection early in the urban planning process. ADB's intervention came after a city had formulated its plan and started implementing a particular project, e.g., wastewater treatment. It was felt that by providing training for key decision makers and senior officials in charge of city planning and infrastructure development, i.e., deputy mayors and directors of municipal environmental protection bureaus (EPBs), greater impacts could be achieved in a more cost-effective manner. The People's Republic of China (PRC) was undergoing a profound shift from a centrally planned economy, in which land and energy uses were entirely governed by government policies and plans, to a market-based economy where prices are the main driving forces for resource allocation. The traditional planning mode was by and large still the predominant way of conducting business for governments at all levels. It was under these circumstances that the Government asked ADB to assist NEPA in conducting leadership training on environmental management.

2. The scope of the TA included (i) developing trainers to train local governmental officials in 47 priority cities; (ii) strengthening the library and information system of NEPA's office in Beijing for the development and dissemination of training materials, environmental references, and other relevant information to key government officials; (iii) developing training methodologies and techniques for local trainers to continue the training program to other local governments after completion of the TA; and (iv) training key local government officials in the 47 priority cities using the library resources, information system, and training methodology and techniques. The TA was closed in December 1999, about 3 months behind the scheduled closing date (30 September 1999). The TA completion report was circulated in June 2000.

### **B. Assessment of Implementation Performance**

#### **1. Design**

3. Although the TA was, and still is, highly relevant in addressing a key aspect of effective environmental management (i.e., low awareness and lack of knowledge on incorporating environment protection in infrastructure planning, among senior municipal officials), the design of the TA was less than effective. ADB and SEPA appeared to have underestimated the difficulties associated with bringing senior officials together and carrying out the training program in the Chinese language, including both logistical and technical difficulties. The logistical difficulties were mainly caused by the fact that many of these high-ranking target participants maintained a very busy schedule and required approval from the central Government to participate in the training program. The technical difficulties included those

associated with compiling a training manual that is both useful and suitable for the nontechnical high-level audience.

## **2. Engagement of Consultants**

4. A consortium consisting of a United States (US)-based consulting firm and a United Kingdom (UK)-based firm was engaged in accordance with ADB's *Guidelines on the Use of Consultants* to execute the TA. The US-based firm was specialized in training and the UK-based firm had a permanent office in Beijing, which played a vital coordinating role with the executing agency (EA) and domestic consultants. However, the proposed team leader of the international consultants became seriously ill half way through the TA and could no longer fulfill the designated responsibilities. Although the replacement team leader was technically well qualified for the position, the consultant lacked the leadership qualities necessary for the position and the overall consulting team was deficient in the credentials needed for a training program targeting such senior-level participants.

## **3. Organization and Management**

5. NEPA, and later SEPA, was the EA. The municipal governments of Shenzhen and Guilin provided the training venues and administrative support for the two training programs. The organization of the training programs was highly complex as traveling and participating in the training programs by some deputy mayors required high-level clearance. SEPA mobilized a large team in organizing the training seminars with no major delays.

## **4. Implementation Schedule and Financing Arrangements**

6. A 3-month delay in submitting final outputs was mostly caused by the time needed to replace the mission leader. ADB allocated \$600,000 for the TA and \$567,078 was utilized, which covered all the foreign exchange cost and about \$200,000 equivalent local currency cost. In addition, SEPA mobilized the private sector to co-sponsor the training programs in addition to budgetary support provided by the Government through SEPA. Total domestic contribution amounted to approximately \$300,000 equivalent.

## **5. Supervision**

7. The TA received high-level attention and supervision from the beginning. The administrator for SEPA, the chairman of the Environment Protection and Resources Conservation Committee (EPRCC), and a member of the Politburo in charge of personnel, participated, opened, and closed the two training sessions. ADB provided close supervision through correspondence, an inception mission, and a total of four TA review missions, for which SEPA was highly appreciative.

## C. Evaluation of Outputs and Impacts

### 1. Outputs

#### a. Adequacy and Quality of Reports/Services Provided

8. Key outputs from the TA included (i) developing trainers to train local government officials in 47 priority cities; (ii) training key local government officials in the 47 priority cities, such as Shenzhen and Guilin; (iii) developing training methodologies and techniques for local trainers to continue the training program with other local governments after completion of the TA; and (iv) strengthening the library and information system of SEPA's office in Beijing. Outputs included preparation of four volumes of an urban environmental management manual in English: volume I was the core volume, volume II for vice mayors, volume III for EPB directors, and volume IV for economic decision makers.

9. However, according to the SEPA official interviewed, although the basic concepts and principles of the four volumes of the training manual remained valid, they had limited value when it came to compiling a Chinese version suitable for the proposed use because SEPA viewed them as "too technically detailed" and "unsuitable for the high-level officials and the realities" in the PRC. The TA consultants then decided to continue compiling the English version, mainly in order to satisfy ADB's requirements as specified in the consultants' terms of reference. The training manuals eventually used for the training were compiled in Chinese by SEPA and incorporated some of the concepts included in the English version. In addition, the trainers trained through an international study tour and other means did not work as "trainers" *per se*. Rather, they functioned as discussants during discussions. Finally, as envisaged, the TA strengthened the library and information system of SEPA's office in Beijing by providing environmental references and training materials to its library and information system.

#### b. Training/Transfer of Technology

10. TA 2906 had training of government officials as the primary focus. Nonetheless, the training materials produced under the TA were not used during training sessions. The "training" was mostly done by the chairman of EPRCC, the administrator of SEPA, and three professors from Tsinghua University, together with other experts. The training took the form of speeches and presentations during the morning sessions and discussions during the afternoon sessions. Although the approach deviated somewhat from the original design, the two workshops appeared to have achieved their objectives by raising the participants' awareness of environmental issues and upgrading their environmental knowledge. An interview with the former director of the Guangzhou Municipal EPB who participated in the training with Guangzhou's deputy mayor, suggested that the training has been very beneficial for him personally and for the city's planning and environmental management. The areas that were particularly useful for him included new project financing mechanisms: build, operate, and transfer, and World Bank or ADB financing, etc. He felt that including deputy mayors in the training program was beneficial because they are the key decision makers. He suggested that this type of training could make the job of EPB directors easier because of the mayors' increased awareness of environment protection. On this basis, he considered that such training should be continued, since the mayors and EPB directors change at least every 5 years in most cities. Building on the experience and lessons learned from the TA, SEPA has been continuing its training activities with other provincial/municipal officials.

### **c. Institution Building**

11. Even though the TA did not follow its original design, it has resulted in upgrading the awareness and basic knowledge of vice mayors and senior local government officials in the 47 priority cities in some key areas relating to environmental improvement and environmental planning. Integration of development planning and environmental protection at the municipal level has been increasingly evident in the PRC and this TA has contributed to the achievement.

#### **2. Performance of Consultants**

12. SEPA expressed dissatisfaction with the performance of the international consultants. The problems started with the first mission leader who, according to the SEPA official interviewed, was “arrogant and insensitive” to SEPA’s needs. After the mission leader fell seriously ill, the replacement mission leader was much more sensitive to meeting SEPA’s needs but was constrained by the contractual arrangements to meet ADB’s demands. Overall, although the consultants were generally technically qualified, they lacked the high “caliber” and experience in conducting such high-level training sessions.

#### **3. Impact**

13. The long-term developmental impact of the TA may be best viewed from two aspects. First, as a result of the raised awareness of environmental issues and the need to incorporate environmental improvement in future development plans among key municipal decision makers, many cities—e.g., Guangzhou and Zhuhai, whose deputy mayors participated the training—have demonstrated strong commitment to integrating environmental protection into their efforts toward sustainable development. Zhuhai became an Environmental Model City, while in Guangzhou, the city’s transport planning has been revised to incorporate vehicular emission control objective and measures. There are other policy factors that contributed to this trend, but the TA played a role in facilitating it. Second, the TA demonstrated the high demand for this type of training and, as a result, SEPA has been continuing to provide similar training to municipal and provincial officials from its own resources, holding at least one workshop for different levels of officials each year.

#### **4. Other Aspects**

14. A somewhat unintended impact was achieved by the TA: the experience of the TA has caught the attention of the Central Government, which has decided to apply the TA’s training methods to other departments/ministries of the Government.

### **D. Conclusions**

#### **1. Overall Assessment**

15. The TA was and continues to be relevant by addressing a key element of the PRC’s sustainable development strategy, i.e., low awareness and capacity among local planning officials and decision makers. However, it was less efficacious in that it successfully met an identified need to increase environmental awareness among senior provincial and municipal officials, but there was clearly a breakdown in communication between ADB and the EA on what was necessary in terms of the training to be provided under the TA. This resulted in materials being produced by the TA consultants to meet ADB requirements, but which consequently turned out to be of little use to SEPA when it came to meeting on-the-ground training needs. It

also appears that the difficulties and funding needs associated with bringing senior officials together and with preparing the training materials in a PRC context were somewhat underestimated at TA formulation. On efficiency, despite the difficulties encountered, the TA was executed relatively on time with only a 3-month delay. Although the total cost was \$567,000, well within \$600,000, most of the money was spent on preparing the training materials, which were of little use. Overall, the TA was less efficient. On sustainability, despite the design flaws, the training methods developed and revised during the TA have continued to be applied in follow-up training activities and, thus, the TA impact appears to be sustainable. The TA has had positive institutional development impact and impact on environmental improvement. Overall, the TA is rated as partly successful.

## **E. Lessons Learned**

16. The following lessons can be learned for consideration in future TAs. First, the experience of the TA once again reinforced the need for ADB's TAs to be more client oriented by paying greater attention to ensuring that a TA meets the real and not perceived needs of the EA. This is a necessary condition for better ownership of TA implementation by the agency. Second, for future training TAs that involve high-level officials and in a non-English language environment, adequate consideration should be given to designing a training program that is technically appropriate for the level of seniority and also to be delivered by experienced and quality trainers (both international and domestic). In this case, the train-the-trainer approach essentially failed and the "training" was reduced, to a certain extent, to official speeches by high-ranked officials

### **2. Follow-Up Actions and Recommendations**

17. Although no direct follow-up actions are needed for the TA, ADB may wish to continue to monitor the progress of SEPA's training activities and seek valuable experience. As a general recommendation, the experience of this TA highlights the need to reform ADB's future advisory TA design through (i) granting greater say to the EA in consultant selection, to reinforce the notion that the EA, not ADB, is the ultimate client; (ii) considering greater flexibility with TA budget for TAs with training as a primary objective, by allocating greater amounts to cover training expenses, along the lines of similar funding arrangements adopted by the World Bank. Currently, SEPA felt that too much of the budget had been spent on the international consultants for little return while no money had been allocated for helping to finance attendance at the training functions.

## **TA 2951-PRC: PROMOTION OF MARKET-BASED INSTRUMENTS FOR ENVIRONMENTAL MANAGEMENT**

### **A. Background**

1. Technical assistance (TA) 2951 was approved in December 1997. It sought to support improved environmental management through (i) an analysis of the most suitable market-based instruments (MBIs) in the People's Republic of China (PRC); and (ii) the formulation of a program for their adoption, specifically in the water and energy sectors. At the time of TA formulation, the PRC had already started to experiment with a series of MBIs. For example, it had implemented a pollution charge system that involved (i) collection of fees from polluters for pollutant discharge, and (ii) a pollution levy fund established from the fees to provide financial incentives for pollution control activities (loans and grants). The pollution charge covered wastewater, air emissions, solid waste, noise, and radioactive wastes. Product charges had also been implemented since 1986. Sulfur dioxide emission charges were piloted in two provinces and nine cities; tax rates were adjusted in environmental protection projects and there was also considerable interest in the application of environmental taxes. Despite these various strong initiatives, the design and implementation mechanisms of the existing MBIs suffered from some inherent flaws and the effectiveness of these MBIs in terms of pollution reduction was limited. The Government requested assistance from the Asian Development Bank (ADB) to analyze and devise a plan to pilot test the most suitable MBIs for environmental management. ADB also viewed this as a good opportunity to promote market-based policies in the PRC to supplement and/or to reduce its reliance on the traditional command-and-control regulatory approaches.

2. The scope of the TA was to cover the following activities: (i) review existing environmental policies related to MBIs and draw experiences from other economies in the region; (ii) propose improvements or replacements, including roles of central, provincial, and local agencies, and management of collected revenues; (iii) review relevant legislation to identify opportunities and limitations for implementing MBIs; (iv) evaluate the effectiveness of MBIs already used; (v) identify institutional requirements to facilitate the introduction of MBIs, i.e., inventory and valuation of resources, and monitoring capabilities, with reference to the existing institutional setting; (vi) analyze the economics of existing MBIs and projecting the costs and benefits of potential MBIs; (vii) list and outline all of the essential tasks that have to be completed to implement feasible MBIs; and (viii) develop an action plan for an identified set of MBIs for different sectors, including task scheduling, implementation arrangements, cost estimates, pilot testing procedures and other considerations. It was to be implemented in Fujian and Shaanxi provinces and in Beijing municipality. The TA was closed in February 2001, almost 2 years after the original closing date (31 March 1999). The TA completion report was circulated in June 2002.

### **B. Assessment of Implementation Performance**

#### **1. Design**

3. The TA was conceived during a period when MBIs were almost perceived to be a panacea in both the academic and development communities for environmental management and pollution control. It would appear that the initial intention of the then National Environmental Protection Agency (NEPA) was for a TA focusing on environmental taxation. This was expanded during discussions with the ADB to cover the whole range of MBIs. With hindsight, although the basic rationale of the TA was sound, the resulting scope may have been overly ambitious by aiming to tackle all the pertinent issues in one TA, e.g., legal, institutional,

monitoring, etc. An inherent risk associated with a broad work scope is that the outputs of the TA in the form of roundtable discussions and recommendations may have been too general and “ahead of its time” to be useful. An alternative approach, e.g., focusing on promoting and reforming a few MBIs, including existing ones such as the pollution levy system and sulfur trading, could have generated more impacts.

## **2. Engagement of Consultants**

4. A multidisciplinary team of international and domestic consultants led by a United States-based consulting organization was engaged to execute the TA in accordance with ADB’s *Guidelines on the Use of Consultants*. Although the consultants were technically qualified, delays to the start of TA after award and the various experts’ busy schedules and other commitments led to major delays in project implementation, which adversely affected the TA outcome and impact.

## **3. Organization and Management**

5. NEPA was the Executing Agency, later elevated to a full ministerial-level agency renamed as the State Environmental Protection Administration (SEPA). NEPA established a project office for the TA and nominated a qualified staff member as the project coordinator, who was responsible for overall supervision of TA implementation, and liaison with various concerned agencies. In addition, a steering committee, chaired by NEPA and comprising representatives from the People’s Bank of China, the Ministry of Finance, the State Development and Planning Commission, and the State Economic and Trade Commission was set up to oversee implementation. The environmental protection bureaus (EPBs) of the two participating provinces and Beijing Municipality were the project implementing agencies for the case studies, assisting NEPA in coordinating with local government agencies. Given that the Operations Evaluation Mission (OEM) was unable to interview anyone from SEPA involved in the TA, it is not clear how effectively these arrangements worked (para. 8).

## **4. Implementation Schedule and Financing Arrangements**

6. The TA implementation experienced a delay of approximately 2 years. This was largely caused by an initial delay in the start of the TA after award, which led to scheduling conflicts among the international consultants, and by the unrealistic nature of the original schedule. A total of \$697,000 from the Japan Special Fund was allocated to fund the entire foreign exchange cost and \$206,000 equivalent of local currency cost. The total undisbursed amount was \$47,667.

## **5. Supervision**

7. One inception mission and one TA review mission were carried out. The OEM could not meet the department of SEPA for executing the TA and, therefore, its reaction to ADB’s assistance and supervision could not be assessed.

## **C. Evaluation of Outputs and Impacts**

### **1. Outputs**

#### **a. Adequacy and Quality of Reports/Services Provided**

8. Key outputs from the TA included (i) documentation of MBI opportunities in the PRC; (ii) case studies on incentive-based approaches to water pollution management in the Minjiang Basin of Fujian Province, sulfur dioxide air pollution in Shaanxi Province, and mobile source emissions in Beijing; and (iii) an action plan for the implementation of MBIs. However, the Foreign Economic Cooperation Office of SEPA could not arrange a meeting for the OEM to interview the department of SEPA responsible for executing the TA. Instead, the OEM interviewed a domestic consultant who participated in the TA. According to ADB documentation and the consultant, whose views did not necessarily represent those of SEPA, the TA has achieved its intended outputs. The reports and other TA outputs, such as the case studies, proposed piloting activities, and proposed action plans are viewed as theoretically sound, although the extent to which the TA has contributed to the application of MBIs for environmental management in the PRC was not clear from the interview. The consultant suggested that the scope of the TA appeared to be too broad and general. Instead of a broad overview of all the possible MBIs, the TA could have achieved more with the same resources by focusing on a few MBIs that were either being used in the PRC but with various design and implementation flaws (e.g., pollution levy), or MBIs that have a big potential to be used in the PRC (e.g., emission trading, reforms of water tariffs, and energy pricing).

9. A series of recommendations of potential MBIs was made by TA consultants. The adoptive status of the recommendations and the Government's view of them, as suggested by the domestic consultant interviewed (but not necessarily the official view), are summarized in Table A6. As indicated, while the Government has started to experiment with some of them, e.g., emission trading, most of them were regarded as "too early to be seriously considered for application."

**Table A6: TA Recommendations and Adoptive Status**

Recommendation	Effect
Reform the pollution levy system	The Government fully agrees and is implementing the measure. Before this technical assistance (TA) the Government was already taking this approach.
Increase the rate for the sulfur dioxide charge	The Government fully agrees and is implementing the measure.
Establish fuel taxes to replace the consumption tax on gasoline	The Government feels that it is too early to implement this reform, given the current situation in the People's Republic of China.
Increase water tariffs to reflect full costs of water production	The Government agrees in principle and is gradually increasing water tariffs. However, they are not at the level of full cost recovery yet.
Continue to liberalize energy markets so that energy prices reflect the full costs of energy production	The Government feels it is too early to seriously consider this at present.
Expand trading programs among point sources of air and water pollution within the total amount control system	The Government is undertaking a piloting program to assess the value of this measure.
Promote banking programs for making point source pollution levy system revenues available for more cost-effective treatment by non-point sources of water pollution	The Government is not implementing this measure. It previously had a pollution charge system, but about 85% of the charge was repaid to the polluter. The approach now taken is to implement better control systems.
Establish an emissions charge to reduce emissions from mobile sources of air pollution	The Government feels it is too early to seriously consider this at present.
Establish a product charge on sulfur content of diesel fuels to encourage production and use of cleaner fuels	The Government feels it is too early to seriously consider this at present.
Establish congestion tolls to reduce congestion in the use of discrete road segments, bridges, tunnels	The Government feels it is too early to seriously consider this at present.
Augment total amount control system by adapting environmental funds to allocate basin-wide or air-shed investment	The Government feels it is too early to seriously consider this at present.
Introduce cost-effectiveness criteria into evaluation of public/private investments in air pollution control and waste-water treatment technologies	The Government fully agrees and is implementing the measure. Before this TA the Government was already taking this approach.

## **b. Training/Transfer of Technology**

10. Workshops and two high-level policy roundtable discussions were held as part of the TA. The Beijing workshop was attended by various agencies including State Development Planning Commission, Ministry of Finance, and the People's Bank of China and was considered to be useful in informing these agencies of the variety of MBIs being used in different parts of the world to promote environmental protection. Three case studies were developed: one for

Shaanxi focusing on air emissions trading, one for Fujian focusing on incentive-based approaches to water pollution management, and one in Beijing focusing on vehicle emissions. According to ADB documentation and the interview with the domestic consultant, the Shaanxi case study and workshop were considered to be the most useful of the three, although the OEM could not independently confirm this due to lack of institutional memories by Shaanxi EPB.

### **c. Institution Building**

11. Although the TA has probably raised the awareness within SEPA in relation to the potential for using MBIs to achieve environmental goals, detailed impact in this regard could not be assessed due to the fact that the OEM could not meet the department of SEPA that executed the TA.

### **2. Performance of Consultants**

12. The consultant interviewed by the OEM indicated that the international consultants were impressive and “world class,” particularly in relation to the international use of MBIs. However, they were not found to be knowledgeable in regard to the situation in the PRC. Consequently, the domestic consultants had to spend significant time in educating the international team on what might be relevant to the local conditions. This lack of local knowledge may have been a factor in the final outputs not being seen by Government as particularly useful. Communication with the responsible ADB officer also indicates that the consultants had such a tight schedule elsewhere in the world that they had staffing difficulties once the TA schedule missed certain windows of opportunity, which caused a delay of almost 2 years.

### **3. Impact**

13. The TA was conceived around the time when the PRC was moving toward World Trade Organization entry and had started to introduce a range of market-based measures, including pollution charging schemes, to tackle its environmental problems. The TA provided an insight to those government departments involved into the role that MBIs could play in helping the PRC achieve its goals. Although the consultant interviewed considered the workshops quite useful, but there has been little effort to disseminate the findings of the TA in general. ADB published a public information document on the TA, but the consultant was not aware of it. In general, the impact of the TA appeared to be limited.

### **4. Other Aspects**

14. The TA has not had any significant unintended impact.

## **D. Conclusions**

### **1. Overall Assessment**

15. Although the TA was relevant to the Government’s sustainable development strategy at the time of TA design and, with World Trade Organization membership, remains relevant today as the PRC continues to strengthen its environmental management through market-based policies and instruments. However, the TA was less efficacious as the TA scope was overly ambitious and general, and the resultant TA outputs were considered by the Government to be not particularly useful. The objective of supporting improved environmental management has not been achieved as the analysis may have been too general and very few recommended

MBIs have so far been adopted. The TA was less efficient as it experienced a delay of almost 2 years. Although the OEM could not meet the department that executed the TA, it is felt that the long-term sustainability is unlikely because there seemed to be little institutional memory of the TA. For the same reason, the impact on institutional development could not be fully assessed. Based on the OEM's observation and the meeting with the domestic consultant, such impact could be minimal. However, the OEM is unable to provide a rating due to lack of official information from SEPA.

## **2. Lessons Learned**

16. A number of lessons can be learned from the TA. First, ADB should be careful not to over-impose its own agenda on a TA design to the point where it starts to lose its relevance or its ability to meet the needs of the Government. Information gathered by the OEM indicates that when SEPA first approached ADB, their thoughts were to focus on environmental taxation. If the scope had been restricted to cover specific alternatives or measures to support the introduction of environmental taxation rather than trying to cover all MBIs, the TA might have achieved greater "buy-in" by Government. Second, ADB should ensure that the designated executing agency fully supports the TA and is in a position to provide adequate resources to meet the needs of the TA, to maximize opportunities for knowledge/technology transfer and to push through the recommendations of the TA as appropriate. In this case, SEPA did not demonstrate an adequate level of ownership and may have been too overstretched to provide the level of support and follow-through necessary to have made the TA more of a success. Third, in cases where knowledge of the local context is particularly important, care should be taken in the recruitment of consultants to ensure that they have such understanding. In this particular case, it was suggested that a team leader with particular knowledge of the PRC conditions would have been a useful addition.

## **3. Follow-Up Actions and Recommendations**

17. ADB may consider a follow-up mission, perhaps in conjunction with other evaluation missions, to complete the evaluation. The OEM also recommends SEPA carry out a wider dissemination of the TA outputs, in particular of the range of MBIs available to support environmental improvement.

## **TA 3079-PRC: TECHNICAL ASSISTANCE CLUSTER FOR THE PROMOTION OF CLEAN TECHNOLOGY**

### **A. Background**

1. Technical assistance (TA) 3079 was approved in September 1998. The overall goal of the TA cluster was to help improve national-level policies, institutional capacities, and financing mechanisms for the promotion and application of cleaner production (CP) technology to achieve sustainable development. Specifically it aimed to support the use of CP technology and associated pollution reduction by (i) improving the policy framework to remove current barriers and constraints; (ii) building the capacity of the concerned agencies to strengthen environmental management; (iii) improving access to information on successful, financially attractive CP experiences, and (iv) developing new project-financing concepts and market-oriented incentives to introduce and adopt CP in a cost-effective manner in small and medium-size enterprises. The TA was formulated at a time when the Government had started to initiate measures to promote the upgrading of industrial technology in the People's Republic of China (PRC). Some 66,000 inefficient and highly polluting factories were closed down in 1996-1997 alone, and steps had been taken to encourage and help other industries to upgrade their processes with modern efficient and environmentally sound technologies, with chemical, metallurgical, building materials and light industries being chosen as key sectors for implementing CP. However, several key obstacles to investing in CP in the PRC have been identified at the national level, including policies, prices of natural resources and energy, weak management expertise, and lack of know-how and access to information on CP.

2. Because of the involvement of several national-level agencies in CP activities and the perceived need to focus on all the related issues in a comprehensive and holistic manner, the cluster approach, adopted for the first time, was regarded as the most appropriate modality for providing the TA. The rationale was that this approach would help integrate economic policy making, legislation and technical support, and an institutional financing mechanism in promoting CP. The TA cluster consisted of six subprojects: (i) policies for promotion of cleaner technology, (ii) national network for cleaner technology transfer, (iii) legislative support for cleaner technology, (iv) cleaner technology development, (v) environmental management for cleaner technologies, and (vi) financing mechanism for cleaner technologies. The TA was scheduled to close in June 2001, but it was still ongoing at the time this report was prepared (August 2003).

### **B. Assessment of Implementation Performance**

#### **1. Design**

3. The design of the TA cluster was understandably less than straightforward as it was the first of its kind. Issues were raised as to the coordination and division of responsibility among different ADB departments, TA scope and budgeting, approaches for consultants' recruitment, and approval procedures for starting various subprojects. In hindsight, it appears that the main alleged advantage of the cluster approach, i.e., capability to address complex issues involved in the promotion of CP in a comprehensive and holistic manner, was severely compromised by the tremendous difficulties of bridging together different government agencies in the PRC, where severe interagency rivalry exists and cross-agency collaboration is lacking. In other words, the synergy effects envisaged during TA formulation have not materialized. The disadvantages of the cluster approach, many of which were not foreseen, became more striking over time. For example, during the span of nearly 5 years, many factors for successful implementation of the TA have changed. Some of the tasks envisaged more than 4 years ago became obsolete, and

the budget became insufficient due to rising costs and other factors. The Government, in the meantime, experienced changes in organization, personnel, and even focus. Also, the Asian Development Bank (ADB) itself underwent reorganization, making it difficult for participating executing agencies (EAs) to determine who within ADB was responsible for each subproject.

4. In retrospect, the work scope for some of the subprojects, e.g., Subproject 4, was not properly thought through and was too general and vague to be implemented.

## **2. Engagement of Consultants**

5. A question was raised regarding whether a single consulting firm should be recruited for all subprojects or one firm for each subproject. It was decided to adopt the first option, a single firm for all subprojects. A consortium of United States and United Kingdom (UK)-based firms was engaged in accordance with ADB's *Guidelines on the Use of Consultants* to execute the TA. The advantage of engaging a single firm, as it was initially envisaged, included time and effort saved in procuring consultants for different subprojects, easier coordination between different subprojects, and better utilization of findings from earlier subprojects as inputs to the subsequent projects. While these perceived advantages may have held some validity, they became less significant when compared to the drawbacks that became apparent as the TA progressed, e.g., difficulties in maintaining a high level of commitment and strong efforts from the consultants for a variety of reasons, and difficulties and reluctance on the part of ADB in recruiting different consultants, even though it may have considered that the current consultants were not performing to a satisfactory standard.

6. In the case of this TA, the lead firm became the subject of a takeover. The new company's previous experience did not cover CP in any depth, so much of the subsequent consulting work has been left to one of the subconsultants (the UK-based firm) to organize and manage. The OEM was unable to meet any consultants from the lead firm in Beijing, and many EAs suggested that the UK-based firm and freelance consultants provided most of the consultants in the field.

## **3. Organization and Management**

7. There are six EAs for the TA cluster, one for each subproject. The State Development and Planning Commission (SDPC) was proposed as the coordinating agency (in addition to being the EA for Subproject 1). A steering committee, jointly chaired by the directors general of SDPC and the State Economic and Trade Commission (SETC) and with representatives from the six EAs, was formed in May 1999. A project management office was located in an SDPC annex building until the completion of Subproject 1. It was then transferred to the UK-based firm's Beijing office, financed by ADB. The project management office was staffed by a full-time technical secretary and a part-time professional interpreter.

8. The organization and management of the TA cluster proved to be more difficult than initially envisaged, partly due to the difficulties of bringing different government agencies together. From early on SDPC had a disagreement with ADB's responsible officer over an issue related to contract negotiation. SDPC quickly lost interest in the TA cluster once Subproject 1 was completed, and did not play the "coordinating role" as originally envisaged. After the completion of Subproject 1, SDPC's participation in the TA cluster ended and the SDPC-based project management office was closed (para. 7). The UK-based consulting firm in the

consortium has played a key role in coordinating the subsequent subprojects.<sup>1</sup> As a result, the individual EAs were left to manage their own subprojects with the consultants doing much of the liaison work.

#### **4. Implementation Schedule and Financing Arrangements**

9. The TA cluster was to be originally completed by June 2001. However, there have been many difficulties in implementation and a revised completion date was set as June 2003. Even this revision is now seen as unrealistic as Subproject 5 had not yet started as of March 2003 when this evaluation took place. For a complex TA like this one, a certain delay was to be expected, especially considering it was the first of its kind. The TA had a slow start, with the consulting service contract being signed in June 1999 rather than the planned start in January 1999. The consultants started the fieldwork in July 1999.

10. Work on Subproject 1 was completed in October 2001, a delay of 16 months compared to the scheduled June 2000. In addition to the startup delays caused by negotiation difficulties, the other main reason was the fact that the principal consulting firm in the consortium was acquired by another consulting firm and the originally nominated team leader for the cluster left the company. It naturally took some time before a new replacement team leader could be nominated and approved. The replacement team leader had no PRC experience and was eventually dismissed. The delay on Subproject 1 not only had caused the delivering of subproject outputs to miss the target deadline (para. 14), but also had major chain effects in delaying the subsequent subprojects. Tasks under Subproject 2 were completed in January 2003, compared to the scheduled December 2000. The final report for Subproject 3 was submitted in December 2002. The final report for Subproject 4 was submitted to ADB by March 2003. As of the Operation Evaluation Mission (OEM) visit in March 2003, all the activities for Subproject 6, except of submission of the final report, had been completed, but work for Subproject 5 had not yet started as of that time (para. 20). On the whole, the revised closing time for the TA cluster, June 2003, is unlikely to be met.

11. ADB allocated \$2,814,000 from its own resources and \$686,000 from the Japan Special Fund, for a total of \$3.5 million, to fund the foreign exchange cost. For those completed subprojects, the EAs indicated that the funding was generally adequate for their tasks particularly for earlier ones. However, the EAs for Subprojects 4 and 6 reported that their scope of work had to be reduced partly due to budget constraints. ADB officers indicated that this was in part caused by the rising costs of domestic consultants and other expenses in the PRC over the period of 4 years.

#### **5. Supervision**

12. So far, at least two reconnaissance/consultation missions, one inception mission, and three TA review missions have been carried out.<sup>2</sup> However, it appears that while ADB's supervision was generally adequate for the first three subprojects, it started to fall short after that. The EA for Subproject 4, SETC, reported that the ADB project officer rarely met or communicated with them once the subproject was under way. The responsible ADB officer pointed out that a significant amount of work was done to reorient Subproject 4 through close consultations with the SETC. ADB's PRC Resident Mission provided close assistance and

---

<sup>1</sup> Many attempts made to move the implementation responsibilities and the project management office from the consultants' office to SDPC were not successful due to disagreement over rental charges and other reasons.

<sup>2</sup> As the TA is still ongoing, the mission data contained in the project files may not be up-to-date.

support by providing a representative in all the meetings and consultations. For Subproject 6, both the EA and consultant were unsatisfied with ADB's slow approval procedures for work order variations (para. 21).

## **C. Evaluation of Outputs and Impacts**

### **1. Outputs**

#### **a. Adequacy and Quality of Reports/Services Provided**

##### **Subproject 1: Policies for Promotion of Cleaner Technology**

13. Under Subproject 1, the consultants identified and analyzed various barriers and constraints in utilizing CP technology, and the role and capacity of various government agencies in the transfer and use of CP technology. A medium-to-long-term action plan to promote CP and improve the environment based on market demand was drafted. A tripartite meeting was held with the Government and other stakeholders to discuss the findings and recommendations.

14. However, the SDPC officials interviewed revealed that SDPC as the EA for the subproject, as well as the principal agency for the TA cluster, claimed little ownership of the report. According to the officials, the TA report was not submitted until the spring of 2001, too late for the drafting of the Tenth 5-Year Plan in the fall of 2000, which was intended as the main objective of the subproject (para. 10). Also, SDPC judged that the findings and recommendations of the report were either too general to be of use or were descriptive of initiatives already being taken. The lack of ownership was also apparently triggered in part by a dispute developed between the ADB project officer and the director general of the department within SDPC responsible for the TA over a relatively a minor issue regarding contract negotiation. This made life at the working level somewhat difficult and, as a result, SDPC adopted an essentially indifferent attitude toward the subproject. Because of the fact that SDPC was also the coordinating agency for the TA cluster and responsible for the overall coordination with other participating EAs through a steering committee, this incident has effectively terminated such an arrangement. As a result, the TA cluster appears to have been mostly coordinated by the consultants' Beijing office (para. 8).

##### **Subproject 2: National Network for Cleaner Technology Transfer**

15. Under Subproject 2, two regional CP technology transfer centers were established in Tianjin (north) and Chengdu (south). With the center in Beijing formed under TA 2434, there is now a network of technology transfer centers. The Chengdu center is hosted in a commercial information technology company while the Tianjin center is operated as a government-sponsored institute. Under the TA, the consultants (i) identified and developed environmental audit procedures for small- and medium-scale enterprises; (ii) tested audit procedures, provided personnel training, and installed a management information system in the two centers; and (iii) carried out financial training and information dissemination.

16. The visit by the OEM to both centers revealed that while the hardware (e.g., computers) and personnel are in place, the centers have not been able to make much headway in carrying out CP auditing and disseminating CP information since the completion of the TA.<sup>3</sup> The legal framework put in place—the CP law drafted under Subproject 3 and passed in 2002—lacks clarity on the exact role of the Ministry of Science and Technology (MOST) and its affiliated technology transfer centers (para. 18). The centers' long-term sustainability is unlikely without further assistance from development agencies or the Government. In particular, the Chengdu center was established using a commercial model, in which co-investment from a commercial company is required to cover operational and other costs and the center is physically located within in the investing company. In this case, an information technology company provided the investment and location. According to the center's key personnel interviewed, the subproject was formulated and implemented before the burst of the internet bubble and the decision by the information technology company to invest in the center was largely based on the expectation that the center would go public one day and the company could more than recover its investment. This has not materialized and the center has not generated any revenue from providing CP auditing for industries except some small contracts from the Beijing center on information gathering.<sup>4</sup> Full commercial operation of the Chengdu center does not appear to be feasible at this particular time given the lack of conducive legal, policy, and macroeconomic environment in Chengdu.<sup>5</sup>

### **Subproject 3: Legislative Support for Cleaner Technology**

17. On Subproject 3, the OEM was unable to meet the EA, the Environment Protection and Resource Conservation Committee (EPRCC) under the National People's Congress (NPC), until at the wrap-up meeting due to the mission's coincidence in time with the preparation for and opening of the NPC. EPRCC completed the questionnaire and, in addition, provided a written assessment of the subproject's implementation. In general, EPRCC has had a major participation in the design of the subproject, and the subproject is highly relevant to other subprojects of the TA cluster, as confirmed by OEM's meetings with other EAs.

18. The subproject started with training of local legislative drafter. A CP law was drafted and a seminar on CP legislation was organized to discuss the first draft of the CP law. The legislative drafters from the EPRCC had further discussions and actual field observations on the development and implementation of CP in the United States. Another workshop was held to review the proposed CP law, which was approved by NPC on 29 June 2002 and became effective on 1 January 2003. The EA is highly satisfied with the consultants' outputs, including seminars, international study tours, and the drafted Cleaner Production Law. The law mandates that those enterprises whose emissions exceed applicable national and regional standards shall carry out CP auditing. However, the it does not specify how often the audits should be conducted and who should carry out the audits except that the Government agencies responsible for economy and trade should provide overall coordination of CP promotion assisted by agencies responsible for environmental protection, planning, science and

---

<sup>3</sup> Neither center has been able to carry out any CP auditing, although the Tianjin center seems to be quite active in disseminating CP information among industries and the general public as supported by the Tianjin municipal government.

<sup>4</sup> Under the subproject, computer servers were provided to both centers with an aim to establish their own website for better dissemination of CP information. This has not materialized due to the high costs of setting up and maintaining a website.

<sup>5</sup> According to the MOST official interviewed, it was suggested to establish the commercial center in one of the eastern cities where more commercial opportunities exist for the center. This was rejected by ADB on the basis that ADB's assistance should focus on the western, less-developed region including Chengdu.

technology, water conservation and standards and supervision.<sup>6</sup> More detailed implementation guidelines are needed, but not yet in place, in order to enforce the law.

#### **Subproject 4: Cleaner Technology Development**

19. The original objective of Subproject 4 was to help SETC identify institutional and policy measures to promote cleaner technology development, including sustainable financing mechanisms for investments in cleaner technology. However, a consensus was reached prior to the commencement of the subproject, based on lessons learned from the first three subprojects, to focus on specific CP projects and investigation of project financing mechanisms. Project selection criteria were developed that included technical, environmental, financial, social and institutional aspects. Three locations, i.e., Changzhou, Chengdu, and Tianjin, were selected as pilot applications. Although the adjustment to the original work scope, which was much broader, appeared to be beneficial and programmatic (given the budget and time constraints), it created a great deal of overlap with Subproject 6. Interviews with SETC indicated that although the subproject has not achieved its original outputs and objectives, it has produced some useful outputs including recommendations on specific financing mechanisms. However, the SETC official interviewed had the impression that the consultants may have focused too much on identifying projects suitable for ADB's own financing, with which the responsible ADB officer disagreed, pointing out that neither the consultants nor SETC delivered any project concepts suitable for ADB financing.

#### **Subproject 5: Environmental Management for Cleaner Technologies in Township and Village Enterprises**

20. ADB documents indicated that the revised schedule for the completion of Subproject 5 was June 2003. At the inception meeting held in June 2002, it was decided that its main objectives were to assist the State Environment Protection Administration (SEPA) and provincial and local environmental protection bureaus to enforce environmental rules and regulations related to ecological industry partnerships and CP policies. The new focus represents a significant deviation from the original broader work scope. The new work scope included three policy areas: (i) command and control systems, (ii) market-based instruments, and (iii) voluntary measures. However, as of the OEM's visit, no work had been carried out and the revised completion date is unlikely to be met. There is considerable amount of disagreement between ADB's responsible department and SEPA as to the reasons for the delay. According to the concerned ADB officers, the main reason for the stall was disagreement between ADB and SEPA over some implementation arrangements (including issues related to recruitment of domestic consultants), and more recently the outbreak of Severe Acute Respiratory Syndrome in the PRC. SEPA, on the other hand, stressed that it has made repeated requests to start the subproject in 2000 or 2001, but the requests were not accepted on the basis either it could not start until the proceeding four, which had lagged seriously behind the original schedule, were completed or the international consultants had no time to start the subproject. In the meantime, SEPA pointed out because of the delay, many tasks set in the original design were outdated.

---

<sup>6</sup> Interviews with various EAs suggested that a decoupling of CP from "environment" in the legislation may have been beneficial from the view point of giving a greater emphasis on improving industrial efficiency to achieve CP rather than treating it as an environmental add-on measure.

## **Subproject 6: Financing Mechanism for Cleaner Technologies in Township and Village Enterprises**

21. As of the OEM's visit, all activities (except the submission of the final report) had been completed and a tripartite meeting was held to discuss the subproject's findings and recommendations. While the main objective remains unchanged: to promote CP in small and township and village enterprises, the work scope has been reduced to focus on (i) conducting a survey of financial needs and mechanisms appropriate for such enterprises, and (ii) identifying potential CP projects in decentralized and rural areas suitable for external financing. This was done to reorient the subproject to be fully consistent with the Government's programs and new initiatives. The EA, the Ministry of Agriculture (MOA), indicated that it is generally satisfied with the outcome of the subproject and with the performance of the consultants. However, the reduced work scope included only one workshop to discuss the findings and recommendations, and the previously scheduled international study tour was also cancelled. In addition, the subproject focused on township and village enterprises in industrial zones rather than on individual ones as previously envisaged. Both MOA and the consultants expressed their dissatisfaction with the fact that ADB's Central Operations Consulting Service Division had still not officially endorsed the change of the work scope as of the OEM's visit.

### **b. Training/Transfer of Technology**

22. Subproject 1 included an international study tour to the UK, which incorporated visits to relevant government departments, factories, and workshops. Five officials from the departments of Regional Economy, Comprehensive Economy, Price, and other related departments of SDPC attended this training program and all are still working in the same organizations. The training was generally considered useful and provided the participants with a view of how CP technology is being encouraged in a developed economy. Of particular interest was the fact that much of what was being implemented within the UK was driven by the European Commission. It was considered that a similar situation existed in the PRC, and the training provided greater confidence that it was appropriate for the Central Government to apply increasing pressure to the provinces to incorporate CP initiatives into their planning processes.

23. Subproject 2 included an international study tour, which incorporated visits to the National Research Council in Canada and a CP promotion center in the UK. Six officials from MOST participated in the training program and all are still working there. The participants considered the training to be somewhat useful but found that language difficulties were a barrier to them being able to take full advantage of the training opportunity.

24. Subproject 3 included a participatory 4-day seminar to review international and PRC regulatory systems and help scope the planned CP law. An international training tour was organized, attended by four legislation drafters, to visit the United States Congress, United States Environment Protection Agency, and other environmental law institutions. The purpose was to help the law drafters to understand the approaches to promoting the adoption of CP in the United States and to gather information related to legislation on pollution prevention. The returned questionnaire and a written assessment of the subproject indicated that the tour was useful.

25. Subproject 6 was to have included workshops and an international study tour. However, due to budget constraints, the study tour was cancelled and the only workshop held was at the end of the subproject to present the findings and recommendations of the subproject. This

workshop was well received by MOA and was also successful from the consultant's point of view in providing them with feedback, which they could use to finalize their final report.

### **c. Institution Building**

26. Since Subprojects 1 to 3 had international study tours that provided some exposure to CP promotion policies, legal framework, and practices, some positive impacts in terms of raising the awareness of good practices can be expected among the participating officials. In particular, the EA for Subproject 3, EPRCC, reported an effective and useful training program (paras. 17 and 24), which has added value to EPRCC's institution building. Subproject 2 helped extend the capacity developed under TA 2434 (to develop a center in Beijing for the transfer of CP technologies) by developing two additional regional centers. Although both regional centers are facing challenges in terms of long-term sustainability, site visits and interviews indicated that capacity building appeared to be more successful in the northern center in Tianjin than in its counterpart in Chengdu. On balance, however, the short-term impact of the TA cluster on institution building has been limited, although long-term impact still remains to be seen.

## **2. Performance of Consultants**

27. In order to arrive at a fair and objective assessment of the performance of the consultants, it needs to be pointed out that the consultants have been facing many difficulties and uncertainties, many of which are beyond their control. They include poor collaboration from some EAs, particularly the coordinating agency, ADB's complicated internal procedures for approving work order variations, and the long time span of the TA cluster across almost 5 years (which makes planning and staffing difficult). Given these constraints, the consultants have made remarkable efforts in continuing the TA cluster and playing a major role in trying to bring different agencies together to address issues related to CP in a holistic manner. This coordinating role should have been better played by the coordinating agency.

28. The overall performance of the consultants, however, has been less than satisfactory. A common complaint from all EAs was that very few consultants had been fielded by the principal contractor, the United States-based firm, and most consultants were either from the UK-based firm or freelance consultants. Some EAs reported that the consultants lacked commitment and knowledge about the PRC and, as a result, the findings and recommendations were often too general to be useful.

## **3. Impact**

29. The developmental impact of the TA cluster cannot be fully assessed at this point. However, the OEM anticipates that the CP law drafted under Subproject 3 and recently passed by NPC is likely have a far-reaching impact on promoting the adoption of CP technology as part of the PRC's long-term sustainable development strategy. The long-term impacts of the other subprojects remain to be seen.

#### **4. Other Aspects**

30. There appears to be no significant unintended impact associated with the TA cluster.

#### **D. Conclusions**

##### **1. Overall Assessment**

31. Due to the fact that the TA cluster is still ongoing, the OEM cannot provide the final assessment at this point in time. The following is a tentative assessment based on the information gathered so far. The concept of CP is sound. Compared to the traditional end-of-pipe measures for environmental improvement, CP brings both economic and environmental benefits. The TA cluster designed to promote CP had and continues to have high relevance by supporting a key avenue to achieving the PRC's sustainable development strategy. The TA cluster has also achieved some positive impact in terms of raising the profile of CP technologies within government agencies, and some subprojects have achieved their intended outputs, e.g., CP law under Subproject 3 and two regional CP centers established in Tianjin and Chengdu, and a range of new concepts and market-based policies for the adoption of CP have been developed and promoted with a focus on small and medium-size enterprises. However, the TA cluster appears to be less efficacious in achieving its overall objective, which was to improve national-level policies, institutional capacities, and financing mechanisms for the promotion and application of CP technology. With a time span of likely more than 5 years, the TA cluster is less efficient. With a total budget of \$3.5 million, the cost-effectiveness of the TA cluster appears to be low.<sup>7</sup> The sustainability of the TA outputs and impact is likely to vary substantially across different subprojects with the CP law of Subproject 3 most likely to sustain and the outputs from Subproject 1 (with SDPC) least likely to sustain. The sustainability of the two regional CP centers established under Subproject 2 depends on long-term government policy and support. The long-term impact of the TA cluster on institutional development and the PRC's environment improvement cannot be fully assessed at this point. Such impact, however, is likely to be positive but modest. Table A7 provides the tentative ratings for the completed subprojects, but no rating is given to the TA cluster at this point in time, which should await a reevaluation to be carried out after the TA's completion (para. 37).

---

<sup>7</sup> One of the factors that affected the effective use of the budget was the general cost rises in the PRC over the 5-year period. For example, the average remuneration for domestic consultants increased by about 60-70% during the period, from about \$3,000 per to \$5,000 per month. Adjustments had to be made, including canceling international study tours and refocusing scopes of the subprojects, in order to meet the budget.

**Table A7: Technical Assistance and Subproject Ratings**

TA Cluster and Subproject	Executing Agency	Tentative Rating
TA Cluster		Not Assessed <sup>a</sup>
1: Policies for Promotion of Cleaner Production	SDPC	Unsuccessful
2: National Network for Cleaner Technology Transfer	MOST	Partly Successful
3: Legislative Support for Cleaner Technology	EPRCC	Highly Successful
4: Cleaner Technology Development	SETC	Partly Successful
5: Environmental Management for Cleaner Technologies in Township and Villages Enterprises	SEPA	Not Assessed <sup>b</sup>
6: Financing Mechanism for Cleaner Technologies in Township and Villages Enterprises	MOA	Not Assessed <sup>c</sup>

EPRCC = Environment Protection and Resources Conservation Committee (under the National People's Congress); MOA = Ministry of Agriculture; MOST = Ministry of Science and Technology; SDPC = State Development and Planning Commission; SEPA = State Environment Protection Administration; SETC = State Economic Trade Commission; TA = technical assistance.

<sup>a</sup> The TA cluster is not yet completed.

<sup>b</sup> Work for the subproject was yet to start.

<sup>c</sup> Although the work for the subproject was mostly completed and the Executing Agency appeared to be satisfied with the outcome, the final report was still being prepared. It is too early to provide a rating at this point in time.

## 2. Lessons Learned

32. As TA 3079 was the first TA cluster approved by ADB, various design and implementation problems encountered are to be expected and, more importantly, the experience and lessons learned from the TA cluster is potentially useful for future TA designs. First, clusters may only be appropriate where there is very clear synergy between the various subprojects. In this case, the synergy achieved was not as significant as expected in part because of difficulties of bring different government agencies together and the severe inter-agency rivalry within the PRC. Second, timescale is a particularly crucial factor for the success of a TA cluster and work should be completed over a relatively short time, e.g., 2-3 years. There should be some overlap in the timescale between the start of one subproject and the completion of another in order to (i) maximize the potential for one subproject to feed into another, (ii) assist the consulting team in keeping their core team together, and (iii) assist in maintaining the momentum of the overall project within the designated timeframe.<sup>8</sup> Since delays are very common for ADB TAs (more than 2 years in this case), the delays may cause more adverse impact on a cluster TA than a regular TA due to the former's relatively long time span and the chain effects of delays rippled across different subprojects. SEPA, for example, pointed out that as Subproject 5 is yet to start, the original tasks set out 5 years have already become obsolete.

33. Third, to improve the potential efficacy of the cluster approach, there should be a single overall coordinating agency within government for a cluster TA, and ADB should pay particular attention to ensuring that this coordinating body is fully engaged in all formulation processes

<sup>8</sup> In this case, the long timescale over which the various subprojects have been carried out has been the root of many of these problems. There have been major reorganizations in all of the main parties involved. Personnel have changed, reducing the effectiveness of the lessons learned in one subproject being passed on to subsequent subprojects.

leading up to the TA and during its implementation.<sup>9</sup> Steps should be taken to ensure that the coordinating body is involved in the day-to-day management of the TA to encourage buy-in and ownership.

34. Fourth, perhaps more so than for a regular TA, the recruitment of consultants and their performance are instrumental for the success of a TA cluster. TA 3079 adopted the single-firm approach, which has the advantage of saving time and effort in procuring consultants for different subprojects, easier coordination between different subprojects, and better utilization of findings from earlier subprojects as inputs to the subsequent projects. However, the disadvantages included difficulties in maintaining a high level of commitment and strong efforts from the consultants for a variety of reasons, and ADB getting 'stuck' in terms of difficulties and reluctance on the part of ADB in recruiting different consultants when the incumbent ones were not performing to a satisfactory standard. A single consulting firm may also find it difficult or not have the capacity to simultaneously carry out project works for different subprojects, which may be dictated by circumstances. In general, the OEM feels that by "placing all the eggs (subprojects) in one basket (the winning firm/consortium)," the single-firm approach is more risky and less flexible than the multiple-firm approach, and ADB needs to carefully evaluate the pros and cons of the approaches on a case-by-case basis for future TA clusters.

35. Other lessons identified below are not unique to the TA cluster approach. In a number of the subprojects, it is clear that the EAs felt little ownership of the work being undertaken on its behalf. This has definitely impacted on the level of success of the subprojects. It is also clear that in some cases, e.g., identification of projects for ADB financing in Subproject 4, the consulting team worked to meet the perceived ADB needs rather than the needs of the EAs. As another small but significant lesson in this regard, SDPC reported that the consultants' final report for Subproject 1 was produced without reference to SDPC on the cover, but it was anticipated that the document would be taken on board by them for dissemination to others. It was explained to the OEM that if the EA was to play such a role, the reports needed to clearly show that they had been prepared under their own auspices (and not those of ADB) so that the EA could prepare a "red-letterhead" document<sup>10</sup> and disseminate it to its provincial and municipal counterparts.

### 3. Follow-Up Actions and Recommendations

36. As the TA cluster is ongoing, the concerned departments within ADB need to adopt a more proactive approach in addressing some of the outstanding issues and the needs of the EAs and the consultants. In particular, for Subproject 6, the situation in which all the activities had been completed but the work order variations were yet to be approved by ADB should be addressed as soon as possible, and avoided in the future. For Subproject 5, the outstanding issues with SEPA need to be resolved on a frank and transparent basis in order to jumpstart the subproject. In the case that such a resolution is not possible, the OEM recommends that the subproject be cancelled without further delay.

37. Due to the strong implications for ADB's future TA activities, the OEM recommends a reevaluation of the TA cluster one or no more than 2 years after the TA activities are completed,

<sup>9</sup> In this case, SDPC as the coordinating TA did not perform to expectations. The SDPC officials interviewed suggested that in future ADB should sign a master contract with the coordinating agency, which will in turn sign subcontracts with other participating EAs. The OEM feels that although this approach would increase the control of the coordinating body, it does not necessarily lead to better ownership and participation by the other agencies, and, on the contrary, may even introduce more interagency rivalry among them.

<sup>10</sup> A phrase used to refer to official documents to be disseminated and implemented.

perhaps together with other TA clusters currently being implemented. This would help in reaching a more definite conclusion on the effectiveness of the TA cluster modality. Until such more definite evaluation results are available, ADB should give careful consideration to whether the cluster approach is an appropriate vehicle for future linked TAs. If it is decided that under certain circumstances it could be, more definite guidelines should be drawn up to ensure that the lessons learned from this and other clusters are fully taken into account.

## TA 3123-PRC: PROVINCIAL LEGISLATION ON ENVIRONMENTAL PROTECTION AND NATURAL RESOURCES CONSERVATION

### A. Background

1. Technical assistance (TA) 3123 was approved in December 1998. It aimed to assist the Environmental Protection and Resources Conservation Committee (EPRCC) of the National People's Congress (NPC) in upgrading the knowledge and skills of provincial legislative drafters and those of other entities such as the State Council, People's Political Consultative Committee, and universities in the review, assessment, revision, formulation, and codification of local legislation related to the protection and conservation of the environment and natural resources, particularly dealing with changes in land and natural resources conservation law. It was also expected that the TA would (i) facilitate sustainable development through a more comprehensive environmental legal and regulatory framework; and (ii) assist implementing agencies and the EPRCC in drafting local legislation, rules, and regulations to implement environmental and natural resource conservation laws approved by the NPC. Prior to the TA, the Asian Development Bank (ADB) provided two TAs to EPRCC in supporting legislative reform and capacity building in the areas of environmental and natural resource conservation.<sup>1</sup> With the assistance provided under the two TAs, two key pieces of legislation, i.e., Water Pollution Prevention and Control Law and the revised Land Use Administration Act, were enacted. While the two laws were enacted at the national level, many local legislations and regulations were in need of revision to comply with the two national laws and specific guidelines were also required to implement the laws in a manner that were specifically tailored to local conditions and circumstances. In particular, the 1998 floods in upper Yangtze added urgency to the revision of Sichuan's legislation concerning land use planning, water pollution prevention and control, and forestry conservation. The two new laws made it incumbent upon provincial people's congresses to legislate and implement related changes.

2. The scope of the TA included (i) reviewing and assessing legislation as well as court and administrative case law in Sichuan Province dealing with land use planning, water resources and water pollution prevention, and forestry conservation; (ii) assisting in development of legislation at the provincial level for natural resources conservation; (iii) providing training for legislative drafters in provincial people's congresses, particularly the staff of the Sichuan EPRCC, in drafting provincial legislation to protect the environment and conserve natural resources, with special reference to land use planning, water resources, water pollution prevention, and forestry conservation; and (iv) assisting in development of guidelines, manuals, and publications for implementing agencies, provincial legislative bodies, and others in the preparation and implementation of rules and regulations to implement laws approved by the NPC. The TA was closed in March 2001, about 4 months behind the scheduled closing time (December 2000). The TA completion report was completed in January 2001.

---

<sup>1</sup> TA 2090-PRC: *Legislative Reform for Protecting Environmental and natural Resources*, for \$500,000, approved in May 1994; TA 2735-PRC: *Capacity Building for Natural Resources Legislation*, for \$800,000, approved in November 1996.

## **B. Assessment of Implementation Performance**

### **1. Design**

3. With a limited budget of \$300,000, the TA was well structured in the sense that it focused on the experience of one province with certain depth and disseminate the experience to a much wider audience through two workshops, one at the provincial level within Sichuan and one at the national level for provincial legislation drafters across the country. The regular budget of NPC does not provide for recruitment of foreign legal experts. Yet, the legal framework in the PRC was, and still is, very much in its early development stage and could benefit a great deal from international expertise. The TA provided much needed exposure to the international legal framework for domestic legislators in a cost-effective manner.

### **2. Engagement of Consultants**

4. Instead of a consulting firm, two individual international consultants were engaged. Compared to the firm approach, in addition to lower costs, the individual consultant approach allowed targeted selection of consultants with the right experience and skill mix so as to better meet the demands of the local legislative drafters. In this case, both international consultants previously worked on TA 2090 and TA 2735 (footnote 1) so that they were familiar with the national legal framework. Their experience in other transitional economies was also a major plus in terms of understanding the unique sets of issues facing such economies.

### **3. Organization and Management**

5. The national EPRCC was chosen as the Executing Agency (EA), rather than its provincial counterparts under provincial people's congresses (PPCs), was mainly because of the fact that multiple PPCs were involved in the TA, even though Sichuan PPC was chosen as the case study. EPRCC was in a good position to play a coordinating role, and was also much more experienced than PPCs in executing ADB projects.

### **4. Implementation Schedule and Financing Arrangements**

6. Although the TA closing date was 4 months behind schedule, most activities were completed well before the scheduled closing date, and the TA was left open for the benefit of providing inputs to a subsequent TA. The Government of Norway provided \$300,000 for the TA, which covered \$158,000 foreign currency cost and \$142,000 equivalent local currency cost. The total undisbursed amount was \$90,656.

### **5. Supervision**

7. ADB provided adequate supervision through correspondence and an inception mission. Since the TA was a series of legal TAs provided to EPRCC at the time, the implementation was relatively smooth.

## **C. Evaluation of Outputs and Impacts**

### **1. Outputs**

#### **a. Adequacy and Quality of Reports/Services Provided**

8. Key outputs from the TA included (i) manual for use by PPC personnel in drafting natural resources legislation; (ii) Sichuan training program attended by 40 officials; (iii) seminar in Beijing attended by 51 representatives from the PPC of 29 provinces and special administrative regions; and (iv) assisting Sichuan legislative drafters in preparing local legislation implementing the Land Use Administration Act. Although the Operations Evaluation Mission was unable to meet the EA (until at the wrap-up meeting) and Sichuan PPC due to the mission's coincidence in time with the preparation for and opening of the NPC, the questionnaire completed by EPRCC indicated that the TA has achieved its main objective, and the provincial laws drafted under the TA has been adopted. The EA expressed high degree of satisfaction with the international consultants' performance and ADB's assistance, but indicated that both the time schedule and budget were somewhat tight for completing the tasks.

#### **b. Training/Transfer of Technology**

9. According to the completed questionnaire survey, the training workshops outlined above have benefited Sichuan and other provincial legislation drafters in upgrading their knowledge and skills. The legislation prepared for Sichuan has also acted as a template for similar legislation in other provinces.

#### **c. Institution Building**

10. It is considered that the TA made a major contribution to upgrading the knowledge and skills of provincial legislative drafters and other government officials in reformulating local environmental and natural resource conservation legislation. It also made some contribution toward facilitating sustainable development and in assisting EPRCC and the PPCs in drafting local legislation, rules, and regulations to implement national environmental and natural resources conservation laws.

### **2. Performance of Consultants**

11. EPRCC expressed a high level of satisfaction, in the questionnaire survey and at the wrap-up meeting, with the performance of the consultants. It appears that the decision to engage individual consultants, instead of a firm, was beneficial in terms of providing greater control to ADB and the EA in selecting experienced consultants whom the EA was very comfortable to work with. EPRCC was particularly appreciative of the consultants' legal expertise and familiarity with the PRC's realities and conditions.

### **3. Impact**

12. Although the TA had a small budget with a moderate goal, the long-term developmental impact of the TA lies in the fact that it has helped improve the PRC's provincial legislation regarding land use and conservation, and that it had upgraded the skills of local legislative drafters. Because the PRC's legal framework is a key weak link in environmental

management, the country can benefit significantly from TA from international expertise in this area.

#### **4. Other Aspects**

13. The TA has not had any significant unintended impact.

### **D. Conclusions**

#### **1. Overall Assessment**

14. The TA was and continues to be relevant by addressing a key aspect and, indeed, weakness of the PRC's sustainable development strategy: its legal framework. The TA was efficacious since it has achieved its main objective of upgrading the knowledge and skills of provincial legislative drafters and facilitating a more comprehensive environmental legal and regulatory framework. The provincial laws drafted under the TA for Sichuan have been adopted. The training workshops have benefited Sichuan and other provincial legislation drafters in upgrading their knowledge and skills, with the seminar in Beijing particularly highlighted for its impact. The budget and the implementation schedule were considered somewhat tight by the EA, but the TA was implemented in an efficient manner, well within budget and with only minor delays. The outputs and impact of the TA are likely to be sustainable since the laws drafted under the TA have been adopted and most people who participated in the training are expected to be in the field for a long time. The impact on institution development and environmental improvement is expected to be moderate but positive. Overall the TA is rated as successful.

#### **2. Lessons Learned**

15. This TA was initiated by EPRCC and, as the EA, it felt considerable ownership for it. When compared with several other TAs evaluated by the OEM, it is clear that the ownership by EPRCC has played a major part in achieving the TA's success. Encouraging this level of local ownership should be a clear goal for future ADB TAs. In retrospect, however, the PPCs, particularly Sichuan PPC, could have been given more responsibilities in executing the TA.

16. It appears another key factor for the success of the TA was the recruitment of high-quality and experienced consultants who understood not only law but also the PRC realities and conditions. In this regard, the flexibility that the individual consultant recruitment provided was beneficial for selecting such consultants in a cost-effective manner.

17. With a limited budget and a moderate goal, the design of the TA was realistic and the scope was appropriate for achieving the goal.

#### **3. Follow-Up Actions and Recommendations**

18. No particular follow-up actions are needed for the TA. As a general recommendation, in future, ADB should consider providing greater roles and responsibilities for provincial agencies in executing provincial TAs to improve their capacities.