

ASIAN DEVELOPMENT BANK

TAR: PRC 38511

TECHNICAL ASSISTANCE

TO

THE PEOPLE'S REPUBLIC OF CHINA

FOR

**ENERGY DEVELOPMENT STRATEGY FOR THE INNER MONGOLIA
AUTONOMOUS REGION**

December 2004

CURRENCY EQUIVALENTS

(as of 4 November 2004)

Currency Unit	–	yuan (CNY)
CNY1.00	=	\$0.121
\$1.00	=	CNY8.2641

The exchange rate of the yuan is determined under a managed floating exchange rate system. In this report, a rate of \$1 = CNY8.26 is used

ABBREVIATIONS

ADB	–	Asian Development Bank
GDP	–	gross domestic product
IMFD	–	Inner Mongolia Financial Department
PRC	–	People's Republic Of China
TA	–	technical assistance
WTO	–	World Trade Organization

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Law, economic management, and public policy
Subsector	–	Economic management
Theme	–	Private sector development
Subtheme	–	Policy/institutional/legal/regulatory/reforms

NOTE

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

This report was prepared by Longyun Peng, People's Republic of China Resident Mission.

I. INTRODUCTION

1. During formulation of the 2003 Country Strategy and Program for the People's Republic of China (PRC), the Government requested that the Asian Development Bank (ADB) emphasize reforms at the provincial level. During the 2003 Country Programming Mission, the Government requested that ADB provide a technical assistance (TA) to support the Inner Mongolia Autonomous Region (Inner Mongolia) to formulate an energy development strategy as an input for the provincial 11th Five Year Plan (2006–2010). A fact-finding mission¹ visited Inner Mongolia 16–21 September 2004, confirmed the need for the TA, and reached agreement on the TA's scope, cost estimates, financing plan, terms of reference, and implementation arrangements.² Appendix 1 gives the logical framework for the TA.

II. ISSUES

2. The 12 western provinces, including Inner Mongolia, have benefited less than the east coast from economic growth and reforms. Incomes are lower, poverty is more widespread, health and education indicators are lower, there are serious land degradation problems, and there are weaknesses in physical infrastructure, including roads, railways, power, and telecommunications. Through its Western Development Strategy, the Government has made a major commitment to accelerate development in the western region.

3. In 2003 the average per capita gross domestic product in Inner Mongolia was CNY8,734, lower than the national average of CNY9,046. Of 101 counties, 31 are national poverty counties and 29 are provincial poverty counties. The fiscal revenue of the poverty counties cannot cover salaries of the government officials, teachers, and health personnel. Investments in basic education and public health are inadequate. In 2003, about 1.28 million people, more than 10% of Inner Mongolia's rural population, lived on incomes below the official poverty line,³ vs PRC's national poverty incidence of 3%. About 2.45 million people, or 18% of the rural population, had incomes of less than the international poverty line of \$1/day.

4. One of Inner Mongolia's comparative advantages is its considerable natural resource base, with the potential to provide the basis for future economic development. For example, Inner Mongolia has deposits of 134 types of mineral resources. Six of these mineral resources, including rare earth elements and columbium, rank number one among PRC's provinces; 11 resources, including coal and chromium, rank second among provinces; and 63 rank in the top 10.

5. Inner Mongolia has abundant energy resources. Proven coal reserves are estimated as 223 billion tons and prospective coal reserves, as 1,200 billion tons. Coal production can potentially reach 500 million tons by 2010, about 20% of PRC's total production. Allowing for consumption in Inner Mongolia, this output could supply 80,000 Megawatt of coal-fired power plants. Considering the proximity to major load centers, large and super-large mine-mouth coal-fired plants could be built in Inner Mongolia. Inner Mongolia has proven oil reserves of 700 million tons and an estimated reserve of 4 billion tons. The proven gas reserves are 1 trillion cubic meters, and the prospective reserves, 4.2 trillion cubic meters. The Shan'xi-Gansu

¹ The mission comprised Longyun Peng, team leader, economics officer of People's Republic of China resident mission, and Ashok Bhargava, energy specialist, Energy Division, ECRD.

² The TA first appeared in *ADB Business Opportunities (Internet edition)* on 17 September 2004.

³ PRC's official poverty line of CNY637 per capita/year is low compared with international rates.

Ningxia Oil and Gas Field, a recognized world-class oil-gas field, is mostly in Inner Mongolia's Erdos Basin. With rising oil prices, the technology of transforming coal to oil or coal liquefaction has become cost competitive. Given its large reserves of coal and successful transformation of 10 million tons of coal to oil production, Inner Mongolia has demonstrated its potential to develop "coal to oil" projects. There is also potential to develop wind and solar energy in Inner Mongolia. If developed in a strategic manner, the energy sector could be a major driver of economic development. Driven by the surge in energy-related industries, Inner Mongolia's gross domestic product (GDP) reached CNY209.3 billion in 2003, a 16.3% increase over 2002.

6. In 2003, the value addition of the energy sector was CNY15.5 billion, and accounted for 7.4% of Inner Mongolia's GDP. The long-term objective is to increase the energy sector's contribution to the economy to 15% by 2010. The provincial government made development of the energy sector and associated industries a priority in the Ninth Five Year Plan (1996–2000). But development of the energy resources has not reached its potential, because of various constraints, including:

- (i) **Lack of a strategic development program.** No comprehensive studies have been undertaken to help the government define the strategic importance of the energy sector and related resources and industries in both Inner Mongolia and China, and to formulate a strategic development plan. There is a need to identify the strengths, weaknesses, opportunities, constraints, risks, and competitive threats; and to forecast energy supply-demand trends, and analyze the impacts of energy development on the environment and social sectors. Such an analysis would provide the basis for developing a strategic plan and estimating the resources required for its implementation.
- (ii) **Limited national priority.** With no comprehensive study to demonstrate the development potential of the energy sector in Inner Mongolia, the central Government has not fully recognized its potential to supply natural resources and energy to fulfill the national demand. There is some concern in the world market for natural resources and energy that PRC's rapidly growing demand is pushing up prices.
- (iii) **Regulated pricing.** Although the market determines most prices, the Government still controls power prices, which in turn negatively affects the coal price. The regulated pricing mechanism weakens Inner Mongolia's comparative advantage, and constrains development of the energy sector and related energy industries. Greater reliance on market forces and competition would help develop an enabling environment for Inner Mongolia's energy sector.
- (iv) **Inadequate infrastructure.** The transport infrastructure (rail and road links) connecting Inner Mongolia to the demand centers on the east coast is inadequate. The railway cannot carry all of the coal and other natural resources that Inner Mongolia can produce. Also, capacity of the power transmission system is limited, and not all electricity grids are interconnected. This limits the ability to develop new coal-fired mine mouth power plants. Weaknesses in the supporting infrastructure have prevented Inner Mongolia's energy sector from developing to its full capacity.
- (v) **Environmental constraints.** Strong mitigation measures are needed to ensure that resource exploitation does not result in unacceptable negative impacts on the environment. Among other things, the prices of resources should be adequate to generate funds to finance environmental mitigation measures, to provide incentives for resource conservation, and to offset depletion of natural resources. Current tax policies do not generate sufficient tax revenue for local governments to adequately address environmental problems associated with resource extraction. While developing its fossil fuel reserves, Inner Mongolia should have a complementary

strategy to maximize the supply side of energy conservation and to develop renewable energy to help offset the adverse impacts of fossil use.

7. The planned investment in the energy sector during the 10th Five Year Plan is estimated as CNY80 billion. If the foregoing constraints are removed, the planned energy investment in the 11th Five Year Plan should increase faster than that in the 10th Five Year Plan. To address these challenges and use its energy/resources as driving forces to help economic development and poverty reduction, the government of Inner Mongolia has decided to undertake a comprehensive study on energy, economic, and environmental development. This study will provide key inputs for formulation of Inner Mongolia's 11th Five Year Plan (2006–2010). PRC's recent energy shortages and high energy prices have created the right environment to draw the central government's attention to energy resource-rich regions such as Inner Mongolia.

III. TECHNICAL ASSISTANCE

A. Purpose and Output

8. The objective of this TA is to help the government of Inner Mongolia develop an energy development strategy as an input for its 11th Five Year Plan. The strategy will provide policy recommendations to develop Inner Mongolia as a state strategic energy base, and to harmonize energy sector development with overall development of the economy and the environment.

B. Methodology and Key Activities

9. The scope of the study includes (i) formulating an energy development strategy for Inner Mongolia that is directly relevant for drafting the energy chapter of the 11th Five Year Plan, including an action plan to implement the recommended energy development strategy; (ii) critically examining models of constructing energy/natural resource bases in various countries, and recommending a model to suit local conditions; (iii) conducting a feasibility study on developing Inner Mongolia as a state strategic energy base that will analyze/forecast PRC's energy supply-demand trend, identify strengths, weaknesses, opportunities, potential risks, and constraints for energy development, and recommending the use of its energy/resources as a key driver for social and economic development; (iv) identifying industrial linkages with upstream and downstream energy/resource industries and formulating policy recommendations for related industrial restructuring and upgrading; (v) identifying areas for cooperation with neighboring provinces in the energy/resource sectors, in providing complimentary infrastructure, and in designing an interprovincial cooperation mechanism; and (vi) analyzing interactions among energy development, social and economic development, environmental protection, and design policies for harmonizing their development.

C. Cost and Financing

10. The TA cost is estimated at \$630,000 equivalent, comprising \$270,000 in foreign exchange and \$360,000 equivalent in local currency. ADB will provide a grant of \$500,000 equivalent to cover the entire foreign exchange cost and \$230,000 equivalent of local currency cost. The Government will finance the balance of the local currency cost, equivalent to \$130,000, by providing counterpart staff, workshop facilities, and logistical support. This TA will be financed on a grant basis by ADB's TA funding program. Appendix 2 gives cost estimates and the financing plan.

D. Implementation Arrangements

11. The Inner Mongolia government will establish a steering committee chaired by Zhao Shun Lian, vice governor, and a project office comprising members of the Provincial Development and Reform Commission, Financial Department, Industrial Office, Coal Administration, and Environment Office. The Inner Mongolia Financial Department (IMFD) will be the Executing Agency. IMFD will be responsible for organizing and coordinating with various departments in the Inner Mongolian government to implement, monitor, and review findings of the study. IMFD will provide office facilities, in-city transportation, and access to all relevant information and data.

12. The TA will be implemented over 8 months, beginning in February 2005 and ending in October 2005. All procurement under the TA will be in accordance with ADB's *Guidelines for Procurement*. Two international consultants and a domestic consulting firm will be selected to undertake the TA. The consultants will be selected and engaged in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB. Two international experts (6 person-months) with expertise in energy planning and the economics of energy development will be engaged to provide international experience from similar assignments. The domestic consultants (42 person-months) will comprise 15 experts in energy planning; energy economy; social development; environmental management; renewable energy; coal, power, gas, and oil; and an industry specialist.

13. Consultants will be divided into six groups, led by a team leader and a deputy team leader. Two domestic experts will be nominated as team leader and deputy team leader, and will be responsible for preparing the main report. The other five groups will prepare the reports covering the five topics outlined above, and provide inputs for the main report. The team leader, assisted by the deputy team leader, will be responsible for overall supervision and coordination, and monitoring work progress of the six consultant groups. Considering large group of consultants and the lack of familiarity of most domestic consultants with ADB procedures, an administrative assistant will be recruited to deal with administrative issues, including coordinating with consultants, collecting invoices, preparing documents for disbursement, helping organize workshops, and interpreting and translating. There will be several consultation and dissemination workshops, so an advance payment facility is needed. Appendix 3 gives terms of reference for consultants.

14. The consultants will carry out all the tasks in a consultative manner, encouraging stakeholder participation. An inception report will be submitted within 4 weeks after the fieldwork begins. A workshop will be organized to review the consultants' final work program, methodology, and key issues, which may impact TA implementation. The consultants will submit an interim report at the end of the 4-month period. The interim report will analyze all components of the TA and initial recommendations. The consultant will submit a draft final report within 7 months. The consultants will submit the final report, incorporating comments from the Government, ADB, and other stakeholders, within 1 month after receiving such comments.

15. **Anticorruption Policy.** During project processing, ADB's anticorruption policy was explained to Inner Mongolian officials. Attention was drawn to the section on fraud and corruption that was added to ADB's *Guidelines for Procurement* and *Guidelines on the Use of Consultants*, particularly that bidders, suppliers, contractors, and consultants observe the highest ethical standards in procuring and executing ADB-financed contracts, and the sanctions if fraud and corruption are discovered.

IV. THE PRESIDENT'S DECISION

16. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$500,000 on a grant basis to the Government of the People's Republic of China for Energy Development Strategy for the Inner Mongolia Autonomous Region, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Policy framework and investment plans for Inner Mongolia's energy sector</p>	<p>Policy review and medium-term recommendations</p> <p>Energy investment in the 11th Five Year Plan significantly higher than in the 10th Five Year Plan leading to greater energy exports by 2010</p>	<p>Inner Mongolia's statistical yearbook</p> <p>Monitoring by PRCM</p>	
<p>Purpose Energy development strategy for Inner Mongolia's 11th Five Year Plan</p>	<p>The energy strategy reflected in Inner Mongolia's 11th Five Year Plan is consistent with the technical assistance (TA) recommendations to promote Inner Mongolia as a strategic energy base</p> <p>Energy production increases about 10% annually</p>	<p>Review of Inner Mongolia's 11th Five Year Plan</p> <p>Policy announcements by the central government regarding designation of state strategic energy bases</p>	<p>Assumptions (A): Inner Mongolia can mobilize the necessary investment resources.</p> <p>Risks (R): (i) The central Government does not agree to designate Inner Mongolia as a state strategic energy base; (ii) Inner Mongolia is unable to compete effectively against other energy suppliers (iii) The energy sector is not developed in an environmentally sustainable manner.</p>
<p>Outputs Main Report that provides the basis for drafting the energy sector of Inner Mongolia's 11th Five Year Plan</p> <p>Report I: Analysis of lessons learned from international experience in building energy/natural resource bases</p> <p>Report II: Feasibility study of developing Inner Mongolia as a state strategic energy base</p>	<p>A practical energy development strategy for Inner Mongolia that analyzes strengths, weaknesses, opportunities, constraints, competitive threats, and risks; and estimates the investment required for its implementation</p> <p>Five suitable international case studies</p> <p>A study that demonstrates to the central Government the strategic value of developing the energy sector and related</p>	<p>Review of the progress reports and final report</p> <p>Supervision by ADB review missions</p> <p>Government review and comments on the consultants' work</p>	<p>(A): Good cooperation among the consultants and government agencies</p> <p>(R): Recommendations are not accepted and implemented</p> <p>(A): The reports reflect the Government's needs, and the recommendations are practical and implementable in Inner Mongolia.</p> <p>(R): The central Government does not support development of Inner Mongolia as a state strategic energy base.</p>

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Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Report III: Analysis of the industrial linkages and impacts on upstream and downstream energy and resource industries</p> <p>Report IV: Analysis of necessary interprovincial cooperation</p> <p>Report V: Formulating a strategy and recommendations so that the development of the energy resources of Inner Mongolia takes place in an environmentally sustainable and socially inclusive manner</p>	<p>industries in Inner Mongolia</p> <p>A report that identifies upstream and downstream linkages with energy and resource industries, and includes policy recommendations to accelerate the development of energy-related industries, including policy recommendations for industrial restructuring and upgrading</p> <p>A report that identifies necessary areas for cooperation with neighboring provinces in the energy/resource sectors and in providing complementary transport and energy transmission infrastructure; and that recommends a mechanism for interprovincial cooperation</p> <p>A report that analyzes interactions among energy development, social and economic development, and the environment. The report should include policy recommendations and measures to enhance positive, and mitigate negative, impacts of accelerated development of the energy sector on social development and the environment.</p>		<p>(R): Managerial and financial weaknesses, constraints in the enabling environment, and strong competition from other businesses limit the ability to capitalize on upstream and downstream linkages.</p> <p>(R): Neighboring provinces have higher priorities than infrastructure investments that are needed to develop Inner Mongolia's energy resources.</p>

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Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Activities</p> <p>Report preparation</p> <p>Field studies</p> <p>Consultations and dissemination workshops</p>	<p>High-quality design of the analytical framework for the study</p> <p>Field working days specified in work plan and questionnaires sent to the Executing Agency (EA) at least 7 days before the consultants' field trips</p> <p>Workshop material and outcomes, numbers of participants, and government agencies represented</p>	<p>Progress reports submitted by the consultants as specified in the contract</p> <p>Supervision by ADB review missions</p> <p>Back-to-office reports of participants</p>	<p>(A): Consultants' services are of good quality.</p> <p>(A): A vice governor provides overall guidance for the studies.</p> <p>(A): Full involvement of the provincial development and reform commissions, despite the fact that the Inner Mongolia Financial Department is the Executing Agency</p> <p>(R): The consultants and government agencies do not coordinate well, and key information is not provided to the consultants.</p>
<p>Inputs</p> <p>Consultant services</p> <p>ADB TA</p> <p>Government counterpart funds</p>	<p>International consultants (6 person-months); domestic consultants (42 person-months)</p> <p>\$500,000 equivalent</p> <p>\$130,000 equivalent</p>	<p>Consultant recruitment process</p>	<p>(A): Well-qualified consultants are recruited in a timely manner.</p> <p>(A): Government counterparts, office space, and logistical support are made available as agreed.</p>

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank (ADB) Financing^d			
1. Consultants			
a. International Consultants			
i. Remuneration and Per Diem	125.0	0.0	125.0
ii. International Travel Costs ^b	25.0	0.0	25.0
b. Domestic Consultants			
i. Remuneration and Per Diem	0.0	160.0	160.0
ii. Domestic Travel Costs ^c	0.0	30.0	30.0
2. Reports and Communications	15.0	0.0	15.0
3. Workshops ^d	50.0	0.0	50.0
4. Translation/Interpretation/Support Costs	15.0	0.0	15.0
5. Equipment	30.0	0.0	30.0
6. Contingency	10.0	40.0	50.0
Subtotal (A)	270.0	230.0	500.0
B. Government Financing			
Study Supporting, Counterpart Staff, Workshops, Communication and Local Travel, Office Accommodation, Documents and Data, and Secretarial Services	0.0	130.0	130.0
Subtotal (B)	0.0	130.0	130.0
Total	270.0	360.0	630.0

^aFinanced by ADB's technical assistance funding program.

^bInclude intercity travels in the People's Republic of China.

^cInclude local intercity travel in Inner Mongolia.

^dInclude honorarium for resource speakers.

Source: Asian Development Bank estimates.

TERMS OF REFERENCE FOR CONSULTANTS

A. Main Report: A Road Map for an Energy Development Strategy in Inner Mongolia

1. Group 1, comprising the team leader, deputy team leader, and a legal expert, will formulate an energy development strategy for Inner Mongolia that will be directly relevant for drafting the energy chapter of the 11th Five Year Plan. The team leader should be familiar with the energy sector, economy, and relevant state policies of the People's Republic of China (PRC); have expertise in macroeconomic planning and policy formulation; and have experience in formulating national or regional development strategies. The deputy team leader will have expertise in energy planning and energy base construction, regional development planning, and environmental management related to the energy sector. The legal expert will familiarize with PRC's overall legal framework and energy laws/regulations.

2. This group's tasks include (i) overall planning/design and coordination of the consulting team to develop a coherent and consistent strategy; (ii) preparation of technical assistance (TA) deliverables and organizing consultation workshops; (iii) identifying relevant best international practice and domestic drivers for formulation of an energy development strategy for Inner Mongolia; (iv) formulating the energy development strategy for Inner Mongolia in a manner that can be incorporated into the 11th Five Year Plan; (v) assessing the feasibility of gaining support to construct a state strategic energy base in Inner Mongolia after assessing the resource conditions, geographical advantages, market demand, infrastructure needs, institutional capacity, necessary policy changes (e.g., energy prices and taxations), competitive treats, risks, weaknesses and opportunities; (vi) formulate the objectives, priorities and implementation steps to develop Inner Mongolia into a state strategic energy base; (vii) describe models and plans for constructing a state strategic energy base; (viii) specify mechanisms to coordinate development in the energy sector with overall economic and social and environmental safeguards in Inner Mongolia; (ix) recommend an action plan to implement the recommended energy development strategy; and (x) review existing legislation and recommend amendments to the legal framework.

3. Consultant input: team leader, 7 person-months; deputy team leader 5 person-months; legal expert 1 person-month.

B. Individual Reports

1. International Models and Lessons Learned for Developing National Energy Bases

4. Group 2 will comprise the two international consultants. The lead international consultant will have expertise in macroeconomic planning, policy formulation, energy strategy formulation, industrial restructuring, and regional development. The second international consultant will have knowledge and experience in energy planning, energy base construction, and environmental management. Previous working experience in PRC is preferable. The international consultants will introduce international experience and best practices in developing energy strategies and energy base construction, and will recommend policies for developing Inner Mongolia as a national strategic energy base in a way that minimizes environmental damage and maximizes positive social and economic impacts. The international consultants will also help the domestic consultant design study approaches and outlines, review draft reports, and edit English versions of final reports.

5. Group 2's tasks will include (i) identifying suitable international models of the world's major energy bases that have suitable lessons for Inner Mongolia and illustrate best practices by analyzing model features, backgrounds, and conditions; environmental safeguards and impacts, and social and economic impacts; (ii) preparing a detailed analysis of at least five international cases of different types and models to identify their "strategic fit" with Inner Mongolia; (iii) recommending changes to the key features of key international models to conditions in Inner Mongolia considering energy situation in PRC and the existing policies and plans; (iv) identifying barriers to effectively implement the international models in Inner Mongolia, based on an analysis of global objectives, development priorities, development structure of the energy sector, spatial layouts, regional cooperation, magnitude and sources of investment financing, measures for environmental protection, upstream and downstream industrial linkages, infrastructure requirements and policy measures; and (v) review and editing of English in final reports.

6. Consultant input: international energy economist (group team leader) 4 person-months; international energy planner 2 person-months.

2. Feasibility Study on Developing Inner Mongolia as a State Strategic Energy Base

7. Group 3 will include 6 domestic consultants. The group leader will have expertise in strategic energy planning and energy base construction, regional development and environmental management in the energy sector. One economist will have working experience in national or regional socioeconomic development strategy formulation, and will understand well PRC energy economy policies and programs. The other four consultants will have expertise in coal, power, oil and gas, and renewable energy.

8. Group 3's tasks will include (i) analyzing the energy supply-demand trends in PRC and world wide, including forecasting of likely trends in energy prices and competitive threats from other regions that have the potential to compete successfully with Inner Mongolia to supply PRC's energy needs; (ii) assessing energy and mineral resources and the development potential of energy-related industries in Inner Mongolia; (iii) analyzing the advantages of, and constraints for, construction of a State Strategic Energy Base in Inner Mongolia; (iv) defining the objectives, priorities and implementation steps for developing a national energy base; (v) recommending environmental safeguard measures and development alternatives to minimize the environmental cost of developing an energy base, including such factors as the environmental legal¹, policy and institutional framework, environmental monitoring and enforcement, the use of market based instruments to encourage environmentally friendly behavior, pollution treatment and strategies to reduce emissions and improve energy efficiency, promotion of the use of clean production technologies and recycling of wastes and ecological protection and restoration; (vi) recommending policy and institutional reforms to create an enabling environment to attract private investment, including assessing the current controlled pricing mechanism and making recommendations for the greater use of market forces in developing the energy sector; (vii) formulating a phased implementation plan and estimating the capital and operating costs and revenues to demonstrate the economic and financial viability of the recommended strategy; and (viii) comparing the recommended investment for the energy sector for the 11th Five Year Plan with the corresponding figures in the 9th and 10th Five Year Plan by major category.

¹ Likely changes in the legal framework that may have a bearing on future developments in the energy sector should be identified (eg., the Renewable Energy law is on the Agenda of the National People's Congress.)

9. Consultant input: domestic energy economist (group team leader) 4 person-months; domestic energy planner 2 person-months; domestic power expert 0.5 person-month; domestic coal expert 0.5 person-month; domestic renewable energy expert 0.5 person-month; domestic oil and gas expert 0.5 person-month.

3. Identification of Linkages and Impacts Associated with Upstream and Downstream Energy/Resource Industries

10. Group 4 will include six domestic experts. The group leader will be an energy economist, with expertise in industrial restructuring and upgrading, energy planning, and national or regional development of energy strategy. The industrial specialist should have expertise in technologies for industrial restructuring and upgrading, metallurgy, chemical, machinery, construction materials, textiles, and high technologies. The four other consultants will have expertise in industries related to coal, power, oil and gas, and renewable energy.

11. The experts' tasks will include (i) identifying the role and status of energy-related industries in the Inner Mongolian economy, based on analysis of historical and present status and expected future evolution; (ii) assessing the impact of accelerated energy sector development of relevant upstream and downstream energy intensive industries, including an assessment of goals, directions, and priorities for their development and impact in demand on energy and related natural resources, job creation and impact on poverty reduction; (iii) analyzing the impacts of accelerated development of the energy sector in Inner Mongolia on substitution of imported energy and changes in the industrial structure; and (iv) recommend policy measures for the strengthen and develop upstream and downstream linkages with the development of the energy sector, including needed improvements in the enabling environment for private sector investment, enterprise reform, and enabling a greater role for market forces.

12. Consultant's inputs: domestic energy economist (group team leader), 4 person-months; industrial specialist, 1 person-month; domestic power expert, 0.5 person-month; domestic coal expert, 0.5 person-month; domestic renewable energy expert, 0.5 person-month; and domestic oil and gas expert, 0.5 person-month.

4. Identification of Potential for Regional Cooperation Related to Energy Development in Inner Mongolia

13. Group 5 comprises three domestic experts. The group leader will be an energy expert with a strong economics background, with expertise in macroeconomic planning, policy formulation, energy planning, and regional development, who is familiar with the conditions and energy supply-demand in Inner Mongolia and its neighboring provinces. The second consultant will be an energy specialist, with working experience in formulating regional energy development strategies and planning major regional energy projects (including power transmission). The third consultant will be a transport specialist, who should have expertise in energy-related infrastructure such as roads and railways.

14. Tasks of group 5 should include (i) mapping the regional distribution of energy and mineral resources in Inner Mongolia; (ii) identifying energy transport systems for markets in and around Inner Mongolia (including energy sources and relevant demand centers, status of energy transportation and transmission, and present and expected future patterns in the energy market); (iii) analyzing the future prospects for cooperation in the energy sector between Inner Mongolia and neighboring provinces to overcome infrastructure constraints; (iv) recommending

directions and priorities for regional cooperation in the energy sector within Inner Mongolia (cooperation between Chifeng, Tongliao and Hulun Buir cities, and Hinggan League, and between Inner Mongolia and the three northeastern provinces; cooperation between cities and leagues in central and west Inner Mongolia and northern, eastern and central; and cooperation between Inner Mongolia and such countries as Russia and Mongolia); and (v) identifying and recommending policy measures to promote regional cooperation for development of the energy sector.

15. Consultant inputs: domestic energy economist (group team leader), 4 person-months; domestic energy planner, 2 person-months; and regional economist, 2 person-months.

5. Sustainable and Inclusive Development of Energy Resources in Inner Mongolia

16. Group 6 comprises two domestic experts. The group leader will be a social development specialist with a strong economic and environmental management background, preferably with a good knowledge of the cultures of northern PRC minorities. The second consultant will have expertise in social development and environmental management, especially in industrial pollution treatment, ecological design, and environment evaluation, and preferably with working experience in Inner Mongolia.

17. Their tasks will include (i) identifying relationships among development of the energy sector and economic, social, and environmental constraints in Inner Mongolia; (ii) analyzing problems of accelerated energy sector development, particularly potential adverse social and environmental impacts and recommending mitigation measures; (iii) suggesting development strategies to address issues such as urbanization, reemployment, and quality of life, and poverty reduction, but do not harm ethnic culture; (iv) strengthening environmental protection and proposing mitigation measures for energy development, including introducing new technologies to reduce environmental damage; and (v) recommending policies to enhance positive, and mitigate negative, impacts of development of the energy sector on social development and the environment.

18. Consultants' input: domestic environmental expert, group team leader, 4 person-months; domestic social development expert, 2 person-months.

C. Administrative Assistant

19. Considering the large group of consultants, and that most domestic consultants are unfamiliar with ADB procedures, an administrative assistant will be recruited to deal with administrative issues, including coordinating with consultants, collecting invoices and preparing documents for disbursements, helping organize workshops, and translation.

20. The administrative assistant must have good command of oral and written English, be familiar with ADB or World Bank policies and procedures, and preferably, have experience on ADB financed projects.

21. Inputs: 6 person-months.