

ASIAN DEVELOPMENT BANK

TAR: PRC 36443

TECHNICAL ASSISTANCE

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR THE

IMPLEMENTATION OF THE NATIONAL STRATEGY

FOR SOIL AND WATER CONSERVATION

October 2004

CURRENCY EQUIVALENTS

(as of 1 October 2004)

Currency Unit	–	yuan (CNY)
CNY1.00	=	\$0.1208
\$1.00	=	CNY8.2766

ABBREVIATIONS

ADB	–	Asian Development Bank
EA	–	executing agency
GEF	–	Global Environment Facility
MWR	–	Ministry of Water Resources
PRC	–	People's Republic of China
TA	–	technical assistance
TOR	–	terms of reference

TA CLASSIFICATION

Poverty Classification	–	Other
Sector	–	Agriculture and natural resources
Subsector	–	Environment and biodiversity, water resources management
Theme	–	Environmental sustainability
Subthemes	–	Natural resources conservation, environmental policy, and legislation

NOTE

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

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I. INTRODUCTION

1. The Government of the People's Republic of China (PRC) has requested technical assistance (TA) from the Asian Development Bank (ADB) to implement a new national strategy for soil and water conservation that was previously prepared with ADB TA.¹ The proposed TA² is included in the PRC Country Strategy and Program for 2004–2006. In response to the Government's request, a TA fact-finding mission visited the PRC in June 2004 to hold discussions with staff from the Ministry of Water Resources (MWR) and the Ministry of Finance, and a memorandum of understanding has been signed with the Government covering the detailed objectives, scope, cost, implementation, and financing arrangements for the TA. The TA framework is presented in Appendix 1.

II. ISSUES

2. The PRC has many of the worst land degradation problems in the world, with over 40% of its land area, 3.0 million–4.0 million square kilometers adversely affected. Although data are inconsistent, trends in land degradation appear to be worsening. Water erosion contributes about 64% of the problem; wind erosion, 6%; and organic matter loss and salinization, 30%. Daily economic losses from land degradation are estimated at approximately CNY176 million (\$21.2 million equivalent), and indirect economic losses, including public health effects, are thought to be over four times higher.³ The social and economic consequences include lower incomes and increased poverty in many rural communities, higher unemployment rates, and higher migration rates.

3. The Government is making a major effort to combat land degradation as a national development priority. During the 1990s, total public investment programs almost tripled, to over CNY54 billion. Investment in soil and water conservation by MWR has increased considerably in recent years to about CNY2 billion (\$241million equivalent) in 2003. But this rate of increase has merely kept pace with the growth in the economy as a whole. Investment by MWR is equivalent to 0.08% of gross domestic product (GDP), which appears low given that the cost of land degradation to the PRC as a whole is considered to be at least equivalent to about 4% of annual GDP. Evaluation of government-financed programs to determine the overall impact and the cost-effectiveness of the broad range of interventions that have been implemented by MWR and other agencies has not been common in the past. However, during the formulation of the 11th Five-Year Plan (2006–2010), the Government is attaching importance to adopting a “scientific, comprehensive, and participatory approach” in the future so that development is sustainable. Adequately valuing the costs and the economic, ecological, and social benefits of increased public investment in alternative interventions to conserve soil and water is a vital part of this more scientific approach.

4. Many externally assisted projects related to soil and water conservation have been undertaken in the PRC. Apart from ADB, the sources of external assistance include the Food and Agriculture Organization of the United Nations, United Nations Development Programme (UNDP), World Bank, and bilateral assistance from, for example, the governments of Australia,

¹ ADB. 2000. *Technical Assistance to the People's Republic of China for Preparing National Strategy for Soil and Water Conservation*. Manila.

² The TA first appeared in the *ADB Business Opportunities* (Internet edition) on 16 April 2004.

³ Editorial. 2002. Ecological Damage Causing Economic Losses of about CNY100 billion in Western Region. *Chinese Journal of Population, Resources and Environment* 12 (2).

Canada, Germany, Japan, and United Kingdom. ADB provided several TAs⁴ to help develop the PRC-GEF Partnership on Land Degradation in Dryland Ecosystems, resulting in a long-term country programming framework (CPF) for \$1.5 billion equivalent covering a 10-year period (2003–2012), which was approved by the GEF council in October 2002. ADB's first project under the partnership was approved in June 2004. In addition, ADB approved two TAs⁵ to help assess the poverty impact of the Government's ongoing forest and grassland development projects. The World Bank and Department for International Development is also conducting a study in evaluating the poverty impact of the World Bank project interventions in the Loess plateau. The China Council for International Cooperation on Environment and Development (CCICED)⁶ has also evaluated the socioeconomic impact of some of government programs, e.g., the Task Force on Forest and Grasslands.

5. As part of its program to assist the Government address the increasing problems of land degradation, ADB TA 3548 helped the Government formulate a new strategy for soil and water conservation. It provided a comprehensive, scientific, and participatory approach from the "bottom-up," replacing the previous "top-down" and centrally planned approach. The new strategy has the following elements: (i) formulating state, provincial, and local government policy frameworks for sustainable land management through a multisector and interagency approach, and recognizing the links between poverty and land degradation; (ii) reforming the water and soil conservation legislation regime and reducing overlaps and maximizing synergies in environment legislation; (iii) strengthening human resources and devolving institutional responsibilities and accountability; and (iv) shifting from treating the symptoms to tackling the root causes. Appendix 2 presents a summary of the new strategy.

6. The work done under this TA involved leading domestic scientists and overseas experts, and reflected the results of international and domestic best practices. As a result, the new strategy is highly regarded in the PRC. MWR has used the process and the report's recommendations to stimulate internal debate and better understand the complex web of causes and effects of land degradation. The top leadership of MWR is committed to a fundamental shift in emphasis and approach as recommended in the report and has communicated this to the local level. Based upon this TA, MWR has approved a new national strategy for soil and water conservation and has taken other specific measures.⁷

7. To now move further to communicate the new strategy for soil and water conservation widely to the leaders of other agencies and to assist in implementation, further ADB support has

⁴ ADB. 2000. *Technical Assistance to the People's Republic of China for Global Environment Facility Partnership on Land Degradation in Dryland Ecosystems*. Manila; ADB. 2000. *Technical Assistance to the People's Republic of China for Preparing National Strategies for Soil and Water Conservation*. Manila; ADB. 2000. *Technical Assistance for Combating Desertification in Asia*. Manila; ADB. 2001. *Technical Assistance to the People's Republic of China for Optimizing Initiatives to Combat Desertification in Gansu Province*. Manila; ADB. 2001. *Technical Assistance to the People's Republic of China for PRC-GEF Partnership on Land Degradation in Dryland Ecosystems*. Manila.

⁵ ADB. 2003. *Technical Assistance to the People's Republic of China for Poverty Reduction in Key Forest Conservation Programs*. Manila; and ADB. 2003. *Technical Assistance to the People's Republic of China for Poverty Reduction in Grassland Development Programs*. Manila.

⁶ A high-level multilateral body that helps the PRC to address issues of environment and development through international cooperation. CCICED makes annual recommendations to the Government, at the highest level, on the formulation and implementation of long-term strategies and policies for sustainable development.

⁷ MWR has taken the following specific measures: (i) developed a pilot program for ecological restoration based on natural processes in 128 counties; (ii) issued a ministerial document, jointly with the Ministry of Agriculture, on Strengthening Ecological Restoration in Soil and Water Conservation and Promoting Grassland Protection (4 September 2004); (iii) launched the first phase of the National Soil and Water Conservation Monitoring Network (in April 2004); and (iv) is drafting Regulations for Public Participation in Soil and Water Conservation, to provide a mechanism for public involvement at the local level.

been requested as follows:

- (i) **Building awareness of the new strategy.** The main elements of the strategy need to be promoted as the previous “top-down” planning process is being replaced by a participatory approach. A brief for the National People’s Congress to gain full support from the national leadership is an important output.
- (ii) **Improvement of the policy, legislative, and institutional environment.** TA 3548 initially assessed the PRC’s key policies and legislation in soil and water conservation and found many overlaps and inconsistencies at the national and provincial levels. There is a need to improve the quality of the current water and soil conservation regime to create an enabling legal and institutional environment for controlling land degradation.⁸
- (iii) **Determining the costs and benefits of controlling land degradation.** TA 3548 also found that there was no consistent methodology for estimating the costs and benefits of measures to combat land degradation in the PRC. Standard costs have been calculated for a number of different engineering and vegetative control measures, but few attempts have been made to determine the economic value of the on-site (farm field level) and off-site (small-watershed and river-basin level) benefits that could accrue from adopting such measures. TA 3548 prepared a methodology and the estimated annual benefits from conservation were CNY223 per hectare for the whole of the PRC and CNY280 per hectare for the Yangtze River basin (in the range \$27 to \$34 equivalent). The profitability of soil and water conservation was also estimated for Loess plateau, Yangtze river area, and PRC as a whole. The analysis showed that past soil and water conservation was economically efficient, with the benefit-cost ratio in a range of 1.0 to 1.5, and increasing to a range of 1.8 to 2.7 when off-site benefits were included. However, there is a need to expand this work to develop a methodology to include (i) reduction in soil pollution, (ii) reduction in salinity, (iii) combating desertification, (iv) expansion in forested areas, and (v) conversion of farmland to other purposes. This analysis can guide future prioritization of investments in soil and water conservation.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

8. The long-term sector goal of the TA is to combat land degradation and support the Government’s sustainable development strategy. The immediate objective of the TA is to assist the Government to implement the new national strategy for soil and water conservation within the MWR and at provincial level. The TA will have the following outputs: (i) improved awareness at the central and local levels of the new strategy; (ii) recommendations on revising the 1991 Water and Soil Conservation Law; (iii) an agreed practical methodology for valuing costs and benefits of soil and water conservation; and (iv) support for a prefeasibility study of an investment project suitable for development partner financing in a selected area.

⁸ A large amount of work is under way to improve the quality of environmental law and regulations. In part it is supported by ADB through (i) PRC-GEF OP12 Partnership on Land Degradation, (ii) OGC’s ongoing program on Support for Environmental Legislation in the PRC, (iii) other TAs, e.g., ongoing ADB. 2002. *Technical Assistance to the People’s Republic of China for Study for Rural Nonpoint Source Pollution Control*. Manila; *Technical Assistance to the People’s Republic of China for Transjurisdictional Environmental Management*. Manila; and ADB. 2001. *Technical Assistance to the People’s Republic of China for Strategic Planning Study for the Preparation of the Yellow River Law*. Manila. ADB is helping the Government proceed toward viable solutions, and through this TA, will focus on a key environmental law.

B. Methodology and Key Activities

9. The TA will take into account the relevant findings of previous ADB-funded TAs and other studies and will assess international and domestic best practices and available methodologies for valuing economic, ecological, and social benefits of soil and water conservation. The TA will propose a practical framework for such valuation and apply the proposed framework to selected sites. Various seminars and training workshops will be conducted at the national level for consensus building, and at the river-basin and local levels for awareness and capacity building. The TA will comprise the following activities:

- (i) Preparing briefing materials on the strategy and action plan for the National People's Congress;
- (ii) Developing training handbooks and brochures, and web site materials on the new soil and water conservation strategy for training workshops at different levels;
- (iii) Conducting two seminars at the national level for planners and policy makers relating to soil and water conservation and land degradation to reach a consensus on the new soil and water conservation strategy; also, conducting one seminar at the river-basin level and three workshops at the local level for a better understanding of the strategy;
- (iv) Carrying out three training workshops for practitioners at the county level on participation and the bottom-up approach in soil and water conservation;
- (v) Assessing international experience in soil and water conservation legislation, and making recommendations for revising the 1991 Water and Soil Conservation Law. A national workshop involving international specialists on selected country/regional soil and water conservation laws and evaluation of work done in TA 3548 will be held in Beijing on June 2005;
- (vi) Analyzing available methodologies for valuing the economic, ecological, and social benefits of soil and water conservation, proposing a practical framework, and applying it in sample areas of the western, black soil, and red soil regions to the provincial or county level; and
- (vii) Supporting the EA to conduct a prefeasibility study for a selected area suitable for development partner financing.

C. Cost and Financing

10. The total cost of the TA is estimated to be \$476,000 equivalent, comprising \$123,000 in foreign exchange costs and \$353,000 equivalent in local currency costs. It is proposed that ADB finance \$379,000 equivalent, consisting of the entire foreign exchange costs and \$256,000 equivalent in local costs. The TA will be financed on a grant basis from ADB's TA funding program. The Government of the PRC will provide the balance of local costs, equivalent to \$97,000 to cover in-kind counterpart costs and services. The detailed cost estimates are given in Appendix 3.

D. Implementation Arrangements

11. MWR will be the Executing Agency (EA) for the TA. A steering committee will be established, chaired by the vice minister of MWR, to provide overall guidance for TA implementation. The steering committee members will consist of MWR, Ministry of Finance, National Development and Reform Commission, Ministry of Land and Resources, Ministry of Agriculture, State Environment Protection Administration, and State Forest Administration. The steering committee will have three meetings, each at TA Inception, midterm review, and final

phase of implementation. A TA management office, comprising MWR's Department of International Cooperation, Science and Technology, Department of Soil and Water Conservation, and other departments as necessary, will be established for daily coordination and administration of the TA, and for liaising with ADB. MWR will assign an experienced staff member of MWR to serve as a TA task manager, as well as counterpart staff who will work closely with the TA consultants. MWR will also provide office space, access to communications and photocopiers, and logistical support for TA implementation using counterpart funds.⁹

12. The TA will be carried out over a period of 12 months commencing in November 2004 and completing by end-November 2005. A total of 29 person-months (p/m) of consulting services will be required for the TA, comprising 5 p/m of international and 24 p/m of domestic consultants. The international consultants will comprise (i) a natural resources development economist (2.5 p/m), with expertise in the economics of soil and water conservation; and (ii) one or two legal experts (a total of 2.5 p/m), with sound soil and water conservation law experience in selected countries with best practices. The domestic consultants will comprise: (i) a TA coordinator (6 p/m), (ii) a natural resources economist (10 p/m), (iii) a seminar/workshop facilitator (2 p/m), (iv) a legal expert (3 p/m), and (v) a project economist (3 p/m). The terms of reference for the consultants are in Appendix 4.

13. ADB will select and engage consultants in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to itself in respect of the selection and engagement of domestic consultants. The international consultants and domestic consultants will be engaged on an individual basis, directly or through an organization, such as an academic institution, a government or international agency, or a consulting firm. Advance payment may be provided to the EA to facilitate the implementation of the seminars and workshops.

14. At the end of the first month, the consultant will submit an inception report and seminar and workshop plan to the Government and ADB, which will be discussed in a tripartite review meeting (TRM). An interim report will be submitted to the Government and ADB at the end of the fifth month from the start of the TA, the findings of which will be discussed in a seminar or workshop, in which stakeholders will take part, and subsequently in a second TRM. A draft final report will be submitted to the Government and ADB, 1 month before the end of the assignment, which will be presented by the consultant at the second national seminar. A third TRM will be held prior to the conclusion of the TA to discuss the draft final report. The suggestions and comments generated during the second national seminar and the third TRM will be incorporated into the TA final report, which will be submitted to the Government and ADB at the end of the 12-month TA implementation period.

IV. THE PRESIDENT'S DECISION

15. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$379,000 on a grant basis to the Government of the People's Republic of China for Implementation of the National Strategy for Soil and Water Conservation, and hereby reports this action to the Board.

⁹ MWR, by itself, cannot achieve an integrated approach by all relevant agencies. However, by adopting the new strategy it can demonstrate its value to the other agencies. As illustrated in para. 6 and footnote 7, a start has also been made in improving interagency coordination between MWR and the Ministry of Agriculture. The steering committee for the PRC-GEF OP12 Partnership on Land Degradation in Dryland Ecosystems (which coordinates 11 key agencies in this area) will also be kept informed.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Land degradation problem addressed effectively through sustainable strategy of the Government</p>	<p>Increased government budget for soil and water conservation program under 11th Five-Year Plan; scientific approach for allocating budget based on cost-benefit analysis and sustainable approaches to land degradation; ex-post monitoring of technical assistance (TA) impacts.</p>	<p>Government documents and reports. Ministry of Water Resources (MWR) monitoring report on ex-post impacts of the TA for 3 years after completion</p>	
<p>Purpose The new national strategy for soil and water conservation accepted and implemented by the Government</p>	<p>New strategy implemented in the work programs of MWR and at provincial level.</p>	<p>Asian Development Bank (ADB) review missions; MWR reports Policy dialogue with relevant government officers and stakeholders</p>	<p>Assumption: Government's continuous commitment to scientific, comprehensive, and participatory development approach</p>
<p>Outputs</p> <p>(i) Improved awareness at central and local levels of the new soil and water conservation strategy</p> <p>(ii) Recommendations on revising Water and Soil Conservation Law</p> <p>(iii) Methodology or framework for valuing costs and benefits of soil and water conservation</p> <p>(iv) Support for a prefeasibility study of an investment project</p>	<p>(i) High-level officials are supportive of the strategy and other stakeholders understand and support the strategy</p> <p>(ii) International best legal and regulatory practices introduced for development of revised law</p> <p>(iii) Systematic estimation of the benefits of soil and water conservation and approved national methodology</p> <p>(iv) Prefeasibility study based on (a) cost-benefit analysis; (b) grant financing; (c) national priority; and (d) impact on poverty</p>	<p>TA completion report</p> <p>TA progress reports</p> <p>Tripartite meetings and workshops</p> <p>TA review missions</p> <p>Completed project prefeasibility study</p>	<p>Assumptions:</p> <p>Well-coordinated approach among sectors and different agencies</p> <p>National legal body support the efforts to revise Soil and Water Conservation Law and other laws related to land degradation</p> <p>Government willingness to apply the methodology</p>
<p>Activities</p> <p>(i) Preparing briefing materials on the revised strategy and action plan for National People's</p>	<p>Briefing report</p>	<p>TA progress monitoring reports</p> <p>TA review</p>	<p>Assumptions: Both international and domestic consultants can</p>

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Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Congress</p> <p>(ii) Seminars at national level for consensus building, river basins, and local levels; training workshops for key counties on participation (bottom-up approaches) in soil and water conservation</p> <p>(iii) Training handbooks and brochures, and website materials on Soil and Water Conservation (SWC) strategy</p> <p>(iv) Assessing international experience on soil and water conservation legislation, and making recommendations on revising the Soil and Water Conservation Law</p> <p>(v) Assessing available methodologies for valuing economic, ecological, and social benefits of SWC, and proposing a practical framework</p> <p>(vi) Applying the proposed framework at selected sites</p> <p>(vii) Support for prefeasibility study in a selected area</p>	<p>National level: 2 seminars River basins: 1 seminar Local level: 3 seminars Training workshops: 3, each 50 persons</p> <p>Materials published and distributed to stakeholders</p> <p>1 national workshop involving international specialists on SWC laws and evaluation of work done in previous TA; report and recommendations on revised SWC laws</p> <p>A methodology for economic valuation of costs and benefits, using the results of TA 3548 and related work</p> <p>Application in sample areas of western, black soil, and red soil regions to provincial or county level</p> <p>Prefeasibility study of selected area</p>	<p>missions</p> <p>Tripartite review meeting</p>	<p>communicate well and cooperate closely</p> <p>Adequate stakeholder participation</p> <p>Necessary data available on timely basis</p>
<p>Inputs</p> <p>TA total cost</p> <p>International consultants</p> <p>Domestic consultants</p> <p>ADB contribution</p> <p>Government contribution</p>	<p>\$476,000</p> <p>5 person-months</p> <p>24 person-months</p> <p>\$379,000</p> <p>\$97,000 equivalent</p>	<p>Progress reports</p>	<p>Government provides adequate counterpart support</p>

NEW STRATEGY FOR SOIL AND WATER CONSERVATION ADOPTED BY THE MINISTRY OF WATER RESOURCES

A. Background

1. In the 1998 floods, the worst for 50 years in the People's Republic of China (PRC), massive physical damage (over \$20 billion equivalent) and loss of life occurred. Increasing land degradation, including wind and water erosion, chemical and physical soil deterioration, mostly as a result of poor land use decisions over a long period of time, was largely responsible for creating the preconditions for such extensive devastation. Land degradation affects most provinces, water tables are declining in many areas, and desertification is expanding in the drier and more fragile areas of the west and central regions. Overstocking of animals on grasslands has increased the spread of deserts and reduced biodiversity. Increasing sand and dust storms originating from degraded dryland areas are adversely affecting the quality of life and are a global problem. With per capita arable land of only 0.11 hectares, shrinking farm areas can encourage nonviable farming practices. Land degradation is correlated with poverty; almost 90% of the rural poor live on degraded land.

2. The Government has been implementing soil and water conservation programs for the past 50 years, and since the 1998 floods the level of expenditures has significantly increased. There are also many sector plans and programs administered by different agencies—but coordination is a challenge, feedback mechanisms are weak, and overlaps in jurisdictions and responsibilities are common. As a result, the level of efficiency in achieving the desired impact of public expenditures is low. An extensive body of legislation and regulation exists but this does not clearly provide for an effective framework to address soil and water conservation. Running through the relevant legislation is an emphasis on production over conservation. Various terms relating to sustainable land use often appear but without clear definitions or consistent and nationally agreed indicators or data. Overall, water and soil conservation policy places an emphasis on “soil erosion” and “desertification” with less mention of other principal forms of land degradation, i.e., salinity, acidification, vegetation decline, or nutrient decline. Moreover, various policies call for a broadening of the national policy framework for water and soil conservation, including an effective multisector approach, and an improvement of the links between land tenure, poverty, and food security.

3. Aware of the need for a more comprehensive approach, the Government requested Asian Development Bank (ADB) technical assistance (TA) in 2000 to develop a new strategy. The work done under this TA 3548¹ is highly regarded in the PRC. The Ministry of Water Resources (MWR) has used the process and the report's recommendations to stimulate internal debate and better understand the complex web of causes and effects of land degradation, and has adopted the recommended strategy.

4. The objective of TA 3548 was to address soil and water conservation in a comprehensive manner (not limited to existing institutional boundaries) and map out a strategic approach to control all forms of land degradation. The extent and severity of land degradation was to be assessed, lessons drawn from past projects were to be analyzed and a pipeline of potential projects for future investment proposed, and a progress monitoring and evaluation system designed. MWR has accepted the strategy as outlined in the final report of this TA.

¹ ADB. 2000. *Technical Assistance to the People's Republic of China for Preparing National Strategy for Soil and Water Conservation*. Manila.

B. The New Strategy

5. The twin goals of the strategy are (i) sustainable and productive use of natural resources (soil, vegetation, and water) in ways that are ecologically sound, economically viable, and socially acceptable and equitable; and (ii) prevention of further land degradation, and the restoration of a productive and protective function in currently degraded areas. The strategy is based on sustainability in terms of ecological, social, economic, livelihood, and institutional impacts. The following are the key concepts and principles:

- (i) A holistic and integrated approach is needed, in which land degradation problems (not just soil erosion) are dealt with, within the constraints and opportunities of land users. Integrated land management is more than just soil and water conservation, as it touches on the totality of rural household livelihood systems, and the improvement of the productivity and sustainability of crop, livestock, and tree-based enterprises.
- (ii) Adoption of participatory approaches is essential to overcome the failings in past “top-down” soil conservation and agricultural production projects.
- (iii) Land degradation is a multidimensional problem that cuts across different sector development interests and administrative responsibilities. Tackling land degradation requires an interagency approach, as no one ministry or department has the full range of disciplinary expertise or statutory responsibility to deal with it alone.²
- (iv) An enabling policy and legislative environment is needed, which allows rural communities to take primary responsibility for the preservation and management of their local natural resources.
- (v) Commonality of interests allows for the harmonization of key government development objectives with the social welfare objectives of rural households.

6. The following are the main elements of the strategy and represent a synthesis of the lessons learned from a review of past efforts to control land degradation.

a. Policies

7. This element entails the formulation of state, provincial, and local government policy frameworks for sustainable land management. This requires harmonization of the related elements within the different policies and strategies guiding the sector development concerns of individual government institutions. Ecological sustainability is a key requirement. Policies aimed at increased production of crops, livestock, and forest products should not conflict with the medium- to long-term goal of restoring, sustaining, and enhancing the productive potential of natural resources. Important aspects are (i) addressing the link between poverty and land degradation and (ii) greater government budget commitment.

² MWR, by itself, cannot achieve an integrated approach by all relevant agencies. However, by adopting the new strategy it can demonstrate its value to the other agencies. As illustrated in para. 6 and footnote 7, main text, a start has also been made in improving interagency coordination. The steering committee for the PRC-GEF OP12 Partnership on Land Degradation in Dryland Ecosystems (that coordinates 11 key agencies in this area) will also be kept informed.

b. Legislation

8. This involves reforming and strengthening the water and soil conservation legislative regime, within the overall environmental law and policy system of the PRC by updating and reformulating the 1991 Water and Soil Conservation Law. Other recommendations are to (i) reduce overlaps and maximize synergies within the body of environmental legislation; (ii) consider longer-term substantial legislative reform, with the aim of overcoming existing weaknesses in the provisions and implementing regulations of individual environmental laws (covering agriculture, forestry, environmental protection, grasslands, and desertification).

c. Institutions

9. Interagency coordination is essential as the control of land degradation and the promotion of sustainable land management are multidimensional. There is a need for a high-level coordinating body with a mandate to: (i) coordinate the various sectors, (ii) develop medium- to long-term strategies and action plans, (iii) prioritize financial resource allocations, (iv) approve guidelines and policies for controlling land degradation and promoting sustainable land management, and (v) review the local area development plans proposed by various levels of government. Other important issues are (i) devolution of primary responsibility for sustainable land management projects and programs to the provincial and county levels; (ii) institutional capacity building to generate a cadre of planners, extension workers, and researchers; (iii) development of participatory approaches and sensitization of policy makers and senior officials at all levels to the benefits of using participatory methods and processes; and (iv) greater attention and financial resources to research the problems inherent in control of land degradation.

d. Technologies

10. The strategy changes the emphasis from looking at land degradation in terms of what is happening to determining why it is happening—instead of focusing on treating the symptoms the need is to identify and tackle the root causes. Sheet, rill and gully erosion, and the scouring and deposition of soil by wind are the visible symptoms of other, usually less obvious, land degradation processes. The most important of these are adverse changes in the physical, biological, chemical, and hydrological properties of the soil. Other features are (i) improving on-site crop, soil, and rainwater management as the keys to preventing soil erosion; (ii) ensuring that land use requirements of agricultural or forestry enterprises match the land qualities present in the areas where they are undertaken; (iii) promoting integrated plant nutrition management systems; (iv) promoting conservation agriculture/no-till systems, to counter the problems of soil erosion, water loss, and organic matter depletion, associated with conventional tillage practices; (v) promoting improved natural grassland management systems to sustain and enhance the livestock production potential of the natural grasslands; (vi) reviewing and improving tree planting practices to ensure that where afforestation is promoted for land degradation control, it achieves the intended objective; (vii) ensuring adoption of mitigative control measures within urban areas so as to address an increasing problem; and (viii) documenting and disseminating information on successful technologies, through the systematic collection, review, and storage of data in a centrally located, on-line computer-based soil and water conservation information system.

e. Processes, Approaches, and Methods

11. Innovation should be encouraged to recognize the role that innovative farmers can play in developing and refining sustainable land management practices. Promotion of sustainable land management will support locally appropriate combinations of the following:

- (i) buildup of soil organic matter and related biological activity to sustainable levels;
- (ii) integrated plant nutrition management with locally appropriate, and cost-effective, combinations of organic/inorganic and on/off-farm sources of plant nutrients;
- (iii) better crop management, especially (i) use of improved seeds, (ii) improved crop establishment for annual crops and mulching/maintenance of surface cover in perennial crops, and (iii) weed management and integrated pest management;
- (iv) better rainwater management to increase infiltration and reduce runoff so as to improve soil moisture conditions within the rooting zone;
- (v) improved protection against wind erosion by maintaining soil moisture, and increasing soil surface roughness;
- (vi) improvement of soil rooting depth and permeability through breaking of cultivation-induced compacted soil layers through conservation tillage practices;
- (vii) reclamation, where appropriate (i.e., if technically feasible and cost effective) of land that has been severely degraded;
- (viii) promotion of community-based participatory approaches, for project planning and technology development, so as to build on rural peoples inherent skills and capability to formulate and implement their own development plans, and to develop and disseminate their own improved land management technologies;
- (ix) development and adoption of people-centered learning processes, such as farmer field schools for “farmer-to-farmer” training and information exchange on improved land management practices; and
- (x) a focus on sustainable (natural resource-based) livelihoods—not just soil and water conservation—so as to break the cycle of poverty and land degradation.

f. Costs and Benefits

12. Potential alternative forms of intervention will be analyzed to determine (i) on-site costs and benefits of controlling land degradation, in particular at the farm household, community, and small-watershed levels; (ii) the off-site costs and benefits, in particular at the community, small-watershed, and river-basin levels. For social equity reasons it is important to (i) consider who incurs the costs of controlling land degradation, and whether they are the ones who benefit; and (ii) identify improved land management practices with high productive benefits, low incremental costs, minimal forgone benefits, and low risk.

g. Monitoring and Evaluation

13. Monitoring and evaluation systems will support decision making for ongoing planning and management of land degradation control programs. Coordination and sharing of the collection and analysis of information between stakeholder institutions is also required to obtain a consistent and broad picture of the true nature, extent, and severity of land degradation. From agreed baseline data, selected key monitoring and evaluation indicators will be developed for measuring the success of sustainable land management projects with regard to the health of the land (ecological impact), and improvements in the socioeconomic circumstances of the intended beneficiaries (poverty impact).

h. Funding

14. The following sources of funding will be pursued during the implementation of the strategy:

- (i) Encouragement of private investment from those engaged in farming, forestry, or other land use enterprises in the expectation that by investing their own resources of skill, land, labor and cash, they would gain tangible financial benefits from investing in improved production-oriented (but conservation-effective) field-level farm and/or forest management practices.
- (ii) Promotion of conservation for business. Improved land management needs to do more than just rehabilitate the environment; it must also enable the land users to make more profit on a sustainable basis.
- (iii) Development of local savings and credit schemes, as an alternative to government support, to overcome local cash constraints.
- (iv) The levy of fees on off-site (downstream) beneficiaries, to pay for on-site (upstream) conservation, where it is possible to clearly identify the beneficiaries, and determine the type of services and benefits received. This requires the development of mechanisms for charging for such benefits (e.g., a levy on water user fees, hydropower bills).
- (v) Funding of land degradation control from the development and operation and maintenance costs of major infrastructure development projects, such as roads, railways, dams, water transmission canals, irrigation facilities, hydropower plants, oil and gas pipelines, and urban water supply projects, as their long-term viability may be threatened by erosion, sedimentation, flooding, or burial by drifting sand or landslides.
- (vi) Creation of central, river-basin, and provincial trust funds, using the money raised from the imposition of levies on the off-site/downstream beneficiaries, to support the planning and implementation of land degradation control programs. This would be part of the public contribution to the costs of upstream conservation.

C. Immediate Priorities

15. Selected priority actions, as included in the strategy, will be assisted by the TA. These include (i) reformulation of the 1991 Water and Soil Conservation Law, (ii) determination of a methodology to estimate the costs and benefits of interventions to combat land degradation, (iii) promotion of the new strategy, and (iv) identification of new investment projects suitable for development partner financing.

COST ESTIMATES AND FINANCING PLAN
(\\$)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank (ADB)^a Financing			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants (5 person-months)	100,000	0	100,000
ii. Domestic Consultants (24 person-months)	0	96,000	96,000
b. International and Local Travel	12,000	15,000	27,000
c. Training Materials, Reports, and Communications	0	13,000	13,000
2. Translation and Interpretation	0	5,000	5,000
3. Workshops and Seminars (including technical panel meetings)	0	100,000	100,000
4. Miscellaneous Administration and Support Cost	0	4,000	4,000
5. Contingencies	11,000	23,000	34,000
Subtotal (A)	123,000	256,000	379,000
B. Government Financing			
1. Counterpart Staff, Per Diem, and Travel	0	35,000	30,000
2. Office Accommodation and Equipment	0	25,000	25,000
3. Workshop and Seminar Expenses	0	15,000	15,000
4. Data Collection and Translation	0	12,000	12,000
5. Maps, Documents, and Reference Materials	0	10,000	10,000
Subtotal (B)	0	97,000	97,000
Total	123,000	353,000	476,000

^a Financed by ADB's technical assistance funding program.
Source: ADB estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The technical assistance (TA) will (i) improve awareness of the new soil and water conservation strategy at the central and local levels; (ii) develop recommendations on revising the Soil and Water Conservation Law; (iii) assess available methodologies for valuing economic, ecological, and social benefits of soil and water conservation; and (iv) undertake a prefeasibility study for a selected region. The TA would engage 5 person-months of international consultants and 24 person-months of domestic consultants.

A. International Consultants

1. Natural Resources Development Economist (2.5 person-months)

2. The international natural resources (development) economist, in conjunction with the domestic natural resource economists, will be responsible for advising on, and overseeing, the implementation of the studies on the economic analysis of land degradation. The consultant will:

- (i) Update and expand the macroeconomic analysis undertaken for ADB TA 3548: National Strategy for Soil and Water Conservation of the PRC,¹ to determine the economic costs of past and present land degradation within specific regions, e.g., western, black soil, and red soil regions compared with the Loess plateau region;
- (ii) Based on work under TA 3548 and data to be made available by the Ministry of Water Resources (MWR) and other sources, extend the methodology for forestry activities, desertification, soil fertility deterioration, salinity, and land use type change;
- (iii) Apply the methodology at the county level for selected projects and programs;
- (iv) Secure full cooperation from MWR and other relevant government agencies, especially the State Forestry Administration and Ministry of Agriculture;
- (v) Develop a methodological framework to assess social and ecological benefits of soil and water conservation, including on-site and off-site cost-benefit analysis; and
- (vi) Develop training materials and guidelines for those involved in the formulation of programs and projects.

2. Legal Specialists (2.5 person-months)

3. One or two international legal consultants will be engaged as individuals or through an international organization. They should be experts in nature conservation and natural resource sustainable utilization with specialty in country experience in legislation and implementation of water and soil conservation (in e.g., United States, Australia, or India). Each consultant will:

- (i) Prepare a country report on water and soil conservation in his or her country, with particular emphasis on: (a) legal framework (whether involving specific legislation, regulations, or other types of policy directive); (b) instruments of water and soil conservation and the comprehensive operation system of water and soil conservation involving technology application, cost-benefit sharing arrangements, stakeholder protection, participatory incentives, and public service development; (c) compliance with law, and practice of agreements, penalties, and incentives with

¹ ADB. 2000. *Technical Assistance to the People's Republic of China for Preparing National Strategy for Soil and Water Conservation*. Manila.

- application to various cases; (d) compensation arrangement for public interest; and (e) practice of applying precautionary principles;
- (ii) Visit Beijing during the week of the international workshop to: (a) present an overview of the draft country report; and (b) review the work under TA 3548 and related work, based on the review of the PRC's 1991 Water and Soil Conservation Law, the 2002 Water Law, the 2001 Land Desertification Prevention and Control Law, the 2002 survey of recommendations for the revision of the 1991 Water and Soil Conservation Law made by MWR, the National Strategies of Water and Soil Conservation (ADB TA 3548 Final Report by consultants), Optimizing Desertification Strategies for Gansu Province of PRC (ADB TA 3663² Final Report by consultants), and the Report of Proposed Yellow River Law (ADB TA 3708³ Final Report by consultants);
 - (iii) Based on discussions with officials of MWR and local consultants, provide a recommendation report on: (a) comments and discussions raised by local officials or consultants, (b) analysis on areas of legislation or implementation in which his or her country has experience or lessons relevant to the revision of the 1991 Water and Soil Conservation Law, and (c) recommendations and comments on the revision of the 1991 Water and Soil Conservation Law.

B. Domestic Consultants

1. Project Coordinator (6 person-months)

4. The project coordinator will be responsible for overall operation of the TA. The consultant will

- (i) work as a team leader to coordinate with international and domestic consultants;
- (ii) liaise with the Executing Agency (EA) and other relevant government agencies for the detailed implementation of the TA;
- (iii) back up international and domestic consultants, including data and background information support;
- (iv) organize expert panel group meetings to review working reports and final project reports;
- (v) draft brief materials on the revised strategy and action plan for the National People's Congress;
- (vi) organize a task force to conduct a project prefeasibility study;
- (vii) consolidate and coordinate working reports from international and domestic consultants; and
- (viii) set up a system in MWR to ensure 3 years ex-post monitoring/reporting on the impacts of the TA.

2. Natural Resources Economist (10 person-months)

5. The natural resource and environmental economist (2 persons) will work with the international natural resources (development) economist. The consultant will have specific responsibility to

² ADB. 2001. *Technical Assistance to the People's Republic of China for Optimizing Desertification Strategies for Gansu Province*. Manila.

³ ADB. 2001. *Technical Assistance to the People's Republic of China for Strategic Planning Study for the Preparation of the Yellow River Law*. Manila.

- (i) expand the application of economic methodology developed under ADB TA 3548 to the western, black soil, and red soil regions and compare the applicability of the methodology to the Loess plateau region;
- (ii) extend the existing methodology for forestry activities, desertification, soil fertility deterioration, salinity, and land use type change;
- (iii) apply the methodology at the county level for selected projects and programs;
- (iv) cooperate fully with MWR and other relevant government agencies;
- (v) develop a methodological framework to assess social and ecological benefits of soil and water conservation, including on-site and off-site cost-benefit analysis; and
- (vi) develop training materials and guidelines, for those involved in the formulation of programs and projects.

3. Legal Specialist (3 person-months)

6. A domestic legal consultant will be engaged with general knowledge of international conventions on water, soil and land conservation, and expertise in the PRC's natural resource and environmental law. The consultant will

- (i) provide a PRC report on: (a) independent expert analysis of focal issues of the 1991 Water and Soil Conservation Law; (b) comments on the 2002 survey of recommendations for the revision of the 1991 Water and Soil Conservation Law made by MWR; and (c) expert recommendations on the revision of the 1991 Water and Soil Conservation Law undertaken by MWR;
- (ii) participate in the international workshop to: (a) present an overview of the PRC report; (b) work closely with international legal consultants, and discuss issues raised from consultant reports and other documents with officials of MWR and other experts; and (c) compile questions and results of discussions with various parties and make a brief report on the legal outcomes of the International workshop;
- (iii) based on discussions with officials and international consultants, finalize the PRC report;
- (iv) edit the country reports (overseas and the PRC) relating to the revision of the 1991 Water and Soil Conservation Law; and
- (v) compile all the reports into a summary recommendation report on the revision of the 1991 Water and Soil Conservation Law, based on all reports of legal consultants and feedback from various sources.

4. Workshop Facilitator (2 person-months)

7. The workshop facilitator will be responsible for facilitating consensus-building meetings involving related government agencies, workshops, and training courses for publicizing the new soil and water conservation strategy. The consultant will specifically

- (i) coordinate, plan, and conduct workshops, meetings, and training courses at the central, river-basin, and local levels;
- (ii) develop training materials for local training sessions for new soil and water conservation strategy;
- (iii) develop brochures, web site material, and other visible publications for publicizing the new strategy;

- (iv) prepare handouts for workshops and meetings;
- (v) examine the most appropriate methods of seeking feedback and consensus of participants; and
- (vi) document these inputs and provide feedback on the outcomes of the workshops to participants and decision makers.

5. Project Economist (3 person-months)

8. The project economist will work with MWR staff on the prefeasibility study. The consultant will

- (i) undertake financial and economic analysis for proposed soil and water conservation project;
- (ii) finalize cost estimates and financing arrangements for the project;
- (iii) coordinate with government agencies and development partners for cofinancing issues; and
- (iv) prepare project documentation as needed, and provide support to the team leader as required.