



Technical Assistance Report

Project Number: 42025
Policy and Advisory Technical Assistance (PATA)
March 2009

People's Republic of China: Strategy for Drought Management

(Cofinanced by the Multi-Donor Trust Fund under the Water
Financing Partnership Facility)

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 13 March 2009)

Currency Unit	–	yuan (CNY)
CNY1.00	=	\$0.146
\$1.00	=	CNY6.84

ABBREVIATIONS

ADB	–	Asian Development Bank
MWR	–	Ministry of Water Resources
PRC	–	People's Republic of China
TA	–	technical assistance
TMO	–	technical assistance management office

TECHNICAL ASSISTANCE CLASSIFICATION

Type	–	Policy and advisory technical assistance (PATA)
Targeting Classification	–	General intervention
Sector	–	Agriculture and natural resources
Subsector	–	Water-based natural resources management
Themes	–	Economic growth, social development, environmental sustainability, capacity development
Subthemes	–	Promoting economic efficiency and enabling business environment, disaster risk management, natural resources conservation, institutional development

NOTE

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

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I. INTRODUCTION

1. During the 2007 Country Programming Midterm Review Mission, the Government of the People's Republic of China (PRC) requested technical assistance (TA) from the Asian Development Bank (ADB) to prepare a drought management strategy.¹ In July 2008, a fact-finding mission visited the PRC and reached an understanding with the Government on the TA's impact, outcome, output, cost estimates, financing plan, implementation arrangements, and the consultants' terms of reference. The TA design and monitoring framework is in Appendix 1.

II. ISSUES

2. Droughts have seriously affected daily lives and socioeconomic activities in the PRC, particularly in poorer areas and have caused about 48% of the country's total direct economic losses. From 1950 to 2006, droughts triggered water shortages to about 29 million people and reduced annual grain production by about 15 million tons. About 61 million people experienced drinking water shortages during a severe drought between 2000–2001, which affected more than 620 cities and towns in 18 provinces. Moreover, particularly in large cities such as Dalian, Tianjin, Weihai, and Yantai, water supplies were under dangerously low levels. The 2-year drought also caused a reduction of about 115 million tons of grains, creating concerns about food security in the PRC. In 2006, the country again suffered a severe drought, which resulted in water shortages to about 36 million people and a reduction of about 42 million tons of grains. The worst-hit area was in the southwest—one of the poorest regions that includes Chongqing Municipality and Guizhou, Sichuan, and Yunnan provinces—where about 20 million people (9.9% of the region's population) experienced serious water shortages.

3. Generally, droughts have affected the PRC's environment. Many northern wetlands and lakes—such as Baiyangdian Lake in Hebei Province, Nansi Lake in Shandong Province, Xianghai Wetland in Jilin Province, and Zhalong Wetland in Heilongjiang Province—suffer from water shortages or dry out during prolonged droughts. In the north, people tend to use more groundwater during droughts, resulting in widespread groundwater and land subsidence in both urban and rural areas. About 6,670 square kilometers of arable land and 23,500 square kilometers of pastureland have been desertified due to consistent water shortages, and many farmers have become “ecological refugees”, and are forced to migrate long distances in search of arable land. During drought years, dust storms also occur more frequently.

4. Since the 1950s, drought management policies were mostly prepared to mitigate drought impact on agriculture. However, currently, there is no law to regulate drought management in the PRC. In recent years, national, provincial, and local governments have established drought management plans and guidelines, such as a national flood control and drought relief emergency plan, provincial-level drought relief guidelines and emergency plans, and city-level drought preparedness plans. In addition, many other rules or regulations have been established for drought relief management, such as methods to assess losses caused by droughts and benefits brought by drought relief actions, subsidies for drought management actions, drought reporting systems, and drought severity indices. The major shortcomings of these existing plans, guidelines, rules, and regulations are (i) drought-relief actions are generally passive in response to crises caused by droughts; (ii) no long-term strategic plans for adaptation to drought; (iii) drought-relief policies are government-centered, and participation of the private sector and nongovernment organizations are not given due attention; (iv) responsibilities of

¹ The TA first appeared in the business opportunities section of ADB's website on 29 October 2008.

different agencies are not well defined, and interagency coordination is not effective; (v) lack of information gathering and sharing mechanisms for early drought warning; (vi) subsidies for drought management are usually minimal in comparison with losses actually caused by droughts; (vii) lack of commercial insurance to share drought risk through domestic and international insurance markets; and (viii) the current policies lack adequate attention to the protection of the ecosystems and environment.

5. Although the PRC has made remarkable achievements in coping with droughts using structural measures such as the construction of water conservation structures and irrigation systems, this approach could produce negative impacts on water cycles, ecosystems, and the environment. Generally, as drought impacts have become more severe, the traditional approach of using structural measures is no longer practical nor economically feasible. Structural measures cannot meet all requirements for drought management, and nonstructural measures—such as drought monitoring, forecasting and warning, drought insurance, and water saving technologies—have yet to be well developed.

6. The PRC has yet to initiate systematic and comprehensive drought management studies. Such studies in the United States have found that droughts cannot be avoided, but their impacts can be alleviated through good management. As a result, the United States is shifting from crisis management to risk management to minimize drought impacts by establishing drought preparedness plans, policies and regulations for mitigation, and advance forecasting. International lessons learned and experiences will be useful for creating a long-term national drought management strategy in the PRC.

7. ADB has been increasingly involved in water resources management in the PRC, such as the Yellow River Flood Management Sector Project,² the Hunan Flood Management Sector Project,³ the Flood Management Strategy Study,⁴ and in Implementing the National Flood Management Strategy.⁵ The proposed TA will support the Government in establishing the national drought management strategy and is in line with the priorities of ADB's water policy⁶ in promoting a national focus on water sector reform and fostering integrated management of water resources. It is also in line with the PRC Country Partnership Strategy (2008–2010)⁷ in promoting resource efficiency and environmental sustainability and in improving natural resources and ecosystem management, and supports the Government's objectives in the water sector.

² ADB. 2001. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the People's Republic of China for the Yellow River Flood Management (Sector) Project*. Manila.

³ ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the People's Republic of China for the Hunan Flood Management Sector Project*. Manila.

⁴ ADB. 2006. *Technical Assistance to the People's Republic of China for the Flood Management Strategy Study*. Manila.

⁵ ADB. 2007. *Technical Assistance to the People's Republic of China for Implementing the National Flood Management Strategy*. Manila.

⁶ ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

⁷ ADB. 2008. *Country Partnership Strategy (2008–2010): People's Republic of China*. Manila.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

8. The impact of the TA is improved and sustainable drought management in the People's Republic of China (PRC). The outcome of the TA is the adoption of an integrated drought management strategy throughout the PRC.

B. Methodology and Key Activities

9. The TA will be implemented in two phases. In the first phase, to be conducted over a period of 4 months, consultants will (i) review geography, meteorology, and hydrology in the PRC; (ii) review historical drought situations including social, economic, and environmental impacts, exploring key problems and changing drought patterns; (iii) review existing strategies, policies, and regulations for drought management in the PRC; (iv) review existing strategies, policies, and regulations for flood and water resources management, and investigate their links to drought management in the PRC; (v) review institutional structures at the national, river basin commission, provincial, and local government levels, as well as decision-making processes in all levels of government for routine, emergency, and proactive drought management; (vi) review structural and nonstructural drought management measures that have been conducted in the PRC to date; (vii) select several drought-prone provinces with different climatic and socioeconomic characteristics as case study areas, and conduct detailed case studies; (viii) investigate international technologies and practices for drought management; (ix) conduct an international study tour for Ministry of Water Resources (MWR) staff to study international technologies and practices for drought management; and (x) hold an international workshop inviting internationally renowned experts to discuss drought management concepts; drought monitoring and forecasting; drought assessment and risk analysis; and drought management strategies, policies, regulations, measures, and technologies.

10. In the second phase, to be conducted over a period of 8 months, consultants will (i) conduct pilot tests of successful international drought management practices—identified during the first phase—in the selected provinces, and assess the feasibility of adopting these practices in the PRC; (ii) identify key issues for future drought management in the PRC; explore ways to lessen serious drought impacts; identify options for drought management; and formulate a national drought management strategy framework and action plan to provide a general basis for designing and guiding integrated provincial-level drought management programs, taking into consideration diverse natural and socioeconomic conditions, balanced structural and nonstructural measures, and links to flood and water resources management; (iii) hold a workshop for wider dissemination of study findings and awareness building; and (iv) publish a handbook on the drought management framework and action plan for decision makers and local government officials, as well as a policy brief for wider dissemination of study findings and policy dialogue with higher-level decision makers.

C. Cost and Financing

11. The total cost of the TA is estimated at \$820,000 equivalent, of which ADB will finance \$400,000 equivalent from its TA funding program. The Multi-Donor Trust Fund⁸ under the Water Financing Partnership Facility will provide cofinancing of \$230,000 equivalent on a grant basis, to be administered by ADB. The Multi-Donor Trust Fund will be used for specific activities shown in Appendix 2. The Government will provide \$190,000 equivalent to cover in-kind

⁸ Contributors: the governments of Australia, Austria, Norway, and Spain.

counterpart costs and services, including the provision of necessary data, office space, counterpart staff, site transport, training and conferences, and other administrative support. Detailed cost estimates and the financing plan are in Appendix 2.

D. Implementation Arrangements

12. MWR will be the Executing Agency for the TA. MWR is responsible for the overall administration of water resources throughout the PRC and has shown strong capacity for executing externally-assisted projects (footnotes 2, 3, 4, and 5). A steering committee will be established under MWR to provide overall guidance for TA implementation. The steering committee members will be senior representatives from the Ministry of Agriculture, Ministry of Finance, Ministry of Housing and Urban-Rural Development, MWR, National Development and Reform Commission, and other ministries and provincial governments as necessary. A technical assistance management office (TMO) will be established in MWR to act as the secretariat of the steering committee, administer day-to-day project activities, and coordinate with ADB and relevant provinces. MWR will assign an experienced full-time MWR staff member to serve as the director of the TMO and counterpart staff to work closely with the TA consultants. MWR will also provide office space, access to communications and copiers, and logistical support for TA implementation. The TMO director will manage and liquidate funds provided by ADB and the Government for training, seminars, and conferences.

13. A panel of technical experts will be established as required to review the work of the TA consultants and the TMO. The panel members will be experts from relevant sectors. The panel will collaborate with the TMO in organizing at least three 1-day panel meetings during TA implementation at inception, midterm, and final phases.

14. The TA will be implemented over 12 months, starting in June 2009 and ending in June 2010. Substantial time will be devoted to survey, fieldwork, and workshops. It is expected that two workshops at the central level and a workshop in each selected province will be undertaken. The consultants will submit an inception report within the first 4 weeks of the start of the TA and an interim report 4 months after the TA starts. A draft final report will be submitted 10 months after TA commencement, and a final report at TA conclusion. The inception, interim, and draft final reports will be subject to review by the Government and ADB. All reports should be written in English and translated into Mandarin. The outline terms of reference for the consultants are in Appendix 3.

15. The TA will be carried out by a team of consultants engaged through a firm. A total of 11 person-months of international consulting services and 24 person-months of national consulting services will be required. The consultants will be selected and engaged by ADB in accordance with the *Guidelines on the Use of Consultants* (2007, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 80:20. The office equipment provided under the TA for the consultants will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time) and will be handed over to MWR upon TA completion. Disbursement under the TA will be undertaken in line with ADB's *Technical Assistance Disbursement Handbook*.⁹ Advance payment procedures will be adopted to facilitate timely implementation of activities related to seminars and conferences. ADB funds for training, seminars, and conferences will be transferred to an existing MWR bank account and managed and liquidated by the TMO director. ADB will undertake intensive review and supervision by fielding missions at critical stages of TA implementation—particularly at inception,

⁹ ADB. 2008. *Technical Assistance Disbursement Handbook*. Manila.

midterm, and final stages—and extending regular support from both headquarters and the resident mission.

IV. THE PRESIDENT'S DECISION

16. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$230,000 to be financed on a grant basis by the Multi-Donor Trust Fund under the Water Financing Partnership Facility, and (ii) ADB providing the balance not exceeding the equivalent of \$400,000 on a grant basis, to the Government of the People's Republic of China for Strategy for Drought Management, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Improved and sustainable drought management in the PRC</p>	<p>Decrease in the number of people threatened by water shortage by about 30% by 2015</p> <p>Decrease in grain production reduction caused by droughts by about 30% by 2015</p>	<p>Government documents and/or reports such as the <i>Bulletin of Flood and Drought Disaster in China</i></p>	<p>Assumptions</p> <p>The Government remains highly committed to a balanced drought-management approach.</p>
<p>Outcome</p> <p>An integrated drought management strategy adopted throughout the PRC</p>	<p>Drought management implemented based on the developed strategy in at least 15 drought-prone provinces by 2012.</p>	<p>TA completion report</p> <p>MWR decrees and publications</p>	<p>Assumptions</p> <p>Drought management remains a high priority in MWR.</p> <p>Interagency coordination is effective.</p> <p>Risk</p> <p>Inadequate involvement of senior Government officials in the Project</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. A national drought management strategy framework 2. An action plan to implement an integrated drought management approach 3. A handbook for the effective drought management framework and action plan for decision makers and local government officials 4. A policy brief of study findings for wider dissemination and policy dialogue with high level decision makers 	<p>The national drought management strategy framework and action plan provide a basis for designing and guiding integrated drought management programs at the provincial level by 2010.</p> <p>The handbook and policy brief disseminated to decision makers and local government officials by 2010.</p>	<p>MWR records</p> <p>MWR reports</p>	<p>Assumptions</p> <p>Necessary information is available on time.</p> <p>All geographical sites are accessible without any government restriction.</p> <p>MWR facilitates the required meetings, workshops, and trainings.</p> <p>Risk</p> <p>Selected local governments lack ownership and support for the TA.</p>

Activities with Milestones	Inputs (\$'000)
1. Review geography, meteorology, and hydrology in the PRC (completed by week 5).	ADB 400.0
2. Review historical drought situations including social, economic, and environmental impacts, exploring key types of drought problems and changing drought patterns (completed by week 6).	• Consulting services, 32.0 person-months 287.0
3. Review existing strategies, policies, and regulations for drought management in the PRC (completed by week 6).	• International and local travel 32.0
4. Review existing strategies, policies, and regulations for flood and water resources management in the PRC, and investigate their links to drought management (completed by week 6).	• Reports, communications, and translation 23.0
5. Review institutional structures at the national, river basin commission, provincial, and local government levels, as well as decision-making processes in all government levels for routine, emergency, and proactive drought management (completed by week 6).	• Equipment 15.0
6. Review structural and nonstructural drought management measures that have been conducted in the PRC to date (completed by week 7).	• Miscellaneous administration and support costs 20.0
7. Select several drought-prone provinces with different climate and socioeconomic characteristics as vase study areas, and conduct detailed case studies (completed by week 13).	• Contingencies 23.0
8. Investigate international up-to-date technologies and practices for drought management (completed by week 13).	Multi-Donor Trust Fund under WFPF 230.0
9. Conduct an international study tour for MWR staff to study international technologies and practices for drought management (completed by week 14).	• Consulting services, 3.0 person-months 60.0
10. Hold an international workshop inviting renowned experts to discuss drought management concepts; drought monitoring and forecasting; drought assessment and risk analysis; and drought management strategies, policies, regulations, measures, and technologies (completed by week 15).	• International travel 20.0
11. Conduct pilot tests of internationally successful practices for drought management—identified during the first phase—in the selected provinces, and assess the feasibility of adopting these practices in the PRC (completed by week 29).	• Reports, communications, and translation 10.0
12. Identify key issues for future drought management in the PRC, explore ways to lessen negative drought impacts, and identify options for drought management (completed by week 31).	• Training, seminars, and conferences 95.0
13. Formulate a national drought management strategy framework and action plan (completed by week 41).	• Surveys 20.0
14. Hold a workshop for wider dissemination of study findings and awareness building (completed by week 45).	• Miscellaneous administration and support costs 13.0
15. Publish a handbook and a policy brief on the drought management framework and action plan for wider dissemination including decision makers and local government officials (completed by week 48).	• Contingencies 12.0
	Government 190.0
	• Office accommodation and transport 70.0
	• Training and conferences 30.0
	• Remuneration and per diem of counterpart staff 70.0
	• Others 20.0

ADB = Asian Development Bank, MWR = Ministry of Water Resources, PRC = People's Republic of China, TA = technical assistance, WFPF = Water Financing Partnership Facility.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Asian Development Bank (ADB) Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	160.0
ii. National Consultants	127.0
b. International and Local Travel	
i. International Travel	25.0
ii. Local Travel	7.0
c. Reports, Communications, and Translation ^b	23.0
2. Equipment ^c	15.0
3. Miscellaneous Administration and Support Costs	20.0
4. Contingencies	23.0
Subtotal (A)	400.0
B. Multi-Donor Trust Fund under the Water Financing Partnership Facility^d	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultant ^e	60.0
b. International Travel	20.0
c. Reports, Communications, and Translation ^b	10.0
2. Training, Seminars, and Conferences ^f	95.0
3. Surveys ^g	20.0
4. Miscellaneous Administration and Support Costs	13.0
5. Contingencies	12.0
Subtotal (B)	230.0
C. Government Financing	
1. Office Accommodation and Transport	70.0
2. Training and Conferences ^h	30.0
3. Remuneration and Per Diem of Counterpart Staff	70.0
4. Others ⁱ	20.0
Subtotal (C)	190.0
Total	820.0

^a Financed on a grant basis by ADB's technical assistance (TA) funding program.

^b Includes translation of reports and documents.

^c Includes office computers with wireless broadband internet access; printer, fax, and scanner machines; and other small peripherals for the consultants. They will be procured using shopping procedures.

^d Contributors: the governments of Australia, Austria, Norway, and Spain. Administered by ADB.

^e An international drought risk management specialist.

^f Includes an international study tour, TA technical panel meetings, and workshops for which an advance payment facility will be established, managed, and liquidated by the director of a TA management office to be established in the Ministry of Water Resources.

^g Includes pilot tests of international successful practices for drought management in selected provinces.

^h Includes steering committee meetings.

ⁱ Includes provision of necessary data and other administrative support.

Source: ADB estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Overall Scope of Work

1. The impact of the technical assistance (TA) is improved and sustainable drought management in the People's Republic of China (PRC). The outcome of the TA is the adoption of an integrated drought management strategy throughout the PRC.

2. The TA will be carried out by a team of consultants engaged through a firm. A total of 11 person-months of international consulting services and 24 person-months of national consulting services will be required. The consultants will be selected and engaged by the Asian Development Bank (ADB) in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The consulting firm will be selected by (i) inviting simplified technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 80:20. The office equipment provided under the TA for the consultants will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time) and will be handed over to the Executing Agency¹ upon TA completion. The consultants will be responsible for ensuring and coordinating stakeholder participation and for developing a sense of ownership of and commitment to the TA.

3. The TA is expected to start in June 2009 and be completed in June 2010, and will be implemented over 12 months in two phases. In the first phase to be conducted over a period of 4 months, the consultants will (i) review geography, meteorology, and hydrology in the PRC; (ii) review historical drought situations including social, economic, and environmental impacts, exploring key problems and changing drought patterns; (iii) review existing strategies, policies, and regulations for drought management in the PRC; (iv) review existing strategies, policies, and regulations for flood and water resources management, and investigate their links to drought management in the PRC; (v) review institutional structures at the national, river basin commission, provincial, and local government levels, as well as decision-making processes at all levels of government for routine, emergency, and proactive drought management; (vi) review structural and nonstructural drought management measures that have been conducted in the PRC to date; (vii) select several drought-prone provinces with different climatic and socioeconomic characteristics as case study areas, and conduct detailed case studies; (viii) investigate international technologies and practices for drought management; (ix) conduct an international study tour for Ministry of Water Resources (MWR) staff to study international technologies and practices for drought management; and (x) hold an international workshop inviting renowned experts to discuss drought management concepts; drought monitoring and forecasting; drought assessment and risk analysis; and drought management strategies, policies, regulations, measures, and technologies.

4. In the second phase to be conducted over a period of 8 months, the consultants will (i) conduct pilot tests of successful international drought management practices—identified during the first phase—in the selected provinces, and assess the feasibility of adopting these practices in the PRC; (ii) identify key issues for future drought management in the PRC; explore ways to lessen serious drought impacts; identify options for drought management; and formulate a national drought management strategy framework and action plan to provide a general basis for designing and guiding integrated provincial-level drought management programs, taking into consideration the PRC's diverse natural and socioeconomic conditions, balanced structural and

¹ The Executing Agency is the Ministry of Water Resources.

nonstructural measures, and links to flood and water resources management; (iii) hold a workshop for wider dissemination of study findings and awareness building; and (iv) publish a handbook on the drought management framework and action plan for decision makers and local government officials, as well as a policy brief for wider dissemination of study findings and policy dialogue with high level decision makers.

B. Reporting Requirements

5. The consultants will produce (i) an inception report within 4 weeks of TA commencement, (ii) an interim report 4 months after TA commencement, (iii) a draft final report 10 months after TA commencement, and (iv) a final report at TA conclusion.

6. The inception, interim, and draft final reports will be subject to review by the Government and ADB. All reports should be written in English and translated into Mandarin. Five copies (in English) of each report are to be submitted to ADB, and five copies (both in Chinese and English) are to be submitted to MWR.

7. The inception report will present an approach for the TA, including a work plan and an implementation schedule. The interim report will present (i) geography, meteorology, and hydrology in the PRC; (ii) historical drought situations and their impacts in the PRC; (iii) strategies, policies, and regulations for drought management in the PRC; (iv) institutional structure, administrative procedures, and decision-making processes for drought management in the PRC; (v) structural and nonstructural drought management measures conducted in the PRC; (vi) results of the case studies in the selected provinces; (vii) international up-to-date technologies and practices for drought management; and (viii) a summary of discussions at the international workshop. The draft final report will cover (i) contents of the interim report; (ii) pilot test results of successful international drought management practices; (iii) key issues for future drought management in the PRC; (iv) ways to lessen negative drought impacts; (v) options for drought management; (vi) a national drought management strategy framework; (vii) a national drought management action plan; and (viii) a draft handbook of the drought management framework and action plan, and a draft policy brief for wider dissemination of study findings and policy dialogue with high level decision makers. The final report will reflect comments made by the Government and ADB.

C. Terms of Reference

1. International Consultants

a. Drought Management Specialist and Team Leader (8 person-months)

8. The specialist will have a postgraduate degree in water resources management and over 15 years of work experience in drought management. Previous experience on drought management strategies and plans will be highly regarded. The specialist will (i) coordinate all TA activities as team leader; (ii) finalize the approach for the TA, including a work plan and implementation schedule; (iii) assign team members to the necessary work; (iv) review historical drought situations including social and economic drought impacts, exploring key problems and changing drought patterns in the PRC; (v) review structural and nonstructural drought management measures that have been conducted in the PRC to date, and assess constraints and barriers to improve practices; (vi) select several drought-prone provinces with different climatic and socioeconomic characteristics as study areas for detailed review; (vii) investigate international technologies and practices for drought management; (viii) assist MWR in arranging and conducting an international study tour for its staff to study international technologies and

practices for drought management; (ix) conduct pilot tests of successful international drought management practices in the selected provinces, and assess the feasibility of adopting these practices in the PRC; (x) identify key issues for future drought management in the PRC, explore ways to lessen serious drought impacts, and identify options for drought management; (xi) formulate a national drought management strategy framework and action plan; (xii) preparing a handbook on the drought management framework and action plan for decision makers and local government officials, as well as a policy brief for wider dissemination of study findings and policy dialogue with high level decision makers; (xiii) prepare the inception, interim, draft final, and final reports; and (xiv) organize two workshops at the central level.

9. The specialist is responsible for ensuring and coordinating stakeholder participation and for developing a sense of ownership of and commitment to the TA.

b. Drought Risk Management Specialist (3 person-months)

10. The specialist will have a postgraduate degree in water resources management and at least 10 years of work experience in drought risk and nonstructural management, including drought monitoring, forecasting and warning, drought insurance, water savings, institutional development, and legislative and policy actions. Previous experience in working in the PRC will be highly regarded. The specialist will (i) review nonstructural drought management measures that have been conducted in the PRC to date, and assess constraints and barriers to improve these practices; (ii) review in detail nonstructural drought management measures conducted in the case study provinces; (iii) investigate international technologies and practices for nonstructural drought management; (iv) conduct pilot tests of successful international nonstructural drought management practices in the case study provinces, and assess the feasibility of adopting these practices in the PRC; (v) assist the team leader in formulating a national drought management strategy framework and action plan, in terms of drought risk and nonstructural management; (vi) contribute to the two workshops at the central level; and (vii) undertake any other necessary work assigned by the team leader.

2. National Consultants

a. Drought Management Specialist and Deputy Team Leader (9 person-months)

11. The specialist will have a university degree or other relevant qualifications in water resources management and over 10 years of work experience in drought management. Previous experience in ADB or World Bank projects focused on drought management strategies will be highly regarded. The specialist will (i) coordinate all TA activities as deputy team leader; (ii) assist the team leader in finalizing the approach for the TA; (iii) review geography, meteorology, and hydrology in the PRC; (iv) assist the team leader in reviewing historical drought situations including social and economic drought impacts in the PRC; (v) assist the team leader in reviewing structural and nonstructural drought management measures that have been conducted in the PRC to date, and in assessing constraints and barriers to improve these practices; (vi) assist the team leader in selecting several drought-prone provinces with different climatic and socioeconomic characteristics as study areas for detailed review; (vii) conduct detailed case studies of the selected provinces; (viii) assist the team leader in conducting pilot tests of successful international drought management practices in the selected provinces, and in assessing the feasibility of adopting these practices in the PRC; (ix) assist the team leader in identifying key issues for future drought management in the PRC, in exploring ways to lessen serious drought impacts, and in identifying options for drought management; (x) assist the team

leader in formulating a national drought management strategy framework and an action plan; (xi) assist the team leader in preparing a handbook on the drought management framework and an action plan, as well as a policy brief for wider dissemination of study findings and policy dialogue with high level decision makers; (xii) assist the team leader in organizing two workshops at the central level and a workshop in each selected province to collect information and data; and (xiii) undertake any other necessary work assigned by the team leader.

b. Drought Risk Management Specialist (3 person-months)

12. The specialist will have a university degree or other relevant qualifications in water resources management and over 5 years of work experience in drought risk and nonstructural management including drought monitoring, forecasting and warning, drought insurance, water savings, institutional development, and legislative and policy actions. Previous experience in ADB or World Bank projects focused on drought management will be highly regarded. The specialist will (i) assist the international drought risk management specialist in reviewing nonstructural drought management measures that have been conducted in the PRC to date, and in assessing constraints and barriers to improve these practices; (ii) assist the international drought risk management specialist in reviewing in detail nonstructural drought management measures conducted in the case study provinces; (iii) assist the international drought risk management specialist in conducting pilot tests of successful international nonstructural drought management practices in the case study provinces, and in assessing the feasibility of adopting these practices in the PRC; (iv) assist in formulating a national drought management strategy framework and action plan, in terms of drought risk and nonstructural management; (v) contribute to the two workshops at the central level; and (vi) undertake any other necessary work assigned by the team leader and deputy team leader.

c. Environment Specialist (3 person-months)

13. The specialist will have a university degree or other relevant qualifications in environmental studies and over 5 years of work experience in environmental protection of lakes and wetlands. Previous experience in ADB or World Bank projects focused on lake and wetland protection will be highly regarded. The specialist will (i) review environmental impacts of historical droughts in the PRC; (ii) review in detail environmental impacts of historical droughts in the case study provinces; (iii) conduct pilot tests of successful international environmental protection practices in the case study provinces, and assess the feasibility of adopting these practices in the PRC, as necessary; (iv) formulate a national drought management strategy framework and action plan for environmental protection; (v) contribute to the two workshops at the central level; and (vi) undertake any other necessary work assigned by the team leader and deputy team leader.

d. Legal Specialist (3 person-months)

14. The specialist will have a university degree or other relevant qualifications in law and over 5 years of work experience in relevant legal studies. The specialist will (i) review the PRC's existing strategies, policies, and regulations for drought management, and assess constraints and barriers to improving them; (ii) review the PRC's existing strategies, policies, and regulations for flood and water resources management, and explore links to drought management; (iii) review in detail existing strategies, policies, and regulations for drought management in the case study provinces; (iv) conduct pilot tests of successful international practices for legislative and policy actions in the case study provinces, and assess the feasibility of adopting these practices in the PRC, as necessary; (v) formulate a national drought

management strategy framework and action plan for legislative and policy actions; (vi) contribute to the two workshops at the central level; and (vii) undertake any other necessary work assigned by the team leader and deputy team leader.

e. Institutional Specialist (3 person-months)

15. The specialist will have a university degree or other relevant qualifications in institutional studies and over 5 years of work experience in institutional studies. The specialist will (i) review institutional structures at the national, river basin commission, provincial, and local government levels, as well as decision-making process at all levels of government for routine, emergency, and proactive drought management, and assess constraints and barriers to improve these practices; (ii) review in detail institutional structure, administrative procedures, and decision-making processes for drought management in the case study provinces; (iii) conduct pilot tests of successful international institutional development practices in the case study provinces, and assess the feasibility of adopting these practices in the PRC, as necessary; (iv) formulate a national drought management strategy framework and action plan for institutional development; (v) contribute to the two workshops at the central level; and (vi) undertake any other necessary work assigned by the team leader and deputy team leader.

f. Social Development Specialist (3 person-months)

16. The specialist will have a university degree or other relevant qualifications and over 5 years of work experience in social development. The specialist will (i) review public involvement and public awareness raising for water saving that have been conducted in the PRC to date, and assess constraints and barriers to improve these practices; (ii) review in detail public involvement and public awareness raising for water saving that have been conducted in the case study provinces; (iii) conduct pilot tests of successful international practices for public involvement and public awareness raising in the case study provinces, and assess the feasibility of adopting these practices in the PRC, as necessary; (iv) formulate a national drought management strategy framework and action plan for public involvement and public awareness raising; (v) contribute to the two workshops at the central level; and (vi) undertake any other necessary work assigned by the team leader and deputy team leader.