

ASIAN DEVELOPMENT BANK

TAR: STU 36488

**TECHNICAL ASSISTANCE
FOR THE
FEASIBILITY STUDIES OF THE
TURKMENISTAN – AFGHANISTAN – PAKISTAN
NATURAL GAS PIPELINE PROJECT**

December 2002

ABBREVIATIONS

ADB	–	Asian Development Bank
EIA	–	environmental impact assessment
O&M	–	operations and maintenance
TA	–	technical assistance
TAP	–	Turkmenistan-Afghanistan-Pakistan

NOTE

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

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I. INTRODUCTION

1. The Turkmenistan-Afghanistan-Pakistan Natural Gas Pipeline Project (the TAP Project) consists of a gas pipeline of about 1,700 kilometers that can transport up to 20 billion cubic meters of natural gas annually from the Dauletabad fields in southeast Turkmenistan to consumers in Afghanistan, Pakistan, and possibly India. The final cost of the Project is estimated at \$2.0 billion - \$2.5 billion. The design and construction of the Project will take about 4 years, after all necessary decisions are taken by the cooperating countries. The heads of state of Afghanistan, Pakistan, and Turkmenistan met in Islamabad on 29–30 May 2002 to announce the formation of a coalition for implementing the Project. The possibility of constructing a spur pipeline taking off from the Pakistan part of the main project pipeline to the Pakistani port of Gawadar for export of liquefied natural gas was also discussed. A steering committee of the ministers of oil and gas from the three countries (Steering Committee) was established for necessary follow-up and supervision of the Project. During its first meeting on 9–10 July 2002 at Ashgabat, the Steering Committee requested the Asian Development Bank (ADB) to play the role of a development partner and to grant regional technical assistance (TA) for feasibility studies of the Project.¹ Fact-finding was completed and the draft terms of reference approved during the second meeting held in Kabul on 16 September 2002.

2. The TAP Project has significant potential for enhancing stability and improving living standards in South and Central Asia. It will be a pioneering effort in linking the energy-deficit economies of South Asia to the hydrocarbon-rich Central Asian countries. It will (i) provide cheaper and cleaner energy to consumers, (ii) generate income that can be used for developing the social sectors, and (iii) bring about regional security through joint project ownership. It has very long-term and widespread positive implications for the countries involved, and for the region as a whole. However, the realization of the Project faces significant political and technical challenges, considering the volatility of the relationships between the concerned countries and the initial stage of the political process in Afghanistan through which a major part of the pipeline passes.

3. The TA reflects the essence of ADB's approach to regional cooperation. In facilitating the Project, ADB will act as an honest broker and an active development partner helping to mobilize the necessary technical and financial resources for the Project.

II. ISSUES

4. The concept of a trans-Afghan pipeline to transport hydrocarbons (both petroleum and natural gas) from Central Asia to South Asia has been mooted several times in the past decade. The last attempt at developing a gas transmission pipeline was made in 1997 by an international oil and gas company. Due to political uncertainty, however, the Project was abandoned after limited technical feasibility studies. This time, to strengthen the business environment of the Project and reduce risks, the Steering Committee has decided that (i) the pipeline should be constructed and operated by a consortium, *inter alia* comprising international oil companies and relevant national companies; and (ii) that the pipeline consortium will only transport the gas and not own it. Suitable gas sale and purchase agreements are therefore to be developed between Turkmenistan and buyers of the gas in Afghanistan, Pakistan, and possibly India, as well as a gas transportation agreement between Turkmenistan and the pipeline consortium. Based on the projected annual gas throughput in the pipeline, a prima facie review of the financial viability of the TAP Project indicates that the price of the gas delivered in

¹ The TA first appeared in *ADB Business Opportunities* in July 2002.

Pakistan and India would be very competitive compared with the prices of substitute fuels being used at present. Since the additional natural gas supply from the Project is expected to reduce the use of fuel oil and coal — the main substitute fuels — the TAP Project will also generate considerable environmental benefits. During the initial years of pipeline operation, Afghanistan is expected to benefit mainly from its participation in the pipeline consortium by receiving a share of the transit fees from the consortium. However, it is expected that a portion of the gas supplied by the pipeline will be used in Afghanistan and that any surplus of the capacity of the pipeline could also be used to transport gas produced in Afghanistan to gas consumers both within Afghanistan as well as outside it. This should stimulate investment in exploration and use of natural gas in Afghanistan. Similarly, Pakistan can also use any surplus capacity in the pipeline either for domestic transportation or for export.

5. Five issues are important to the TAP Project: (i) confirmation of a market for the gas in Pakistan and India and commitment of potential buyers to enter into gas sale and purchase agreements; (ii) certification that the natural gas reserves at Dauletabad field can produce the envisaged quantities of gas over a period of 25–30 years; (iii) security concerns of Pakistan and India with regard to possible disruption of gas supplies through the pipeline; (iv) techno-economic feasibility of the pipeline and preparation of its basic design, considering the terrain conditions and logistical constraints; and (v) required mobilization of international oil and gas companies to take the lead role in the pipeline consortium for timely and cost-efficient construction of the pipeline, and operation and maintenance of the same in accordance with international standards. At the request of the Steering Committee, ADB is proceeding to develop solutions to issues (i) and (iii) through (v). The Government of Turkmenistan is financing an evaluation and certification of the recoverable gas reserves at the Dauletabad field and a technical audit of its gas production and processing facilities. The creation of a contractual basis for the Project's development and ADB's provision of technical assistance for preparing documents are seen as a major source of strength for the Project.

6. To address the five key issues raised in para. 5, a number of feasibility studies will be undertaken. The studies have been divided into six parts.

- (i) **Market analysis.** ADB staff and staff consultant experts are analyzing the demand for natural gas in north India and Pakistan. This study will establish the base demand for Turkmen gas, which is necessary for the techno-economic feasibility study being conducted under this TA. The study is expected to be completed by 10 December 2002.
- (ii) **Risk analysis and mitigation.** Mitigating the concerns of Pakistan and India about disruptions of gas supplies is important for securing their participation in the Project. ADB staff, in consultation with international experts, are preparing a paper identifying the possible risks associated with the Project and possible mitigative measures. ADB has retained a firm of external international counsel to provide advice as to (a) the legal, security, and geopolitical background of the Project; (b) the contractual framework necessitated by (a) to ensure the viability of the Project, and (c) the provisions that should be incorporated into the inter-country Framework Agreement [see (v)] as a result of (a) and (b).
- (iii) **Certification of the production capacity and facilities at Dauletabad to sustain gas supplies over the next 25 years.** This study is being organized by the Government of Turkmenistan and will be completed by March/April 2003.

- (iv) **Techno-economic study of the TAP Pipeline.** This study is being conducted under the TA and will cover pipeline routing, preliminary design, cost estimates, rapid environmental impact assessment (EIA) and calculations of volume-price sensitivity.
- (v) **Consortium formation.** ADB staff are working with the Steering Committee to finalize the intercountry framework agreement that will form the basis for organizing to implement the TAP Project. A draft version of this agreement was tabled during the third meeting of the Steering Committee held in Ashgabat on 17–18 October 2002, and was extensively discussed. Based on this draft and inputs independently to be provided by ADB staff working with an international law firm, ADB will prepare prequalification documents to assist the Steering Committee in making a shortlist of international gas companies that could become lead members of the consortium for the TAP Project. ADB will assist the Steering Committee, possibly through an advisory TA, on the final selection of consortium partners and contractors from the shortlisted firms and drafting multiple agreements that are needed to finalize the TAP Project.
- (vi) **Social impact studies.** While the initial social assessment of the Project will be done as part of the EIA performed under item (iv) — studies on social impact, poverty analysis, and possible mitigative measures will be carried out after the project concepts and routing are finalized. The activities could be done under a follow-up TA that will include a final EIA and also a social impact study.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

7. The TA will fund the preparation of a technical and economic feasibility study for the TAP Project. This feasibility study [para. 6 (iv) above], along with the other listed studies, will be used by the governments of Turkmenistan, Afghanistan, Pakistan, and, possibly, India as a basis for (i) the intergovernmental framework agreement required to implement project construction, operation, and gas sales; (ii) the gas sales and purchase contracts between Turkmenistan and the purchasers of gas from the Dauletabad field; and (iii) the transportation contract between Turkmenistan and the gas pipeline consortium. The TA framework is in Appendix 1.

8. The output of the TA will include route surveys, basic design of the TAP Project, cost estimates, implementation schedule, environment and social impact assessment, and financial and economic analyses. The outline terms of reference for consultants are in Appendix 2.

B. Cost and Financing

9. The total cost of the TA is estimated at \$1,370,000 equivalent, of which \$1,250,000 will be in foreign exchange and \$120,000 equivalent in local currency. The Government of Turkmenistan will be funding the assessment of reserves of the Dauletabad Natural Gas Field, expected to cost about \$300,000 equivalent. In addition, the governments of Turkmenistan, Afghanistan, and Pakistan will provide \$70,000 equivalent in kind, to cover costs of office accommodation, transport, salaries of counterpart staff, administrative support, and contingencies. The TA will be financed on a grant basis by ADB's TA funding program to cover foreign exchange costs of \$950,000 and local currency costs of \$50,000 equivalent for a total of \$1,000,000. Detailed cost estimates are in Appendix 3.

C. Implementation Arrangements

10. ADB will be the executing agency for the TA and the Steering Committee will be its Implementing Agency. The Steering Committee is adequately staffed with the required persons and has the necessary resources to coordinate with the international consultant in the consultant's techno-economic study of the TAP pipeline. In addition, each of the three countries has appointed specialist coordinators to ensure detailed sector support to ADB and the international consultant. Finally, the heads of state of the three countries have arranged to meet every quarter to resolve key issues concerning the Project. To ensure the commitment of the three countries to the TA, it was agreed that the international consultant will be fielded only after the framework agreement has been signed.

11. The TA will require about 22 person-months of input of an international consultant. The international consultant will have expertise in pipeline system design, route survey and evaluation, costing, and financial and economic analyses. The international consultant will be permitted to hire domestic consultants, interpreters, and guides to assist in the route survey and selection. The international consultant may also contract out satellite imagery services required for route survey. ADB will engage the international consultant in accordance with its *Guidelines on the Use of Consultants* and other arrangements for selecting and engaging consultants including those required by the quality and cost based selection system. Since the scope and other arrangements are being specified in detail, summary technical proposals will be invited.

12. The TA is expected to begin in January 2003 and be completed by August 2003. The international consultant will submit inception, draft final, and final reports 1, 4, and 5 months, respectively, after appointment. At the first tripartite meeting, the steering committee, the international consultant, and ADB will review the inception report establish the direction of the study. The final tripartite meeting will be held after submission of the draft final report to confirm the results of the TA and to establish follow-up actions by the governments and ADB. After this meeting, the international consultant, at ADB's request, will present the results of the study to the concerned governments, ADB staff and other stakeholders.

13. ADB will procure an all-terrain vehicle for the use of the consultant and ADB staff in supervising the work in Afghanistan. The vehicle and other small items required for completing the TA will be procured in accordance with ADB's *Guidelines for Procurement*. After completion of the TA, the vehicle will be given to the Government of Afghanistan under arrangements satisfactory to ADB.

IV. THE PRESIDENT'S DECISION

14. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis for the Feasibility Studies of the Turkmenistan-Afghanistan-Pakistan Natural Gas Pipeline Project, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Risks/Assumptions
<p>Sector Goal</p> <p>Reduce poverty by expanding the use of natural gas resources and enhancing subregional economic cooperation among Turkmenistan, Afghanistan, Pakistan, and India</p> <p>Increase contribution of the respective natural gas sectors in line with the needs of the market economy</p>	<p>Regional and subregional economic growth, social development, and poverty reduction</p> <p>Improved availability of natural gas supplies in Afghanistan, Pakistan, and India</p>	<p>Policy dialogue with government agencies, review missions, and consultants' periodic reports</p>	<p>Active involvement of the regional countries and their long-term commitment to improving energy supply services and improving subregional natural gas trade</p> <p>Participating governments to cooperate and remain committed to subregional gas trade</p>
<p>Purpose</p> <p>Establish the technical feasibility and the economic and financial viability of constructing and operating a gas pipeline from Turkmenistan to Afghanistan, Pakistan, and India</p>	<p>Comprehensive feasibility study, which identifies technical parameters, cost and financing requirements, construction schedule and arrangements, and economic and financial returns given certain volumes of gas throughput</p>	<p>Review missions, participation in project steering committee meetings, and consultants' periodic reports</p>	<p>Adequate progress on policy and institutional issues to increase cooperation in subregional natural gas trade</p> <p>Adequate resources found for construction, operation, and maintenance of the gas transmission pipeline</p>
<p>Outputs</p> <p>Techno-economic feasibility of increasing natural gas supply from Turkmenistan to Afghanistan, Pakistan, and India</p>	<p>Techno-economic feasibility report that is acceptable to all parties</p>	<p>Review missions, participation in project Steering Committee meetings, and consultants' periodic reports</p>	<p>Continued commitment of the governments to provide data and access to all areas along the proposed routes of the pipeline</p>
<p>Activities</p> <p>Selection of route</p>	<p>Superiority of recommended route is based on objective criteria such as costs, market access, and optimum logistics with regard to construction and operation</p>	<p>Review missions, consultants' periodic reports, and tripartite review meetings</p>	<p>Availability of adequate data</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Risks/Assumptions
<p>Make preliminary design</p> <p>Determine efficient pipeline construction, and operation and maintenance requirements and arrangements</p> <p>Assess environmental impact</p> <p>Prepare cost estimates and economic and financial analyses</p>	<p>Preliminary design that meets international standards and is based on various gas throughput scenarios</p> <p>Establish arrangements that have been agreed to by all parties, which will ensure shortest possible construction time and efficient operation of the pipeline</p> <p>Development of a comprehensive environmental impact assessment and related mitigation plan</p> <p>Establishment of economic and financial internal rates of return for different cost assumptions</p>	<p>Review missions, consultants' periodic reports, and tripartite review meetings</p> <p>Review missions, consultants' periodic reports, and tripartite review meetings</p> <p>Review missions, consultants' periodic reports, and tripartite review meetings</p> <p>Review missions, consultants' periodic reports, and tripartite review meetings</p>	<p>Development of realistic scenarios with regard to gas market demand</p> <p>Cooperation of concerned national agencies</p> <p>Availability of adequate data</p> <p>Cooperation of concerned national agencies</p>
<p>Inputs</p> <p>Consulting Services</p> <p>Costs</p> <p>Financing</p>	<p>International consulting services for 22 person-months</p> <p>Domestic consulting services for 25 person-months</p> <p>Estimated total cost \$1,370,000 equivalent including \$1,250,000 in foreign exchange and \$120,000 equivalent in local currency</p> <p>Asian Development Bank financing of \$1,000,000 equivalent, including \$50,000 equivalent in local currency, on a grant basis</p> <p>Participating governments' pro rata contribution of \$70,000 equivalent</p>	<p>Review missions, consultants' periodic reports, and tripartite review meetings</p>	<p>Capable consultants with requisite skills</p> <p>Domestic consultants to provide the required support</p> <p>Counterpart funds available to meet the local currency costs</p>

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The international consultant will carry out all investigations to appropriately estimate the costs, reliability, routing, construction and operation and maintenance (O&M) of the Turkmenistan – Afghanistan – Pakistan (TAP) Pipeline.

A. Route Selection

2. The international consultant will conduct a detailed survey for establishing a route for the pipeline using two alternative routes.¹ The following factors will be considered in selecting the route:

- (i) physical geography, including river crossings, mountains, etc., which may require an alternate route
- (ii) local issues related to culture, archaeology, etc.
- (iii) regulatory applications and approval requirements
- (iv) land acquisition and resettlement of affected persons
- (v) compensation for surface access
- (vi) laws/regulations concerning cross-border movements
- (vii) security issues
- (viii) environment protection

3. Using the survey results, the consultant will submit a map (scale not less than 1:200,000) of the selected route with any proposed alternatives and their rationale. The international consultant will locate on the map all geographic details, major earthquake/fault zones along the proposed pipeline route, elevations and other features deemed important to construction, as well as for O&M of the TAP pipeline. The map should also indicate locations of environmentally protected/sensitive areas. The international consultant will also identify points along the route where major civil works/structures will be required for construction of the pipelines.

B. Pipeline System Design

4. The pipeline system consists of the pipeline, all compressor stations, meter stations, block valves, measurement equipment, and other facilities required to transport natural gas between the end locations of the pipeline in accordance with the projected demand. The international consultant will design the pipeline system for the chosen route covering the following:

1. Pipeline

- (i) design parameters for system reliability, redundancy, and safety
- (ii) hydraulic analyses and options (pipe diameter, operating pressures, etc.)
- (iii) pipeline specifications
- (iv) applicable country codes and standards
- (v) earthquake design consideration
- (vi) river, road and railway crossing requirements
- (vii) material selection
- (viii) lead time for manufacturing, shipping, and transporting to stockpiling at site

¹ The routes are (a) Dauletabad – Herat – Sokh-Ab – Kandahar – Chaman – Bostan – Dera Ghazi Khan – Multan – Haveli – Fazilka; and (b) Dauletabad – Sheberghan – Mazar-e-Sharif – Pol-e-Khomri – Kabul – Jalalabad – Peshawar – Rawalpindi – Lahore – Amritsar.

- 2. Design for Compressor Stations, Meter Stations and Block Valves**
 - (i) sizing and numbers, taking into account reliability, redundancy and safety
 - (ii) locations
 - (iii) cross-border access
- 3. SCADA System Design**
 - (i) reliability and redundancy
 - (ii) operating philosophy
- 4. Corrosion and Cathodic Protection**
 - (i) recommend equipment and procedures for corrosion control
- 5. Leak Detection and Control**
 - (i) design equipment and recommend procedures to identify and control pipeline leaks
- 6. Gas Control and Dispatch Center**
 - (i) technical design and equipment requirements
 - (ii) location
 - (iii) backup center
 - (iv) staffing, legal provisions, visas and permits
 - (v) staff training program
 - (vi) staff accommodations
 - (vii) language issues

C. Pipeline Construction

5. The following will need to be assessed to estimate construction costs and to successfully construct the TAP pipeline:

- 1. Route**
 - (i) Security and mine-clearing
 - (ii) Number and size of survey crews
 - (iii) Survey schedule
- 2. Import of Materials (Pipe, Compressors and Related Construction Material)**
 - (i) selection of port of landing
 - (ii) customs regulations
 - (iii) time to clear customs
 - (iv) local stockpiling requirements and yard preparation
 - (v) security
- 3. Delivery to Pipeline Route and Stockpiling**
 - (i) trucking requirements and availability
 - (ii) selection of stockpiling sites
 - (iii) assessment of existing road system and restrictions
 - (iv) new road requirements
- 4. Pipeline Construction Methodology**
 - (i) number and size of pipeline spreads
 - (ii) surface clearing and grading plan
 - (iii) water-table assessment
 - (iv) ditching issues (e.g. depth of trench, acquisition of blasting material, frost)
 - (v) regulations governing material storage, use of explosives
 - (vi) welding, welding inspectors and coating of welds

- (vii) locate existing subsurface obstacles such as existing pipelines
- (viii) stringing and laying pipe
- (ix) backfill
- (x) route restoration

5. Manpower Requirements

- (i) number
- (ii) availability
- (iii) training requirements and schedule
- (iv) language issues
- (v) salary expectations
- (vi) permits, visas and other legal issues

6. Accommodation and Services

- (i) building requirements
- (ii) logistics
- (iii) power and water requirements
- (iv) waste disposal

7. Weather Issues Affecting Construction

- (i) temperature and wind conditions
- (ii) precipitation patterns

D. Pipeline Operations And Maintenance

6. It is important to note that the pipeline is expected to operate for a minimum of 30 years.

1. Field Offices and Maintenance Stations

- (i) requirements and training
- (ii) accommodations
- (iii) temporary accommodations for pipeline maintenance and repair

2. Operations Equipment and Requirements

- (i) maintenance requirements and pipeline repair frequency
- (ii) fire and safety equipment
- (iii) leak detection

3. Spare Parts Requirements and Storage

4. SCADA Operations and Maintenance

5. Border Crossings

- (i) transportation of equipment
- (ii) maintenance and equipment installation personnel

6. Maintenance Requirements and Pipeline Repair Frequency

7. Fire and Safety Equipment

8. Leak Detection

E. Communication System Requirements

7. It is important with a 1,700 kilometer pipeline that a fast and reliable communications system be in place to facilitate smooth day-to-day operations and quick response to any pipeline

or personnel emergency. The international consultant will advise on fast and reliable communication for the Project, keeping in mind the available infrastructure along the line route.

F. Medical Requirements

8. The international consultant will advise on establishing a system to deal with the treatment of all normal illness and accidental injuries for a multicountry, multilanguage construction and operating staff and management personnel.

- (i) preconstruction to operation
- (ii) evacuation plan
- (iii) border issues
- (iv) AIDS prevention

G. Insurance Requirements and Customs Issues

9. The international consultant will assess the types of available insurance to cover the following personnel, equipment, and operations.

10. From the start of the Project to the day-to-day operation of the pipeline, a multi-country project requires a clear set of guidelines on all applicable customs issues and recommended procedures to avoid any delays.

- (i) import / export regulations for each country
- (ii) border crossing by personnel
- (iii) normal time lines for clearing equipment through customs

H. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

11. The international consultant will conduct an environmental impact assessment (EIA) of the pipeline system as per ADB's *Environmental Guidelines for Selected Industrial and Power Development Projects* and *Environmental Assessment Requirements* and provide a self-standing summary EIA. The project is tentatively classified as Category A as per Asian Development Bank classifications for such projects. The EIA is important not only to prevent any environmental damage but to help control the overall project costs. The international consultant will also assess the initial social impact on the present population along the proposed pipeline route and the likely impact of the Project on their way of life.

I. Project Management

12. Proper project management is imperative for the efficient construction and operation of the TAP pipeline system. The international consultant will develop a detailed project implementation schedule, estimate costs and identify bid packages for the entire pipeline system. The work schedule will be of the "L1" network type and be in sufficient detail to permit monitoring of individual activities. From the route survey and his design, the international consultant will tabulate material and construction costs for the following facilities.

- (i) Construction costs — pipeline, compressor stations, meter stations, block valves, SCADA, and other facilities as required.
- (ii) Operating costs – manpower, transportation, maintenance and spare parts, insurance, transit fees, management costs.

J. Economic Analysis

13. The international consultant will undertake the following:

- (i) Estimate the financial capital and operating costs, and carry out least-cost, viability, and distributional analysis of the proposed project, including sensitivity analysis according to ADB's *Guidelines for the Economic Analysis of Projects* using a net present value approach based on a discounted cash-flow analysis to

assess the comparative economic advantage of the proposed project. The technical assistance (TA) study should demonstrate how the benefits of the Project are distributed among the developing member countries (DMCs) and how they are distributed within each.

- (ii) Undertake economic benefit-cost analysis to confirm the overall viability of the proposed project in terms of economic internal rates of return as per ADB's *Guidelines for the Economic Analysis of Projects*.
- (iii) Assess the uncertainties and risks facing the proposed Project, and carry out sensitivity analyses to check its viability under adverse conditions. A particular scenario will analyze the viability of the Project without India's participation.
- (iv) Evaluate the proposed project's direct and indirect environmental impacts, and carry out an economic analysis of these impacts in terms of net present value and internal rates of return in accordance with ADB's *Handbook on Economic Evaluation of Environmental Impacts*.

K. Financial Analysis

14. The international consultant will undertake the following:
- (i) Prepare detailed project cost estimates in ADB format based on 2003 prices expressed in foreign exchange and local currencies, including appropriate provisions for physical contingency, price escalation, and interest during construction.
 - (ii) Assess the financial feasibility of the proposed project and its financial performance, prepare appropriate financial statements in accordance with ADB's *Guidelines for the Preparation and Presentation of Financial Analysis*, undertake benefit-cost analysis to compute the financial internal rate of return for the individual investment components.
 - (iii) Undertake sensitivity analyses for the financial evaluation of all components considering key factors that could affect their viability.
 - (iv) Provide best possible assessment of the loss in tax revenues to Afghanistan as a consequence of the tax waiver accorded to the Project under the Framework Agreement by the Government of Afghanistan.

L. Project Viability

15. After completing the financial and economic analyses, the international consultant, will analyze all the collected information and in-country observations and make recommendations on project viability, considering the following factors:
- (i) netback analysis on gas sale price at the Dauletabad fields
 - (ii) project enhancement, through potential for supply of LNG and construction of an LNG terminal at Gawadar, Pakistan
 - (iii) competitive advantage of natural gas over alternative energy substitutes in Pakistan and India

M. Feasibility Reports

16. The feasibility study report should be delivered at 2 stages: the intermediate report and the final report. The intermediate and final reports will be submitted in 20 copies, including 10 copies each in English and Russian. The international consultant will also submit 10 sets of the final report on CD ROM using pdf electronic format.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing^a			
1. International Consultants			
a. Remuneration and Per Diem			
i. International Consultants	540.0	0.0	540.0
ii. Domestic Consultants	0.0	50.0	50.0
b. International and Local Travel	30.0	0.0	30.0
c. Reports and Communications	10.0	0.0	10.0
2. Purchase of One All-Terrain, 4-Wheel-Drive Vehicle for Field Supervision in Afghanistan	30.0	0.0	30.0
3. Seminars	10.0	0.0	10.0
4. Surveys	200.0	0.0	200.0
5. Miscellaneous Administration and Support Costs	20.0	0.0	20.0
6. Representative for Contract Negotiations	10.0	0.0	10.0
7. Contingencies	100.0	0.0	100.0
Subtotal (A)	950.0	50.0	1,000.0
B. Government Financing			
1. Office Accommodation and Transport	0.0	20.0	20.0
2. Remuneration and Per Diem of Counterpart Staff	0.0	50.0	50.0
3. Gas Reserves Audit	300.0	0.0	300.0
Subtotal (B)	300.0	70.0	370.0
Total	1,250.0	120.0	1,370.0

^a Financed by ADB's TA funding program.
Source: Asian Development Bank estimates.