Securing Afghanistan's Future:
Accomplishments and the Strategic Path Forward

OIL AND GAS

Technical Annex

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Terms and Abbreviations

ADB	Asian Development Bank
USAID	Unite States Agency For International Development
MMI	Ministry of Mines and Industry
TA	Technical Assistance
USTDA	The United States Trade and Development Agency
USGS	The United States Geological Survey
mmcfd	million cubic feet per day
BGS	British Geological Survey
bcm	billion cubic meter
EIRRP	Emergency Infrastructure Reconstruction and Rehabilitation Project
bopd	barrels of oil per day
mmcm	million cubic meters

AFGHANISTAN: HYDROCARBON SECTOR NEEDS ASSESSMENT (2004 – 2015)

EXECUTIVE SUMMARY[1]

Context

- Afghanistan is well endowed with natural gas, coal and hydropower. The potential gas reserves are estimated to be about 120 billion cubic meters with the likelihood of additional reserves in deeper horizons. The discovered gas reserves are spread over eight fields in the northern area of the country of which three fields have been brought in production. Domestic oil production is insignificant; and the country depends on imports for most of its petroleum product requirements, which account for about half of the total commercial energy consumption. Current production of oil is at 50 tons/day (or 400 barrels/day) and for gas, about 600,000cubic meters per day (or 21.2 million cubic feet per day (mmcfd). Several local private sector entrepreneurs with minimum government control, monitoring or management supply petroleum products. Commercially, the most important energy source in Afghanistan is natural gas. The current gas production is only about one fourth of the production level in the 1980s. The present gas utilization is at a very low level due to lack of infrastructure facilities for production and transportation of natural gas. It is estimated that less than 40 per cent of the demand of natural gas is being met in the present area of operations.

- Infrastructure for local production of oil and gas, and for the export of gas, is either non-existent or in some cases functioning inefficiently, and the level of local expertise in oil and gas exploration and production is limited. Poor infrastructure of the country's hydrocarbon sector is caused by a combination of factors that include the direct effects of the wars that the country has undergone, and the shortage of expertise, spare parts and equipment. The problems have been compounded with the under funding of the sectors. As a result, the sector entities have been unable to effectively operate, repair and maintain the system. The gas fields need to be developed and many of the gas wells need to be rehabilitated. About 30 per cent of the gas produced is being lost due to leakage caused by corrosion of the transmission and distribution pipelines. This leakage is not only a colossal loss of revenue but also a major safety hazard. A large part of the infrastructure for storage, transportation, and distribution of petroleum products has been damaged while the remaining capacity is in the need of rehabilitation. This has led to unregulated supply and distribution of petroleum products. The quality of the product is below specifications. Current supply constraints have affected all sectors of the economy.

Key Issues and Constraints

- The key issues that relate to the hydrocarbon sector are: (i) the strengthening the of capacity of key energy institutions to support the sector rehabilitation and reconstruction, (ii) undertaking a review of policy, institutional, regulatory and environmental issues related to the energy sector, (iii) establishing an efficient policy and regulatory framework for the hydrocarbon sub-sector, (iv) developing policy environment to encourage private sector investment in oil and gas exploration

[1] This annex was put together by Akin O.Oduolowu, Lead Energy Specialist, Oil and Gas Policy Division (world Bank). Pillar 2 work was coordinating by Moinuddin Alamgir (ADB) and Alain Loccusul (World Bank).

and development, (v) increasing Government revenues by phasing out price subsidies and improving collection of payments by the gas and power utilities, (vi) gradually implementing separation of policy making, regulatory and operational functions, (vii) developing policy on inter-regional gas trade to facilitate import and export of natural gas through transmission network among the neighboring countries, (viii) creating institutional capacity for negotiating and monitoring investments in exploration and development of oil and gas, and (ix) establishing appropriate codes and standards for the oil and gas industry, and preparing procedures for its enforcement and monitoring.

Sector Vision and Objectives

- The Government has given a high priority to the development of oil and gas as a significant source of energy in the country. Geologically, many of the sedimentary basins are considered rich in hydrocarbons and the potential for new discoveries are considered high. An important aspect of the development program for the gas industry is to increase gas production, and to develop gas transmission and distribution infrastructure so that a higher proportion of the country's energy requirements can be met by natural gas and dependence on imported oil can be reduced. The domestic utilization of natural gas has remained at a low level due to inadequate infrastructure facilities for gas production and its transportation to the consumption centers. Natural gas is not transmitted to major parts of the country, in particular the south where the high demand centers are located. The potential for increased utilization of natural gas is considered high, as there is significant gap between the demand and supply. In addition, natural gas is a premium fuel as it has the least negative impact on the environment as compared to other fossil fuels.

Operational and Implementation Strategy

- The operational strategy of the Government for the hydrocarbon sector is aimed at promoting economic growth by removing impediments to the modernization and reconstruction program, in particular policy, financial, regulatory and institutional constraints. The Government plans to open up the hydrocarbon sector to private participation, specifically oil and gas exploration, petroleum imports and marketing, and the mining sector. It is recognized that there is a need to establish separate policy and regulatory functions, to undertake sector restructuring, and to improve operation, maintenance, and safety standards. It will, however, take time to formulate new policy frameworks, modify existing legislation and regulations, achieve financial sustainability, and reorganize the sectors. The Government, therefore, favors a parallel approach of using the existing Government structures to implement the capacity building and reconstruction work, while exploring options and creating consensus for implementing policy and structural changes appropriate for each sector

Investment Priorities

- Total investment requirement during the 2004-2015 period is $1,1445 million; $453 million form the private sector. Public sector investment is likely to be $691 million and another $15 million to monitor and regulate activities in the sector. An additional $300 million private sector investment is envisaged during the period 2011-2015. In the first year investment is in technical assistance. During the period 2004-2008, it is expected that an investment totaling $539 million will be required for: (i) the rehabilitation of the infrastructure comprising construction of a small size refinery by the private sector ($60 million); rehabilitation of the gas processing and fertilizer plant by the public sector ($70 million); and construction of the gas pipeline from Shebergan to Kabul by the public sector ($300 million); (ii) drilling of new

production wells and work-over of some of the older wells that are either producing or shut ($50 million including $15 million public) in order to increase gas and oil production; (iii) $50 million for exploration and development of oil and gas from new and old fields by the private sector, and (iv) $30 million for oil storage tank rehabilitation, $20 million of which should come from the private sector.

- During the period 2008-2010, investment priorities include (i) $15 million public investment to monitor and regulate activities in oil and gas sector, and work over of existing wells, and (ii) $100 million for oil exploration from private sector. Another $100 million worth of investments are expected from the private sector for exploration in the following five years.

Financing Requirements

- Several options will be considered for financing these activities. The promotion of exploration concessions to the private sector will be done in phases. The first phase would involve promotion of concessions in currently producing oil and gas areas to the private sector as a means of increasing reserves of oil and gas. It is hoped that the success from this initial promotion can be leverage to attract private sector to other new areas. Current bilateral and multilateral commitments for the oil and gas sector include the following.

- Technical and financial assistance has been provided to the Government by the World Bank, Asian Development Bank (ADB), United States Trade and Development Agency (USTDA), United States Agency for International Development (USAID) and the United States Geological Survey (USGS) and other donors for the implementation of several components of the strategy. Most of these activities are to be completed by 2004, and would form the basis for determining the investments required in subsequent years for the development of the sector. The activities include:

    - Development of a hydrocarbon exploration promotion program for the areas that are currently producing oil and gas. This component is being funded from a World Bank Technical Assistance program under the Emergency Infrastructure Reconstruction Project. The total cost is about $500,000.

    - Development of options for the rehabilitation of the infrastructure for producing oil and gas. This is being funded through a Trust fund from USTDA at an estimated cost of $1.2 million. The study would evaluate the viability of rehabilitating the gas processing and fertilizer plants; construction of a small size refinery with capacity of 5000-10,000 barrels of oil per day (bopd); and the construction of a pipeline from Sheberghan to Kabul.

    - Evaluation of the hydrocarbon potential in the sedimentary basins in Afghanistan. This study is being funded by USTDA and would be undertaken by the USGS.

    - Rehabilitation of three gas fields and the field infrastructure facilities; repair and rehabilitation of gas transmission and distribution pipelines, and the development of a Gas Master Plan and Institutional Strengthening of the Ministry of Mines and Industry (MMI). This is being funded by the ADB.

- Rehabilitation of the Afghanistan Geological Survey. Assistance for this is being provided by the British geological Survey (BGS). The detail of the assistance in still being worked out between BGS and the staff of MMI.
- Restructuring of MMI and provision of Technical Advisors to the ministry. Development of a legal and regulatory framework and establishment of an appropriate fiscal and tax policy for the sector. This is being funded by USAID.

- Public sector commitment requirement is only about $657 million; $395 million for capital expenditures and $262 million for O & M. Capital expenditure commitments would have to be made in 2005 for gas processing an fertilizer plants, Kabul pipeline, for old gas well work over, and oil storage rehabilitation. An additional amount of $15 million would be required for monitoring oil and gas exploration activities.
- Given the current political situation and security issues, it may be difficult to quickly attract the interest of private sector to Afghanistan. If the direct involvement of the private sector is not obtained, then other options such as management contracts for the development of the currently producing areas might be pursued. However, if the above planned investments materialize as envisaged, then oil production could increase from the current level of 400 bopd to 3000 bopd by 2008, 5000 bopd by 2010 and 10,000 bopd by 2015 onwards. Similarly for gas, it is envisaged that the proposed investment could increase gas production from the current level of 600,000 cubic meters/day to about 5 million cubic meters /day by 2015.

Cost Recovery

- Total revenue streams from these developments are estimated at a minimum, to increase from $0.584 million in 2004 to about $ 24.5 million/year by 2015 from oil production; and from $1.53 million in 2004 to about $ 21.4 million per year by 2015 from gas. These revenues do not include additional taxes from value added through conversion of the gas to fertilizer or power and the crude oil to refined petroleum products.

I. BACKGROUND

1. Afghanistan is well endowed with natural gas, coal and hydropower. The gas reserves are estimated to be about 120 billion cubic meters (bcm) with the likelihood of additional reserves of about 1,000 bcm at deeper horizons. The discovered gas reserves are spread over eight fields in the northern area of the country of which three fields have been brought in production. The coal deposits are estimated to be 125 million tons with nine proven deposits, of which four mines have been harnessed for production. The country depends on imports for most of its requirements of petroleum products that account for half of commercial energy consumption. The domestic crude oil reserves are insignificant, estimated to be about 12 million tons dispersed over six fields in the northern region.

2. The most important indigenous primary energy resource in Afghanistan is natural gas. The Government began extensive exploratory surveys for oil and gas at the end of 1950s with the assistance of the former Soviet Republic. Successful drilling revealed considerable gas reserves in the northern part of the country near the city of Sheberghan. The natural gas production began in1967 when a pipeline was constructed to the border of Afghanistan - Uzbekistan where it was connected to the main gas transmission line traversing through Turkmenistan to the former Soviet Union. Three gas fields were developed, which have depleted over the years and the combined remaining reserves of these fields are currently estimated at about 10 bcm. However, it is uncertain how much of it is recoverable in the absence of relevant data on field operation and management. The remaining five fields have not been exploited. A promising area for additional gas reserves is located near the city of Herat in the west region. The current gas production is about 800 thousand cubic meters per day that is about one-fourth the level of production in the 1980s.

3. Afghan Gas was established in 1968 mainly to develop and utilize the hydrocarbon resources of Khwaja Gogerdaq gas field located 25 km away towards the southeast of Sheberghan City. The field was developed and a distribution network put in place to supply natural gas to fertilizer and power plants at Khudberq by laying an 89 km long pipeline from Khwaja Gogerdaq to Khudberq. Afghan Gas soon after its establishment started exporting gas to the erstwhile USSR through a 100 km long pipeline from Khwaja Gogerdaq to Keleft located at the border of Uzbekistan. Subsequently, a new field at Jarquadaq was discovered and processing and distribution facility were put in place in 1977. A small field at Yatimtaq was also developed for supply of gas in 1985. The export of gas to USSR stopped in 1988 with the end of Soviet domination in Afghanistan. Afghan Gas started supplying gas to the domestic and industrial customers in Sheberghan and the villages nearby by expanding their pipeline network. In 1999, gas supply network was extended to the city of Mazar-i-Sharif and surrounding small towns by commissioning a 135 km pipeline from Khwaja Gogerdaq to Mazar-i-Sharif.

4. The infrastructure of the country's energy sector is in a state of decline, caused by a combination of factors that include the direct effects of the wars that the country has undergone, the shortage of expertise, and unavailability of spare parts and equipment due to lack of funding. The gas production, transmission and distribution systems have severe operating problems and are in urgent need of rehabilitation. The gas availability is grossly inadequate to meet the current requirements mainly due to loss of production facilities and high rate of leakages. The machinery and equipment available for oil and gas exploration is not functional and the level of local expertise is limited. There is currently no private sector participation in exploration and development. These factors have contributed to the country's inability to develop its hydrocarbon resources.

5. The Khwaja Gogerdaq field produced for 10 years at an average of 6 million cubic meters per day, the maximum plant capacity, delivering to the export pipeline of the former

Soviet Union. In 1988 when export production was stopped, the field output had declined to 1.4 million cubic meters per day. The field is producing at present only 0.3 million cubic meters per day. The Jarquaduq gas field is producing essentially sour gas and was put into production in 1980. It has produced at a short, five year somewhat irregular plateau period, at an average of around 5 million cubic meters per day. It currently produces about 0.45 million cubic meters per day and, operates at a much-declined pressure. Gas production from Yatimtaq field started in 1985. The field has an unfortunate history due to a well blowout accident during the earlier well drilling completion. The well ignited and remained out of control for three years. A large number of wells have been shut down for various reasons.

6. An appraisal should be carried out to assess the gas reserves of the untapped gas fields for future development considering that Khwaja Gogerdaq and Jarquadaq gas fields are now in the stage of tail production. From the available information on gas reserves, the total gas in place is estimated to be in excess of 35 bcm. A seismic program is required to be undertaken for all the unexploited gas fields. Two of these fields, at Juma and at Bashikud, appear to be at a somewhat advanced stage of appraisal, and are at depths not far below the already drilled up fields (and the technology already employed). The further appraisal of the third find, at Jungle-e-Kalan, will be of a scale and of a technological level that will require foreign capital and expertise, if contemplated within the next five years or so. There may be an opportunity for a revival of gas production in Afghanistan on a scale experienced before.

II. ORGANIZATION OF THE HYDROCARBON SECTOR

7. Institutional responsibility for the hydrocarbon sector is spread over several entities. The line ministries with specific responsibilities are the Ministry of Mines and Industries (oil exploration, gas, coal and mining), and Ministry of Commerce (oil imports & distribution). The oil, gas and coal sub-sectors are controlled by the Government, which acts as owner, regulator and policy maker. As the energy sector utilities are fully integrated with the government administration, the government has mixed roles. On one hand it acts as operator of the utilities, and on the other hand as a policy maker and regulator.

8. The Ministry of Mines and Industry (MMI) is the administrative arm of the Government for the gas sub-sector, and is responsible for the sector development and coordination. Under the MMI, the Department of Petroleum and Gas exploration undertakes geological surveys and exploration of oil and gas, and the Gas & Oil Production Department, through Raisat-e-Tasadi (Afghan Gas), is responsible for production, transmission and distribution of natural gas. Other major departments and enterprises reporting to MMI in the energy sector are Department of Mines Affairs, Department of Geological Survey and Mineral Resources, Planning Department, Technical Review Department, Research Institute, Private Sector Department, Geo Engineering and Hydrology Enterprise, Mine Exploitation Enterprise and North Coal Enterprise. The Department of General Petroleum Products under the Ministry of Commerce is responsible for import, storage and distribution of petroleum products in the country.

III. CURRENT STATUS AND ACCOMPLISHMENTS

9. The World Bank, the Asian Development Bank (ADB), the United States Trade and Development Agency (USTDA), the United States Agency for International Development (USAID), the United States Geological Survey (USGS) and the British Geological Survey has provided assistance to the hydrocarbon sector. Most of these activities are ongoing, and would form the basis for determining the investments required for developing the sector

10. ADB provided about $26.5 million in the form of technical assistance grants and loan for the following activities: Emergency Infrastructure Rehabilitation and Reconstruction Project

(EIRRP) that included rehabilitation of two gas fields and improvement of the gas production, processing, transmission and distribution facilities ($24.2 million); Energy Sector Review and Development of Gas Master Plan ($0.95 million); Institutional Strengthening of the Gas Sector ($0.75 million), and Capacity Building for Reconstruction and Development that included strengthening of the hydrocarbon sector institutions (0.6 million). In addition, ADB also provided a loan of $150.0 million for Post Conflict Multi-sector Program to support reforms in the financial, transport and energy sectors. The implementation of these activities has been initiated.

11. The World Bank provided Development of a hydrocarbon exploration promotion program for areas that are currently producing oil and gas (US$0.5 million) funded by a TA program under the Emergency Infrastructure Reconstruction Project. The World Bank is also involved (US$1.2 million funded through a USTDA Trust fund) in development of options for the evaluation of the rehabilitation of gas processing and fertilizer plants, the construction of a small size refinery with capacity of 5,000 to 10,000 barrels of oil per day, and the construction of a pipeline to transport gas from the Shebergan area to Kabul for power and non-power uses. The TA is to fund urgently needed sector work and also to provide advisory and supervisory assistance to MMI. Part of this TA is being used to: (i) undertake the promotion of exploration activities in currently producing oil and gas areas to the private sector; (ii) advise and supervise the preparation of a legal and regulatory framework and review the fiscal and tax policy for the petroleum sector; (iii) monitor and supervise a study to evaluate the options for the development of oil and gas infrastructure; and (iv) advise and supervise the study to evaluate the hydrocarbon potential in several sedimentary basins in Afghanistan**.**

12. The British Geological Survey has also agreed to provide about $ 5.0 million for the supply of equipment, materials and technical services to upgrade Afghanistan Geological Survey. Similarly, and as stated above, USTDA has provided financial assistance for the evaluation of options for the rehabilitation and development of oil and gas infrastructure, review of the Fiscal and Tax policy, and the evaluation of the hydrocarbon potential of the sedimentary basins in the country. To complement these efforts, USAID is providing technical assistance through technical advisors on long-term basis (about 3 years duration) to MMI to improve the operational efficiency of the ministry. USAID would also provide support for short-term critical activities that may be required in improving the functionality of MMI.

IV. KEY ISSUES AND CONSTRAINTS

13. Afghanistan has one of the lowest per capita energy consumption, estimated at 2000 kWh in 1987 (UNDP). Traditional fuels such as fuel wood, animal dung and agricultural wastes meet over 85 per cent of the energy needs, and the rest by commercial energy sources such as oil, gas, coal and hydropower. Fuel wood accounts for about 75 per cent of total energy supplies, and constitutes the basic source of energy for cooking and heating in rural areas where the majority of population lives. Fuel wood has long been available in unrestricted quantities to rural consumers. In recent years, a commercial market has also developed in urban areas. The indiscriminate cutting of trees for fuel, natural regeneration has not been able to sustain the forest area creating serious ecological and environmental risks. Petroleum products dominate the use of commercial energy, which accounts for more than 50 per cent of consumption. The remaining commercial energy requirements are met by other sources.

14. The infrastructure of the country's energy sector is in a state of decline, caused by a combination of factors that include the direct effects of the wars that the country has undergone, the shortage of expertise, and unavailability of spare parts and equipment due to lack of funding. As a result of the poor economic situation in the country and damage caused to the infrastructure facilities, the hydrocarbon sector is in urgent need of rehabilitation and repairs. Recovery, reconstruction, and longer-term development needs are large and will require substantial new

investment. A constraint on the design and delivery of effective and sustainable reconstruction and development programs is the weak institutional capacity of the sector entities.

15. It is envisaged that in the hydrocarbon sector, the gas sub-sector will be major recipient of external assistance. In the medium-term, external assistance will be required to (i) establish an efficient policy and regulatory framework, (ii) rehabilitate existing energy infrastructure and improve maintenance operations, (iii) expand natural gas production, transmission and distribution system, (iv) encourage private sector investment in hydrocarbon exploration and development, (v) gas pricing study with a view to increase Government revenues by phasing out gas subsidies, and improve collection of payments, (vi) develop the necessary human skills, and (vii) strengthen Government institutions.

16. The Government plans to open up the energy sector to private participation, in particular, oil and gas exploration, petroleum imports and marketing, and the mining sector. It is recognized that there is a need to establish separate regulatory and operational functions in the sector. It will, however, take time to formulate new policy frameworks, modify legislation and regulations, achieve financial sustainability and reorganize the sectors. The Government, therefore, favors a parallel approach of using the existing government structures to implement the emergency repairs and reconstruction work while studying options and creating consensus for implementing policy and structural changes appropriate for each sector.

17. Long-term sustainability requires promoting development of energy resources on a least cost basis in an environmentally sound and socially acceptable way. The country's energy resources that include natural gas, hydropower and coal can be developed economically. Given the extreme winter conditions, the heating load is likely to be substantial. The huge reliance on the use of traditional energy resources, particularly firewood has adverse impact on the environment. An expanded natural gas grid would not only meet the rural energy needs but also assist in reducing environmental degradation by replacing the use of firewood. It can also be utilized to establish community based decentralized electricity supply in many rural areas. Cement, textile and food processing industries primarily use coal. The coalmines are favorably located near the industrial areas, where the cement factories are situated. Creation of policy framework to enable private investments in the coal sector would facilitate exploitation of the coal resources in the country.

18. The key issues related to the development of the hydrocarbon sector are:

- Strengthening the capacity of the key oil and gas institutions to support the sector rehabilitation and reconstruction;
- Undertaking a review of policy, institutional, regulatory and environmental issues related to the oil and gas sector;
- Conducting a study to establish an efficient policy and regulatory framework for the gas sector;
- Carrying out specialized studies in the gas sector such as Gas Sector Master Plan, Feasibility Study for Gas Supply to Kabul and Gas Sector Efficiency and Productivity Study;
- Developing policy environment to encourage private sector investment in oil and gas exploration and development;
- Increasing Government revenues by phasing out gas price subsidies and improve collection of payments by the gas utility;
- Implementing gradually separation of policy making, regulatory and operations functions in the oil and gas sector;

- Carrying out an analysis of potential for public-private partnerships in the management of petroleum imports, supply and distribution in the country;
- Reviewing and formulating legislation related to downstream petroleum sector to facilitate private sector participation in import and distribution of petroleum products;
- Determining procedures for importation of petroleum products, establishing petroleum product quality standards, developing safety and environmental codes for petroleum storage and transportation, and introducing licensing of depots and retail outlets;
- Establishing level of taxes and import duties on petroleum products and introduce a revenue collection system;
- Creating institutional capacity for negotiating and monitoring private investments in exploration and development of oil and gas, and import and distribution of petroleum products;
- Accelerating development of alternative energy resources and facilitate distribution of petroleum products to the rural areas to arrest rapid deforestation;
- Developing policy on inter-regional gas trade to facilitate import and export of gas through transmission network among the neighboring countries; and
- Establishing appropriate codes and standards for the gas industry and preparing procedures for its enforcement.

V. STRATEGY FOR DEVELOPMENT OF THE HYDROCARBON SECTOR

A. Short-Term Priorities

19. The immediate objectives for the rehabilitation of the hydrocarbon sector are to (i) undertake capacity building and training of the sector ministries and enterprises, (ii) restore the provision of essential fuels to meet the requirements of transport sector, power generation, agricultural equipment and household users, (iii) repair and rehabilitate the natural gas infrastructure to increase gas production and arrest high losses so that a higher proportion of the energy needs can be met by natural gas, (iv) provide technical assistance that will support creation of new institutional framework in the energy sector, and (v) re-establish some of the strategic establishments to enable the sector to begin reconstruction of its facilities on a priority basis.

B. Medium-Term Needs

20. The longer-term operational strategy for the energy sector is aimed at promoting economic growth by removing impediments to the reconstruction program, in particular policy, financial and institutional constraints. This will be achieved by assisting the Government in formulating the sector policies and regulatory frameworks, providing financial resources to rehabilitate the damaged infrastructure, and improving operations, maintenance, and safety standards; and developing human resources. The need to proceed expeditiously with emergency repairs is recognized. Upon completion of the rehabilitation work, the focus of the investments will shift to system expansion and modernization. Long-term sustainability requires promoting development of energy resources on a least cost basis in an environmentally sound and socially acceptable way.

C. Government Strategy

21. The Government strategy is to create a hydrocarbon sector that is efficient and cost effective in meeting the demand of products and services at the least economic, financial and environmental cost to the country, while at the same time, promote the development of the country's hydrocarbon potential, and develop institution capacity and manpower needs for the sector. The Government plans to open up the energy sector to private participation, in particular, oil and gas exploration, petroleum imports and marketing, and the mining sector. It has recognized the need for establishing separate regulatory and operational functions in the sector. It will, however, take time to formulate new policy frameworks, modify legislation and regulations, achieve financial sustainability and reorganize the sectors. The Government, therefore, favors a parallel approach of using the existing government structures to implement the emergency repairs and reconstruction work while studying options and creating consensus for implementing policy and structural changes appropriate for each sector.

22. The Government is aware that in order to achieve the above objectives, it would have to establish an enabling environment that would attract investments from the private sector, both local and international investors. Furthermore, it will require strengthening the capability of the sector institutions and equip them with logistical support and well-trained manpower to enable them control, manage and monitor activities in the sector efficiently. The proposed strategy would comprise the implementation of the following set of actions.

- Develop institutional capacity and improve the level of expertise of its manpower in the sector.
- Develop appropriate legal and regulatory framework that would allow the promotion of private sector investment in the sector and the efficient development of the resources in an environmentally acceptable and safe manner.
- Restore the capability for local production of oil and gas and the rehabilitation of essential infrastructure to facilitate the transport of oil and gas.
- Promote the private sector for investments in new areas for exploration and production of hydrocarbons and facilitate technology transfer.
- Evaluate the economic and financial viability of local industries such as oil refinery, fertilizer plant etc.
- Evaluate the viability of the country as a preferred transit route for gas exports from the surrounding countries, such as Turkmenistan to Pakistan and/or India.

V. IMPLEMENTATION STRATEGY

23. The proposed strategy is to be implemented under various proposed and ongoing technical assistance and loans to the Government. It includes:

- Development of Sector policy, Institution Restructuring and Manpower development; and Reform of Legal and Regulatory Framework;
- Resource evaluation and reopening of hydrocarbon exploration activities with private sector involvement; and Development of Infrastructure in the hydrocarbon sector;
- Reconstruction and rehabilitation of the gas production, transmission and distribution infrastructure; and
- Development of gas sector master plan.

A. Development of Sector Policy

24. This will involve a comprehensive review of existing policy and strategy for the hydrocarbon sector and the development of a sector policy that is in line with international practices in other oil and gas producing countries. The policy would establish: (i) the basic rules

and regulations that would govern hydrocarbon operations in the country; (ii) procedures to regulate these activities for both domestic and international enterprises; and (iii) the principal administrative, economic and fiscal guidelines for promoting investment activities in the sector. The development of the policy would involve participatory approach with senior government officials, local enterprise managers, non -governmental organizations that are involved in the sector and members of civil society. To achieve this objective the Government would seek assistance from bilateral donors and multilateral financial institutions to help fund consultancy services to:

- Review the current organizations structure of the Ministry and the sector agencies to prepare a baseline assessment of the current situations with respect to national policies, legislations, taxation and institutional structure; and recommend necessary changes or modifications that would improve and enhance the efficiency of the Ministry and its sector agencies;
- Provide assistance and advice in the implementation of the restructuring of MMI, to separate the responsibilities for oil and gas from mining into two distinct departments; and
- Develop and design an implementation program for training the staffs of the ministry and the agencies to enable them operate efficiently in the newly restructured ministry.

B. Institutional Strengthening and Capacity Building

25. The several decades of political instability has resulted in limiting the capability and capacity of not only the MMI but also of the sector agencies. Despite the fact that MMI has over 12,000 staff, there is a paucity of experienced local manpower in petroleum exploration and development activities (such as geologists, geophysicists, petroleum engineers and petroleum economists, etc). The ministry obviously cannot efficiently handle all these staff, particularly as they do not have the prerequisite competency or expertise in mineral resource development. In this regard, assistance will be sought to:

- Restructure the MMI. Such restructuring would include provision of a social safety net or compensation for those staff that may not be required by the ministry;
- Build capacity so that personnel may become proficient with modern management techniques and equipment;
- Establish a competent technical unit within the ministry that would implement, monitor and regulate government policies for the oil and gas sector and also be the custodian for the management of the exploration and production resource data for the country. The unit should be the primary point of interface between the State and the private sector and also provide technical support and counsel to the Government's policy-making body in the petroleum sector;
- Develop and implement a comprehensive technical and language-training program to upgrade the expertise and knowledge of the staff, and also improve their ability to communicate in English;
- Provide the ministry a reliable access to the Internet so as to facilitate its communication with the outside world; and

- Rehabilitate and equip the Afghanistan Geological Survey so that it can provide technical support to the Ministry and the Sector agencies.

26. As institutional strengthening is very critical to making the ministry and the overall sector efficient, most donors are providing assistance for the manpower development. Most assistance is in form of training of staff either directly through class work or as part of an ongoing activity in which staff are encouraged to participate. In addition to training to improve technical expertise, the staff also needs some training in the English language so as to facilitate their communication outside Afghanistan. With regard to improving the functional capability of the ministry, USAID would be providing some senior advisers to the ministry knowledgeable in oil and gas sector development to work with the ministry in the development of the Sector strategy and the restructuring of MMI. Furthermore, the senior advisor to be provided by USAID would develop a program for the training of the staff of the ministry both locally and abroad. They would be divided into different groups in line with their professional expertise and interest, and the groups will be made to participate in ongoing activities and studies to obtain technology transfer and professional exposures.

27. Under an approved TA financed by ADB, consultants will be hired to identify capacity building and institutional strengthening requirements of the gas sector entities. The key departments of MMI responsible for the gas sector will be strengthened to cope with the responsibilities assigned for the management and the development of the sector. The consultants will develop and strengthen the institutional capability in planning, reviewing, monitoring, and undertaking needs assessment and modernization of the gas sub-sector. For the efficient and effective sector development, it is also proposed to strengthen the capacity of MMI in policy formulation, energy sector assessment, energy planning, program monitoring and evaluation, and overall sector management and coordination. The consultants will undertake a review of the personnel deployment, skills mix, and support services needed, and assess the present capacity to carry out the responsibilities assigned. As a result, the consultants will design training courses, workshops and seminars in the areas identified and will prepare detailed work program to facilitate their implementation.

C. Reform of the Petroleum Legislative and Regulatory framework

28. Currently, there is no well-defined modern legal and regulatory framework for the sector. Although there is a combined Mining and Petroleum law, it is inadequate in its present form and not in line with international standards. In line with the practice in other countries, the legal and regulatory framework for both mining and petroleum activities should be separated. In addition, the following issues and others that is considered relevant and in line with international practices will be clearly defined, such as:

- Ownership of resources;
- Role of specific investment agreements;
- Taxation regime and how to be applied;
- Role of State as regulator and not as owner/operator;
- Creation and role of the regulatory agency who should be vested with the exclusive mandate to design, draft and implement government policies in the sector;
- Definition and responsibilities on agreed work obligations of the concession title holder;
- Public disclosure and ownership of data;
- Health, safety and environmental requirements; and
- Abandonment procedures for depleted or uneconomic wells.

29. Services of reputable legal professionals are being used to analyze the existing legislations and regulations pertaining to petroleum resources development with a view of preparing a modern legal regulatory framework for Afghanistan petroleum sector that addresses the above issues. The outcome would be a legal and regulatory framework that would include a new and modern Petroleum Law, Petroleum regulations, Modern Concession and Production Agreements and a Tax and Fiscal policy that is in line with international best practices and would facilitate the promotion of private sector interest in the sector.

D. Review of Fiscal and Tax Policy in the Petroleum Sector

30. In Afghanistan, principally the Government undertook hydrocarbon exploration and development activities, and hence the existing tax and fiscal policy are not geared towards the private sector. As previously discussed, Afghanistan petroleum sector had been significantly affected by the several wars and political instability that have plagued the country and as a result, there is no private sector involvement in the sector, the sector suffers from lack of modern geologic information and data on reserves, poor production and basic infrastructure and a petroleum administration that has very limited number of staff experienced in oil and gas activities. The Fiscal and tax policy to be adopted must therefore be able to provide the enabling environment for attracting private sector investment to hydrocarbon exploration and development. In this case, the policy recommended to the Government consists of a minimum royalty from gross production of 5%, corporate tax and production-sharing possibilities after the rate of return on the contractor's investment is greater than 15%.

31. Based on the currently available data on hydrocarbon potential of the country, it is likely that the petroleum sector in Afghanistan will not be wealth generator for the State in the short-term (0-5 years). Indeed, it is not expected to be a significant contributor in terms of royalties and taxes for at least the next decade. However, in order to provide Afghanistan's petroleum sector with the best chance of becoming a wealth generator for the State, and also to sustain proper governance and management, the oil and gas sector needs to be restructured such that the essential governance functions - Policy Formation; and Policy Implementation and Regulation can be effective:

E. Rehabilitation of Gas Infrastructure

32. The infrastructure of the gas sector is in a state of decline, caused by a combination of factors that include the direct effects of the wars that the country has undergone, the shortage of expertise, and unavailability of spare parts and equipment due to lack of funding. The gas production, transmission and distribution systems have severe operating problems and are in urgent need of rehabilitation. The gas availability is grossly inadequate to meet the current requirements mainly due to loss of production facilities and high rate of leakages. The entity responsible for gas production, transmission and distribution (Afghan Gas) urgently needs modern technology related to field depletion and reservoir management. The reservoir pressures have decreased significantly and a large number of production wells have been shut down. Some of the non-producing wells have to be worked-over to enhance production and to prolong the life of the fields. There is lack of geological and geophysical expertise in the country that is urgently needed to establish the gas field management strategy and to determine the optimum field depletion policy.

33. Under the ongoing loan project, it is proposed to increase the availability of gas by repair of non-producing wells, upgrading of gas production facilities, and rehabilitation of transmission and distribution pipelines. The scope of work will encompass a wide range of activities. The producing gas fields will be rehabilitated to enhance gas production and to prolong the life of the fields. Some of the non-producing wells will be worked-over and the wells that were uncompleted would be re-evaluated. The quality of gas from some of the wells is not suitable as feedstock for

fertilizer production due to high hydrogen sulfide content in particular gas bearing zones. Appropriate gas processing facilities will be installed. The rehabilitation of gas infrastructure will enhance environmental and safety standards will reduce ecological problems and will promote efficiency of natural gas use.

F. Development of Gas Sector Master Plan

34. Consultants have been engaged to prepare a comprehensive gas sector development master plan that will guide and promote the development of Afghanistan's gas infrastructure over the next 10 years. It will improve energy supply based on identification of promising potential resources, attract private capital by removing impediments in Government policies and strategies, improve sector efficiency through institutional strengthening, and prepare a gas development master plan to meet the expected increased domestic demand for natural gas, reduce the consumption of imported petroleum products and reduce the environmental impact associated with the use of other fossil fuels. The consultants will undertake an assessment of the energy sector and evaluate various options for the development of the gas sub-sector. The key activities include:

- Reviewing the Government's policy framework to promote and develop energy resources;
- Estimating the investment requirements to increase the primary energy production to meet the projected demand;
- Formulating strategy to encourage private investment in energy sector development;
- Assessing the potential for increased domestic utilization of natural gas;
- Prioritizing major gas infrastructure development projects that need to be undertaken to meet the increased demand for natural gas;
- Assessing economic and environmental benefits of increased domestic natural gas consumption in place of other fuels;
- Identifying measures aimed at providing supply of gas to the extent possible to the poor and disadvantaged;
- Assessing the potential for increasing small-scale use of natural gas;
- Identifying the changes required to the existing laws, rules and policies governing the gas sector; and
- Capacity building and training of gas industry personnel.

VI. SERVICE DELIVERY TARGETS

A. Oil and Gas Resource Evaluation

35. The recoverable reserves of oil and gas currently estimated are based on the analysis undertaken by the Russians about 15 years ago, which put the recoverable reserves of gas between 120-200 bcm and 14-18 million tons (or about 100 million barrels) for oil. As over the years, there has been continuous production from some of the fields (albeit small), it is important to confirm the validity of these reserve data, in order to ascertain if the resources of oil and gas are significant enough to warrant a major investment program. Therefore, reserve data estimation will be undertaken as part of the evaluation of options for the rehabilitation of the infrastructure for oil and gas. In addition to the areas currently producing hydrocarbon, Afghanistan has other relatively attractive geological petroleum basins with likely significant deposits of oil and gas. These include areas around Herat in the West, the south region around Helmand, and southeastern region in Katawaz, where Total Oil Company did some exploration activities in 1976. The

potential of these basins have not been evaluated. Therefore, assistance would be sought by the Government to undertake a comprehensive evaluation of the potential of hydrocarbon is these sedimentary basins.

36. The study to evaluate the hydrocarbon potential of the sedimentary basins is being undertaken by USGS under financial assistance of about $2.2 million provided by USTDA. The study was started in August when a team of USGS geologists, geophysicists and petro-physicists visited Afghanistan to evaluate the quantity and quality of available data and also installed some equipment both at Kabul and Shebergan, to be used to analyze geological data. The USGS considers that there is a reasonable volume of data that can be used to develop promotional packages for the currently producing areas, but also felt that the acquisition of some new data; particularly new 2D seismic could improve the integrity of the database. Discussions are currently ongoing on the appropriate volume of seismic data required, how to acquire this new data, cost and timetable. USTDA has agreed in principle to provide some funds for the acquisition of the seismic data. Preferably, a reputable international seismic data acquisition company will be contracted to acquire the data with Bank supervisory oversight. A major problem however, is how to ensure that the areas in which the data is to be collected have been secured and de-mined.

B. Promotion of Hydrocarbon Exploration

37. Since 1987, no exploration activities for oil and gas have been conducted in the country, either by the Government or private sector. The Government plans to reopen exploration activities in several sedimentary basins in the country, principally with the assistance of the private sector. Several options for promoting the areas will be considered. However, exploration promotional activities will first be undertaken in the already producing basins to stimulate private sector interest. The success of the private sector involvement in these areas will then be leverage to attract other investors to the other basins. For the promotion activity to work, there must be established, the necessary legal and regulatory framework and appropriate fiscal and tax policies. A consulting firm from USA has been selected to assist the Government develop and implement the program for the promotion of the producing areas. Several options would be considered for attracting private sector investment both for exploration and development of oil and gas resources but also for the development of urgently needed production infrastructure.

C. Infrastructure Development

38. The oil and gas infrastructure were badly damaged during the wars, and are in some cases, not operational. It is also believed that the level of production and demand are suppressed because of the limitation of the oil and gas infrastructure. High priority will be therefore be given to the rehabilitation of the oil and gas infrastructure to improve the utilization of the resources by the various categories of consumers and thereby, enhance the contribution of the sector to the overall economy. Furthermore, because of the unique and favorable geographical location of Afghanistan, the Government is also exploring the economic feasibility of Afghanistan as a transit route for gas exports from Turkmenistan through to Pakistan and India.

39. The study for the evaluation of options for the development of oil and gas infrastructure is being funded through a consultant trust fund provided by USTDA. The study estimated to cost about $ 1.2 million would:

- Evaluate the status of the Gas Processing and Fertilizer plants and recommend the least cost option to either rehabilitate the plants or build new plants.
- Undertake a feasibility study for the construction of a small size refinery for the production of refined petroleum products.
- Undertake a Gas Utilization study for Kabul and surrounding areas.

- Undertake a feasibility study for the construction of a pipeline to transport gas from the northern areas of Shebergan and Mazar-e-Sharif to Kabul for power and non-power uses.

D. Oil and Gas Development Scenario

40. The projected demand for oil and gas in Afghanistan are given in Annex 1. As indicated earlier, currently, gas production is only from three fields at the cumulative rate of 600,000 cubic meter/day (equivalent to about 21 million cubic feet/day), which is less than 10% of the capability of the fields. The fertilizer plant to produce about 40,000 tons/year of urea consumes about 300,000 cubic meters/day of the gas and the balance of the gas is used mainly in the northern region for households, industrial and power generation. The gas processing plant constructed by the Russians to purify the gas by removing water and H2S is no more functioning. This forces a limitation on the amount of sour gas that can be blended with the sweet gas to meet the gas specification for the fertilizer. Also, the fertilizer plant that consumes about 50% of the gas produced has been poorly maintained and hence can only produce at less than 40 % capacity of 105,000 tons per year. The fertilizer facility is self-contained with respect to processing capabilities, maintenance and utilities, such as power generation for its own use. This includes a 48-megawatt power station (4x12 megawatts capacity) for internal needs (16 megawatts) and export sales to the surrounding region of Mazar-e Sharif. The lack of funds to purchase spare parts has contributed to the poor maintenance of the plant. This, in turn, has led to the low level of urea production and also to the level of power generated which has decreased from 48 MW to about 21 MW, thereby reducing the amount of power that can be supplied to the surrounding towns. Current power generation takes about 60,000 cubic meters/day of gas. Other industrial demand is estimated at 100,000 cubic meters/day of gas. In addition, an estimated 300,000 households or only 7.8% of total households of the country utilize about 140,000 cubic meters/day in the north.

41. The target connection of gas to households is 23.1% (1 million) in 2010 and 42% in 2015. The idea is to bring the most abundant and environment friendly energy resource of the country to the reach of as many household as possible. Average use is assumed to be 350 therms/year/household for those without central heating and 500 therms/year/household for those with central heating.

42. It is difficult to estimate current demand for petroleum products because of supply constraints. The estimated utilization figure for petroleum products is 80,000 tons/month, which translates into 960,000 tons annually. The 2004 figure is placed at 965,000 tons (Annex 1), increase at the rate of population growth. Future growth of demand for petroleum products will depend on a number of growth factors including vehicles, total and urban population, and vehicles per capita (Annex 1). Taking these factors into account a conservative annual growth rate of 8% has been assumed for all petroleum products with some variation among different products.

43. As for supply to match demand, hydrocarbon resources of Afghanistan can be grouped geographically into 5 basins comprising: (i) Karakum or Amu-Daria, with an area of 57,000 km^2 in the North-West; 51 structures were drilled with 13 commercial discoveries (7 gas, 6 oil), (ii) Afghan-Tadjik with an area of, 31,000 km^2 in the North; exploration was stopped after 10 drillings (negative results), (iii) Tirpul with an area of 26,000 $km^{2\ in}$ the West, (iv) Helmand with an area of 131,000 km^2 in the South, and (v) Kundar-Urgun with an area of 40,000 km^2 in the South-East. The latter three structures were classified as “possible basins” without any significant results other than one successful exploration well in Tirpul.

44. Gas development in the medium term will therefore concentrate on the proven petroleum basin of Karakum, surrounding the cities of Shebergan and Mazar-i-Sharif that will include:

- The four undeveloped gas fields: Juma, Bashicord, Jangali Kalan and Khuaja bulan hold together officially 32 billion m^3 recoverable gas reserves
- The three developed gas fields**:** Khuaja Gogerdak, Jargoduq and Yatim taq, hold together officially 53 billion m3 remaining recoverable gas reserves. However, these fields are highly depleted, with downgraded infrastructures, and candidate for a rehabilitation program. All three structures appear to be fully developed in terms of producing wells. No massive investment is foreseen, in comparison with the expenditures needed for non-developed fields.
- The six undeveloped oil fields represent altogether 14 million tons of oil. The cost of their development has not been estimated yet, it could amount up to $300 million (equivalent to $3 / bbl) provided that wells potential is sufficient to guarantee a reasonable pay-out time
- The remaining exploration potential of 260 identified non-drilled structures are being investigated under the TA for Gas Master plan. An exploration strategy will then be defined, and a schedule will be proposed depending on the expectations of gas market development. Short-term exploration efforts will remain low anyway in comparison with the expenditures needed for non-developed gas fields.

45. Development of the upstream oil & gas sector will be concentrated in the Northern region of Shebergan and Mazar-i-Sharif. It can be split into four categories comprising: (i) development of discovered but undeveloped gas fields, (ii) development of oil fields (upon assessment of commercial reserves), (iii) rehabilitation of developed, producing gas fields, and (iv) exploration of undiscovered gas resources

46. The first category is the most important, in term of proven reserves, capital funds, and quality of project definition. The three undeveloped fields of Bashicord, Juma and Jangali Kalan could be developed jointly, either simultaneously or in sequence. Such development would yield:

- Recoverable reserves equal or in excess of 30 billion cubic meters;
- Project duration between 5 and 8 years, including a 2-years appraisal phase on Jangali Kalan;
- Target production plateau of 6.5 to 8 million cubic meters per day; and
- Total investment down to the tie-in point to a regional pipe, at Jargoduq (40 km), around $300 million.

These are preliminary estimates, and need to be confirmed later by the results of the ongoing study.

47. Out of the four undeveloped gas fields, Khwaja Bulan can be temporarily set aside because (i) official reserves are marginal at 2.5 billion m^3, and (ii) it is located close to Khwaja Gogerdak and could be developed as a satellite stand-alone project. The other three fields could be grouped into one joint development, in two steps: Firstly, develop Juma and Bashicord with recoverable reserves estimated at 11 billion m^3 (classified C1, using the Russian categorization) plus 6 billion m^3 (C2). The Upper Jurassic gas reservoirs lie at 3200 to 3400 meters depth, and initial pressure around 410 bars. Their degree of appraisal is sufficient to start the development after 2 more appraisal wells, designed for modern data acquisition and well performance assessment. A 40-km new pipeline would transport the gas to Jargoduq, where it could be injected

into the existing pipeline. Secondly, develop Jangali Kalan with recoverable reserves estimated at 15 billion m^3 (C2) plus a significant upside of more than 100 billion m^3 (cat. D). Upper Jurassic gas reservoir lie deeper at 4300 meters, associated with high pressure (530 bars) and high temperature (above 140°C) conditions. The field remains in its initial appraisal stage. It is prudent to plan 3 to 5 more appraisal wells, to assess production levels and upside of reserves. Those wells could be converted later into production wells. A 30-km new pipeline would transport the gas to Bashicord.

48. Four possible alternatives have been identified for the development of natural gas resources, depending on the pace of development and target production plateau: (i) parallel development, 5 years (3 years for joint development Juma-Bashikud, 2 for Jangali Kalan), (ii) sequential development, 8 years (Juma and Bashikud are sequential, 3+3+2 years), (iii) no upside in Jangali Kalan, production plateau is 3.5 + 3 = 6.5 million m^3 per day, and (iv) upside confirmed in Jangali Kalan, production plateau 8 million m^3 /d (equal to 1973-1986 period). Table 1 below summarizes the capital expenditures for different options:

Table 1. Alternatives for the Development of Natural Gas Resources

Plateau	Phasing	year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	Total
6.5 Mm^3/day	Simultaneous	Appraisal		Jangali-Kalan						
		Bashicord+JUMA								
		25	77	91	54	40	0	0	0	287
	Phased				Appraisal		Jangali-Kalan			
		Bashicord			JUMA					
		7	17	30	20	62	63	54	40	292
8 Mm^3/day	Simultaneous	Appraisal		Jangali-Kalan						
		Bashicord+JUMA								
		25	77	91	74	60	0	0	0	327
	Phased				Appraisal		Jangali-Kalan			
		Bashicord			JUMA					
		7	17	30	20	62	63	74	60	332

VII. ESTIMATE OF INVESTMENTS IN THE OIL & GAS SECTOR 2004-2015

A. Investments Estimates

1. 2004 ($ 29.5 including $ 14.5 million of technical assistance)

49. During this year, most of the activities in the sector would consist of implementation and completion of several ongoing studies, which would then provide the basis for the investments to follow in subsequent years. Most of these activities are being funded through technical assistance, grants and /or loans from multilateral financial institutions and several bilateral donors. It is estimated that major part of the $ 14. 5 million (Annex 2), which is in form of technical assistance and grants already obtained by the Government will be fully committed or disbursed. Oil and gas production is expected to remain at the same level as in 2003, i.e. 50 tons/day (equivalent to about 400 barrels of oil per day); and 600,000 cubic meters of gas per day. The Government oil and gas entities in Shebergan would continue to handle oil and gas production because direct investments from the private sector are not expected to be available during this year. In addition, focus would be on the completion of ongoing studies, analysis and promotion programs; training and manpower development; institution capacity building including the restructuring of the Ministry

of Mines and Industries; confirmation of recoverable reserves of oil and gas; and the approval and passage of essential laws and regulations to establish the enabling environment conducive to attracting private sector (local and foreign) investment to the sector.

50. Afghanistan depends on imports for most of its requirements for petroleum products, unlike other forms of commercial energy for which there are sizeable domestic resources. Supply and distribution of petroleum products in Afghanistan presents considerable problems. The distance from the supply depots/refineries in neighboring countries to various parts of Afghanistan are long and the routes are often tortuous. There are no rail facilities and the existing road conditions are very poor compounded by damaged bridges. A number of bridges have been damaged as a result of long conflict. At present, the import of oil in the country is unregulated and there are no oil import agreements in force. Individuals who are not commercially organized are importing oil from the neighboring countries in small quantities on an ad hoc basis. This has led to unregulated supply and distribution. The black market price is significantly higher than the border price due to high cost differentials between bulk and containerized imports. Individual importers do not have the required facilities for bulk handling and storage. The quality of products in the market is substandard as it is mixed with inferior products. Moreover, the Government is not in a position to realize the revenue potential from the import and sale of petroleum products. The oil storage facilities owned by the Government are in a state of disarray due to lack of maintenance and damage caused during the civil strife. However, a significant part of the 162,000-kiloliter storage capacity can be restored after rehabilitation. It is estimated that about 24 percent can be commissioned with minor repairs, and additional 38 percent after rehabilitation for a total capacity restoration of 62 percent. The remaining capacity can be rehabilitated subsequently with increase in the demand of petroleum products. There is thus an urgent need to rehabilitate the petroleum storage/handling and quality testing facilities. A $15 million investment is proposed for 2004 to rehabilitate 100,000-kiloliter of oil storage tanks (Table 2 and Annex 2). Public sector is expected to cover $14.5 worth of studies for which funds are already committed as well as $5 million for rehabilitation of petroleum storage tanks. Details of public and private sector investment program in hydrocarbon sector are presented Annex 3.

2. 2005-2008 ($594.0 million – Public $424.5 million and Private $169.5 million)

51. This is the most critical period for the hydrocarbon sector. During the four years, it is expected that the Government would have obtained funds to undertake the development of the infrastructure that would stimulate the increase in oil and gas production and utilization. The required infrastructure include the rehabilitation or construction of new gas processing and fertilizer plants estimated to cost about $80 million ($70 million capital expenditure and $10 million O & M) by the public sector; construction of the small sized refinery at about $65 million ($60 million capital expenditure and $5 million O & M) by the private sector; construction of the gas pipeline from the north to Kabul, estimated to cost about $320 million ($300 million capital expenditure and $20 million O & M) by the public sector; rehabilitation of the gas production facilities and Shebergan/Mazar-I-Sharif pipeline, at about $ 24 million (funds

Table 2. Hydrocarbon Sector Investment Program 2004-2015 ($ million)

Activities	2004	2005-2008	2009-2010	2004-2010	2011-2015	Total
Total oil & gas invt	29.5	594.0	186.0	809.5	315.0	1,124.5
Capital	29.5	545.0	100.0	674.5	100.0	774.5
O & M	0.0	49.0	86.0	135.0	215.0	350.0
Public	5.0	424.5	65.0	494.5	162.5	657.0
Capital	5.0	390.0	0.0	395.0	0.0	395.0
O & M	0.0	34.5	65.0	99.5	162.5	262.0

Private	10.0	169.5	121.0	300.5	152.5	453.0
Capital	10.0	155.0	100.0	265.0	100.0	365.0
O & M	0.0	14.5	21.0	35.5	52.5	88.0
Studies	14.5					14.5
Infrastructure	15.0	594.0	186.0	795.0	315.0	1,110.0
Capital	15.0	545.0	100.0	660.0	100.0	760.0
O & M	0.0	49.0	86.0	135.0	215.0	350.0
Refinery	0.0	65.0	10.0	75.0	25.0	100.0
Public	0.0	0.0	0.0	0.0	0.0	0.0
Private	0.0	60.0	0.0	60.0	0.0	60.0
O & M		5.0	10.0	15.0	25.0	40.0
Gas Processing & Fertilizer Plants	0.0	80.0	20.0	100.0	50.0	150.0
Public	0.0	70.0	0.0	70.0	0.0	70.0
Private	0.0	0.0	0.0	0.0	0.0	0.0
O & M	0.0	10.0	20.0	30.0	50.0	80.0
Kabul Pipeline	0.0	320.0	40.0	360.0	100.0	460.0
Public	0.0	300.0	0.0	300.0	0.0	300.0
Private	0.0	0.0	0.0	0.0	0.0	0.0
O & M	0.0	20.0	40.0	60.0	100.0	160.0
New Wells/Old	0.0	55.0	10.0	65.0	25.0	90.0
Public	0.0	15.0	0.0	15.0	0.0	15.0
Private	0.0	35.0	0.0	35.0	0.0	35.0
O & M	0.0	5.0	10.0	15.0	25.0	40.0
Expl.Promotion	0.0	50.0	100.0	150.0	100.0	250.0
Public	0.0	0.0	0.0	0.0	0.0	0.0
Private	0.0	50.0	100.0	150.0	100.0	250.0
O & M	0.0	0.0	0.0	0.0	0.0	0.0
Oil Storage Rehab.[6]	15.0	24.0	6.0	45.0	15.0	60.0
Public	5.0	5.0	0.0	10.0	0.0	10.0
Private	10.0	10.0	0.0	20.0	0.0	20.0
O & M	0.0	9.0	6.0	15.0	15.0	30.0

already provided by ADB); drilling of new oil and gas wells (about $ 5 million per well) and rehabilitation of some of the wells that are currently producing, for a total of $55 million ($50 million capital expenditure and $5 million O & M) by both public and private sectors (Table 2 and Annex 3). Capital investment by private sector for gas exploration promotion is placed at $50 million. Production of oil is not expected to increase dramatically in 2005. It would remain at the level of 400 barrels of oil per day (bopd) increasing to about 500 bopd in 2006 and 2007, while gas production is estimated to increase during the same period to 1.8-2.0 million cubic meters/day (mmcm/day). The increase in gas production will be facilitated by the completion of the ADB rehabilitation program of the two gas fields and the rehabilitation of the Mazar-I-Sharif to Shebergan gas pipeline by 2006; and also the rehabilitation of the gas processing and fertilizer plants, with private or public sector financing. It is expected that these works will be completed by 2006. Hence at 2.0 mmcm/day, there should be enough gas supply for about 100 MW for power generation at (0.71 mmcm/day); (ii) fertilizer plant to produce about 100,000 tons/day of urea and 40 MW of power for the Shebergan area (about 0.85 mmcm/day). The balance of about 0.44 mmcm/day would be distributed to households and commercial consumers around the Shebergan and Mazar-I-Sharif areas.

3. 2008-2010 ($186.0 million – Public $65 million and Private $121 million)

52. Exploration activities for oil and gas by the private sector should be ongoing during this period, both in the areas with known discoveries and for new discoveries. The main contribution, however, would be from the areas that are known to have oil and gas reserves, with the involvement of the private sector and application of modern production technology. An investment of about $100 million from the private sector is anticipated for drilling new production wells and further developing essential infrastructure for production in the currently producing areas. Minimum investment (about $15 million) is expected from the Government or the public sector to monitor and regulate the activities in the sector. Additional private investments will amount to $121 million. Contributions from new discoveries are not expected to provide any significant impact till 2010 at the earliest. However, it is expected that the completion of the construction of the refinery and the Kabul gas pipeline, would stimulate an increase in the oil production during this period to 3000 barrels per day (bopd) and gas production would also increase to about 3 mmcm/day during the same period. An additional 1.0 mmcm/day of gas will be available to be transported through the pipeline to Kabul or used for generating an additional 100MW of power.

4. 2011-2015 ($315.0 million – Public $162.5 and Private 152.5)

53. Most of the investment during this period would be to develop the new discoveries and maintain production in the old fields. About $60 million/year is estimated to be required over the next five years from the private sector. As a result, it is expected that gas production will finally increase to 5 mmcm /day during this period, and oil production will increase to about 5000 bopd between 2011-2013 and to 10,000 bopd thereafter.

54. Under this conservative scenario, the cumulative volume of gas that would have been produced during the next 12 years would be about 12 billion cubic meters or about 0.5 trillion cubic feet, which is less than 20% of the estimated currently remaining recoverable gas reserves. Similarly for oil, the cumulative production of oil during this period will be about 17 million barrels or 17% of the estimated recoverable reserves of crude oil.

B. Estimates of Revenue to the Government

55. Direct revenue to the Government from oil and gas production generally will start to accrue from the following sources:

- Royalty payments on gross production
- Licensing Fees from the grant of exploration and production concessions
- Corporate Tax from the exploration and development activities
- Government share in production sharing arrangements

56. Others, such as fees and taxes on value added through refining (tax on products), gas conversion to fertilizers and power Criteria in the draft Legal and Fiscal documents discussed with the Government have been used to determine likely revenues to the Government. Some of these criteria include:

- Royalty at 5 % of gross production.
- Corporate Tax at 20 %.
- Cost of oil (so that the investor could recoup its investment if commercial discovery is made). Due to the high cost of doing business in Afghanistan, cost oil has been taken as 50% of gross production on an annually basis after royalty commitments have been deducted. This 50% is only used as proxy for the real cost, and hence could be higher or lower.
- Prices: the current pricing policy for oil and gas in Afghanistan is not sustainable. Currently, crude oil is priced at $10/barrel as compared to international price of $25/barrel. Similarly for gas, the average price of gas is set at about 1200 Afghans / thousand cubic meters (mcm). This is equivalent to $24/mcm or $0.70/mmbtu. This is very low compared to export price of gas in Turkmenistan at $40/mcm or in Uzbekistan at $37/mcm. The prices for these commodities have to be adjusted to international level, otherwise it would be difficult to attract private sector investment and also the government would be giving the wrong signals to the consumers on the actual cost of their energy resources. For estimating the revenue, the following prices have been used: $20/bbl for crude oil and $35/mcm for gas.
- Production sharing: In the Fiscal Policy regime being proposed, this was defined as being triggered when the investor has achieved an Internal Rate of Return (IRR) of 15%. At this production level, the portion of the after tax revenue will be shared at 50/50. It is assumed that the production rate of 3000 bopd for oil and 1.8 mmcm/day for gas would be achieved by 2008. The rationale for this is simply that the main source of initial oil and gas to be produced will be from the areas where some oil and gas are currently being produced. Probability of achieving the increased production rates is considered high. It is believed that the current production rates for oil at 400 bopd, and gas at 600,000mcm/day are due to the restriction imposed by lack of infrastructure.
- On the basis of the above assumptions, the likely revenues for the Government and the private sector during the next 12 years from the oil and gas sector are summarized in Annex 2.

57. As one can see, the sector would not provide very significant revenue during the initial five years. Revenue from oil and gas become significant from 2008 upwards. Based on the scenario used with most of the development based on private sector investment, the revenues to the Government during the 12 years would be about $250 million of which about $110 million is expected from oil production and about $140 million is from gas development.

58. The Government is very keen at promoting the intra-country gas pipeline from Turkmenistan through Afghanistan to Pakistan (and maybe to India). If such a pipeline is built, Afghanistan will accrue significant benefits in the form of transit fees and perhaps additional source of gas. Judging from the long gestation period for similar pipelines, it is doubtful if this pipeline can be a revenue generator for Afghanistan in the short to medium term.

VIII. DEVELOPMENT PROGRAM AND BUDGET

59. The total program cost including studies under way which are funded by donors, is placed at $1,124.5 million (Table 2). Investment required for 2004-2010 period is $809.5 million. The balance $315 million is earmarked for the following five years. Public sector share is $494.5 million ($395 million capital expenditure and $99.5 million O & M) and $162.5 million (O & M) for the two periods respectively. Financing has to be obtained from both donors and private sector if the program were to be implemented as planned. Required financing commitments are shown in Annexes 4 and 5.

60. Several options will be considered for financing these activities. The promotion of exploration concessions to the private sector will be done in phases. The first phase would involve promotion of concessions in currently producing oil and gas areas to the private sector as a means of increasing reserves of oil and gas. It is hoped that the success from this initial promotion can be leverage to attract private sector to other new areas. Current bilateral and multilateral commitments (Attachment) for the oil and gas sector include the following:

- Technical and financial assistance has been provided to the Government by the World Bank, Asian Development Bank (ADB), United States Trade and Development Agency (USTDA), United States Agency for International Development (USAID) and the United States Geological Survey (USGS) and other donors for the implementation of several components of the strategy. Most of these activities are to be completed by 2004, and would form the basis for determining the investments required in subsequent years for the development of the sector. The activities include:
    - Development of a hydrocarbon exploration promotion program for the areas that are currently producing oil and gas. This component is being funded from a World Bank Technical Assistance program under the Emergency Infrastructure Reconstruction Project. The total cost is about $500,000.
    - Development of options for the rehabilitation of the infrastructure for producing oil and gas. This is being funded through a Trust fund from USTDA at an estimated cost of $1.2 million. The study would evaluate the viability of rehabilitating the gas processing and fertilizer plants; construction of a small size refinery with capacity of 5000-10,000 barrels of oil per day (bopd); and the construction of a pipeline from Sheberghan to Kabul.

- Evaluation of the hydrocarbon potential in the sedimentary basins in Afghanistan. This study is being funded by USTDA and would be undertaken by the USGS.
- Rehabilitation of three gas fields and the field infrastructure facilities; repair and rehabilitation of gas transmission and distribution pipelines, and the development of a Gas Master Plan and Institutional Strengthening of the Ministry of Mines and Industry (MMI). This is being funded by the ADB.
- Rehabilitation of the Afghanistan Geological Survey. Assistance for this is being provided by the British geological Survey (BGS). The detail of the assistance in still being worked out between BGS and the staff of MMI.
- Restructuring of MMI and provision of Technical Advisors to the ministry. Development of a legal and regulatory framework and establishment of an appropriate fiscal and tax policy for the sector. This is being funded by USAID.

- Public sector commitment requirement is only about $657 million; $395 million for capital expenditures and $262 million for O & M. Capital expenditure commitments would have to be made in 2005 for gas processing an fertilizer plants, Kabul pipeline, for old gas well work over, and oil storage rehabilitation. An additional amount of $15 million would be required for monitoring oil and gas exploration activities.

61. Given the current political situation and security issues, it may be difficult to quickly attract the interest of private sector to Afghanistan. If the direct involvement of the private sector is not obtained, then other options such as management contracts for the development of the currently producing areas might be pursued. However, if the above planned investments materialize as envisaged, then oil production could increase from the current level of 400 bopd to 3000 bopd by 2008, 5000 bopd by 2010 and 10,000 bopd by 2015 onwards. Similarly for gas, it is envisaged that the proposed investment could increase gas production from the current level of 600,000 cubic meters/day to about 5 million cubic meters /day by 2015.

Oil and Gas Demand Projection for 2004 -2015

Item	2004	2005	2007	2010	2015
Natural Gas Demand					
Number of domestic connections (000)[1]	300			1,000	2,000
% of households covered	7.8%			23.1%	42.0%
MW Power (gas based)	24		140		240
Fertilizer production (000 tons)	40		100	110	200
Thousand cubic meters/day					
Domestic	140	200	300	600	1200
Industrial	100	250	350	800	1500
Power	60	60	750	850	1500
Fertilizer	300	340	600	750	800
Total	600	850	2,000	3,000	5,000
Petroleum Products Demand					
Number of vehicles (000)	300			695	1,144
Annual growth rate (%)				15%	10%
Population (000)	22,626			26,004	28,598
% population urban	21			25	27
Annual population growth-total	1.92	1.92	1.92	1.92	1.92
Annual population growth-urban	3.3	3.3	3.3	3.3	3.3
Vehicle per capita	13			26	40
Annual growth of vehicle per capita (%)				12%	9%
Metric tons/year					
Gasoline	150,000	158,000	182,000	201,000	257,000
Kerosene	70,000	72,000	79,000	84,000	97,000
Diesel	715,000	779,000	1,010,000	1,199,000	1,845,000
Aviation fuel	50,000	55,000	73,000	89,000	143,000
Total	985,000	1,064,000	1,344,000	1,572,000	2,341,000
Annual growth rate (%)				8%	8%

Note: [1]Projected household coverage (000) in 2015 in major cities is as follows:

Kabul	900
Mazar	90
Kunduz	50
Baghlan	30
Pule Khomri	200
Kholam	
Khan abad	
Charikar	

Annex 2

Investment Program and Projected Revenues in the Hydrocarbon Sector 2004-2015 ($ million)

Activities	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Production Profile													
Oil (bopd)	400	400	500	500	3000	3000	5000	5000	5000	5000	10000	10000	16.7 (mb)
Gas (mcm)	600	850	1200	2000	2200	2500	3000	3500	4000	4500	5000	5000	12.1 bcm
Investments ($ Million)	**29.5**	**144**	**283**	**103**	**83**	**93**	**93**	**63**	**63**	**63**	**63**	**63**	**1143.5**
(a) Completion of Studies/Rehab.													
Expl.Promotion [1]	0.5												0.5
Infrastructure Rehab. [2]	1.2												1.2
Gas Master Plan [3]	1												1
Institutional Strengthening[3]	0.75												0.75
Basin Eval..[2]	0.7	1.5											2.2
Gas Infr.Rehab [3]	3.85	7.5											11.35
Gas Field Rehab [3]	5	8											13
Dev.of AGS [4]	1.5	2											3.5
Total	**14.5**	**19.0**											**33.5**
(b) Infrastructure Development													
Refinery [5]		25	30	5	5	5	5	5	5	5	5	5	100
Gas Processing & Fertilizer Plants [5]		15	30	25	10	10	10	10	10	10	10	10	150
Kabul Pipeline [5]		50	200	50	20	20	20	20	20	20	20	20	460
New Wells/Old [5]		20	20	10	5	5	5	5	5	5	5	5	90
Expl.Promotion [6]				10	40	50	50	20	20	20	20	20	250
Oil Storage Rehab.[6]	15	15	3	3	3	3	3	3	3	3	3	3	60
Total	**15**	**125**	**283**	**103**	**83**	**93**	**93**	**63**	**63**	**63**	**63**	**63**	**1110**
Revenues ($ Million)													
OIL	0.584	0.58	0.73	0.73	6.97	6.97	12.23	12.23	12.2	12.2	24.5	24.5	**109**
GAS	1.53	1.53	1.53	4.6	8.56	10.6	12.84	14.69	17.1	19.3	21.4	21.4	**135.08**
TOTAL	**2.114**	**2.11**	**2,26**	**5.33**	**15.5**	**17.6**	**24.07**	**26.92**	**29.4**	**31.5**	**45.9**	**45.9**	**244.08**

Funding Sources: [1] World Bank Financing. [2] USTDA. [3] Asian Development Bank (ADB). [4] British Geological Survey. [5] Public/Private Sector. [6] Private Sector only.

Investment Program (Public and Private) in the Hydrocarbon Sector 2004-2015
($ million)

Activities	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Total oil & gas invt	29.5	144	283	103	83	93	93	63	63	63	63	63	1144
Capital	30	144	280	100	40	50	50	20	20	20	20	20	794
O & M	0	0	3	3	43	43	43	43	43	43	43	43	350
Public	19.5	95	237	79.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	691
Capital	19.5	95.0	236	78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	429
O & M	0.0	0.0	1.0	1.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	262
Private	10.0	49.0	46.0	24.0	50.5	60.5	60.5	30.5	30.5	30.5	30.5	30.5	453
Capital	10.0	49.0	44.0	22.0	40.0	50.0	50.0	20.0	20.0	20.0	20.0	20.0	365
O & M	0.0	0.0	2.0	2.0	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	88
Studies	14.5	19											33.5
Infrastructure	15.0	125	283	103	83	93	93	63	63	63	63	63	1110
Capital	15.0	125	280	100	40	50	50	20	20	20	20	20	760
O & M	0	0	3	3	43	43	43	43	43	43	43	43	350
Refinery	0	25	30	5	5	5	5	5	5	5	5	5	100
Public		0	0	0									0
Private		25	30	5									60
O & M		0	0	0	5	5	5	5	5	5	5	5	40
Gas Processing & Fertilizer Plants	0	15	30	25	10	10	10	10	10	10	10	10	150
Public		15	30	25									70
Private		0	0	0									0
O & M					10	10	10	10	10	10	10	10	80
Kabul Pipeline	0	50	200	50	20	20	20	20	20	20	20	20	460
Public		50	200	50									300
Private		0	0	0									0
O & M					20	20	20	20	20	20	20	20	160
New Wells/Old	0	20	20	10	5	5	5	5	5	5	5	5	90
Public		6	6	3									15
Private		14	14	7									35
O & M					5	5	5	5	5	5	5	5	40
Expl.Promotion	0	0	0	10	40	50	50	20	20	20	20	20	250
Public				0	0	0	0	0	0	0	0	0	0
Private				10	40	50	50	20	20	20	20	20	250
O & M													0
Oil Storage Rehab.[6]	15	15	3	3	3	3	3	3	3	3	3	3	60
Public	5	5											10
Private	10	10											20
O & M			3	3	3	3	3	3	3	3	3	3	30

Required Financing Commitments for Public and Private Investments in the Hydrocarbon Sector 2004-2015 ($ million)

Activities	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Total oil & gas invt	44.5	499	3	103	43	43	193	43	43	43	43	43	1144
Capital	45	499	0	100	0	0	150	0	0	0	0	0	794
O & M	0	0	3	3	43	43	43	43	43	43	43	43	350
Public	24.5	404	1	1.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	691
Capital	24.5	404	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	429
O & M	0.0	0.0	1.0	1.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	262
Private	20.0	95	2.0	102	10.5	10.5	160	10.5	10.5	10.5	10.5	10.5	453
Capital	20.0	95	0.0	100	0.0	0.0	150	0.0	0.0	0.0	0.0	0.0	365
O & M	0.0	0.0	2.0	2.0	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	88
Studies	14.5	19											33.5
Infrastructure	30.0	480	3	103	43	43	193	43	43	43	43	43	1110
Capital	30.0	480	0	100	0	0	150	0	0	0	0	0	760
O & M	0	0	3	3	43	43	43	43	43	43	43	43	350
Refinery	0	60			5	5	5	5	5	5	5	5	100
Public		0											0
Private		60											60
O & M		0			5	5	5	5	5	5	5	5	40
Gas Processing & Fertilizer Plants	0	70			10	10	10	10	10	10	10	10	150
Public		70											70
Private		0											0
O & M					10	10	10	10	10	10	10	10	80
Kabul Pipeline	0	300			20	20	20	20	20	20	20	20	460
Public		300											300
Private		0											0
O & M					20	20	20	20	20	20	20	20	160
New Wells/Old	0	50			5	5	5	5	5	5	5	5	90
Public		15											15
Private		35											35
O & M					5	5	5	5	5	5	5	5	40
Expl.Promotion	0	0	0	100			150						250
Public				0			0						0
Private				100			150						250
O & M													0
Oil Storage Rehab.[6]	30		3	3	3	3	3	3	3	3	3	3	60
Public	10												10
Private	20												20
O & M			3	3	3	3	3	3	3	3	3	3	30

Required Financing Commitment for Public Investment in the Hydrocarbon Sector 2004-2015
($ million)

Activities	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Total Public Financing	24.5	404	1.0	1.0	31.5	31.5	31.5	31.5	32.5	32.5	32.5	32.5	686.3
Capital	24.5	404	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	428.5
O & M	0.0	0.0	1.0	1.0	31.5	31.5	31.5	31.5	32.5	32.5	32.5	32.5	257.8
Studies	14.5	19											33.5
Public Infrastructure Financing	10.0	385.0	1.0	1.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	657.0
Capital	10.0	385.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	395.0
O & M	0	0	1.0	1.0	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	262.0
Refinery	0	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public		0											0.0
O & M		0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gas Processing & Fertilizer Plants	0	70			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	150.0
Public		70											70.0
O & M					10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	80.0
Kabul Pipeline	0	300			20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	460.0
Public		300											300.0
O & M					20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	160.0
New Wells/Old	0	15			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	27.0
Public		15											15.0
O & M					1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	12.0
Expl.Promotion				0			0.0						0.0
Public				0			0.0						0.0
O & M													0.0
Oil Storage Rehab.[6]	10.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	20.0
Public	10.0												10.0
O & M			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0

Attachment

UPDATE ON NATIONAL DEVELOPMENT BUDGET - MINISTRY OF MINES AND INDUSTRIES PROPOSED PROJECTS FOR 1382

No	Project No.	Project	Donor	Proposed Budget in USD Million												Status
				1381				1382				1383				
				Req	Comm	Disb	Spent	Req	Comm	Disb	Spent	Req	Comm	Disb	Spent	
1	AFG/ 0352	Development of Sector Policy, legal framework and restructuring	USAID					0.2	0.2	0	0	0	0	0	0	Going on
2	AFG/ 0354	Promoting known Oil & Gas Fields	WB					0.5	1	0	0	0	0	0	0	Going on
3	AFG/0355	Basic Geophysical work for Oil & Gas exploration	Unknown					7.2	0	0	0	4.8	0	0	0	Proposed for new US funding ($ 7.5 m)
4	AFG/0356	Mines assessment and related strengthening of AGS	Unknown					1.2	0	0	0	0.8	0	0	0	Possible financing by DFID for BGS; also proposed for new US funding ($ 10.0 m)
5	AFG/0357	Assessment of Coal reserves	Unknown					0.9	0	0	0	0.6	0	0	0	
6	AFG/0358	Update studies of Aynak copper & Hajigak Iron Ore Res. & promote them	Unknown					1.5	0	0	0	0	0	0	0	MOU singed with Chinese for Aynak Copper mine JV basis
7	AFG/0359	Assessment of underground water reserves and strengthening of AGS	Japan	0.1	0.1	0		1.2	1.2	0		0.7	0.7	0		The project completed by JICA
8	AFG/0360	Rehabilitation of the building of Afghanistan Geological Survey	DFID	0	0	0	0	3.6	0	0	0	0.4	0	0	0	Proposed for new US funding ($ 7.5 m)
9	AFG/0361	Study of North- Kabul gas pipeline, existing Gas installation & an Oil refinery	WB	0	0	0	0	1.1	1.1	0	0	0	0	0	0	Going on
10	AFG/0362	Preparing Energy review and Gas masterplan	ADB	0	0	0	0	1	1	0	0	0	0	0	0	Going on
11	AFG/0363	Promoting private investment in Industries	USAIDI					0.5	0.5	0	0	0	0	0	0	
12	AFG/0367	Rehabilitation of Coal Mines in Sabzak	Unknown					0.5	0	0	0	0.45	0	0	0	Proposed for new US funding ($ 5.0 m)
13	AFG/0368	Rehabilitation of Cal Mines in Dudkash, Karkar, DareSuf and Eshposhta	Unknown					0.1	0	0	0	0.9	0	0	0	Proposed for new US funding ($ 20.0 m)

Attachment

UPDATE ON NATIONAL DEVELOPMENT BUDGET - MINISTRY OF MINES AND INDUSTRIES PROPOSED PROJECTS FOR 1382 (continued)

No	Project No.	Project	Donor	Proposed Budget in USD Million												Status
				1381				1382				1383				
				Req	Comm	Disb	Spent	Req	Comm	Disb	Spent	Req	Comm	Disb	Spent	
14	AFG/0369	Fertilizer and Power plant	Unknown					0.2	0	0	0	1.35	0	0	0	
15	AFG/0370	Rehabilitation of Jangalak Metal Factory	Unknown					0	0	0	0	0.3	0	0	0	MMI requests funds to be moved to 1382; will take $ 0.3 from AFG/03058
16	AFG/0371	Rehabilitation of Ghuri-1 Cement plant	Unknown					0	0	0	0	1	0	0	0	
17	AFG/0372	Rehabilitation of Jabulsraj cement plant	Unknown					0	0	0	0	0.3	0	0	0	
18	AFG/0373	Rehabilitation of Takcha khana Salt Mine	Unknown					0	0	0	0	0.2	0	0	0	
19	AFG/0374	Rehabilitation of Quarries in Kabul area	Unknown					0	0	0	0	0.2	0	0	0	
20	AFG/0376	Repair of buildings including laboratories	Unknown					0	0	0	0	0.4	0	0	0	
21	AFG/03541	Oil and Gas Assessment	USTDA	0.6	0.6	0	0	1.8	1.8	0	0	1.14	0	0	0	
22		Rehabilitation of Sheberghan Gas field and gas transmission line from Sheberghan to Mazar-e-Sharif	ADB					24	24	0	0	0	0	0	0	Selection of consultant firm is under process