Investment Opportunities in Pakistan's Upstream OIL & GAS Sector




Ministry of Petroleum & Natural Resources
Government of Pakistan

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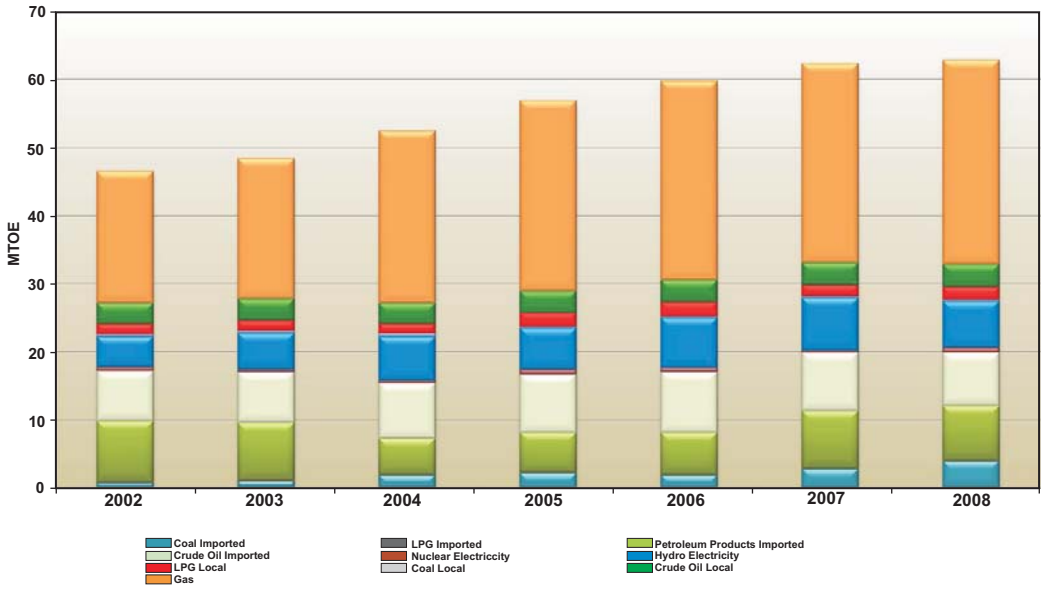
Oil and Gas sector in Pakistan has seen phenomenal growth since the independence in 1947 when oil quantities produced were scarce. At that time there was no gas production. Over the past half century the petroleum industry has played a significant role in national development by making large indigenous gas discoveries. These sources are supplying gas to consumption centers through 9,843 kilometers transmission networks and 71,863 kilometers of distribution system. Pakistan meets about 15% of its oil demand from local sources.



Pakistan's Energy Mix *(Fig.1)*

A. Policy Focus

Oil and Gas are major components of Pakistan's energy mix meeting over 79% of energy needs (Fig.1) and therefore, successive Governments since independence have attached high priority to this sector. The Governments have adopted consistent policies aimed at promoting foreign investment in upstream petroleum sector with the view to exploit indigenous hydrocarbon resources in an optimal manner for the benefit of the nation while providing adequate return to the investors. The driving force behind these policies has been the need to alleviate heavy dependence on imported oil, the prices of which in the international market exhibit great deal of volatility making the country prone to oil supply disruption risk as had been experienced in the past on several occasions (Iranian Boycott 1951-53, Suez Crisis 1956, Six-days War 1967, Ramadan War 1973, Iranian revolution 1979, Iran/Iraq war 1980, Gulf Crisis 1991) worldwide economic crises (2008). Pakistan's commercially exploitable energy resources consist of natural gas, oil, coal and hydropower. The country's current yearly energy supply is about 65.01 million tonnes of oil equivalent. Petroleum and natural gas meet about 78% of these requirements. The balance is derived from hydropower, coal, liquefied petroleum gas (LPG), nuclear and imported power.

The Government realizing fully well that while a fiscal package with competitive incentives plays a vital role in also attracting fresh investment, an adequate protection of the companies' investment is an essential prerequisite for promotion of petroleum exploration in the country. This led to enactment of foreign investment protection law of 1976 by the Parliament, under which the Government guaranteed full safeguard to foreign investments in Pakistan. The Governments have been providing policy package of liberal incentives to enhance exploration activities in the country, the latest of which was introduced in 2009.

Production well Balkassar # 2 - 1956

After the promulgation of the Policy 2007, the international oil prices showed tremendous hike and touched a maximum level of US $146 per barrel. In order to further incentivize the Policy 2007, meetings with the stakeholders were held wherein it was concluded that revision of gas prices and certain incentives are essential for enhancement of exploration activities in the country, which otherwise would result in high import bill as compared to various import options. Accordingly the Policy 2007 has been revised, and a new policy 2009 has been announced.


First well after independence, Lakhra -1948

B. Onshore-Recount of a Success Story

Tracing back the history, the first exploration well in the part of British India that is now Pakistan, was sunk in 1887 near an oil seep at Kundal in district Mianwali, Punjab. This was the time when modern petroleum industry was being developed in the wilderness of Pennsylvania, USA. It started of with rig-based drilling activity by Captain Drakes. This was followed by a number of other efforts, prominent of which was the drilling of thirteen wells near Khattan oil seepage (south-east of Quetta) in Balochistan. It produced about 25,000 barrels of heavy crude during 1885-1892. The next discovery came somewhat later in 1915 when commercial quantities of oil were discovered at Khaur, district Attock, Punjab by the predecessor of Attock Oil Company (AOC). As a result of the combined efforts of AOC and Burmah Oil Company (BOC), Dhulian (1936), Joya Mair (1944) and Balkassar (1946) oil fields were discovered in the Potwar area establishing the oil potential of Potwar region.


Aerial view of Sui field development - 1958


Marking of Sui well location - 1950

After the independence of Pakistan in 1947, the Government promulgated Regulation of Mines and Oilfields and Mineral Development (Government Control) Act, 1948 and issued rules there under in 1949. The aim of the act was to provide regulatory certainty for exploration and production business that was


Drilling of Kandhkot Well-1958

essential to encourage and accelerate petroleum exploration activities. Thereafter BOC and AOC established local companies, Pakistan Petroleum Limited (PPL) and Pakistan Oilfields Limited (POL) respectively and transferred exploration activities to these companies.

In 1952, a well drilled on the Sui structure (located in Balochistan Province), in Central Indus Basin, made the maiden discovery of large reserves of natural gas in the Sui Main Limestone of Early Eocene age. The original recoverable gas reserves were estimated to be over 10 trillion cubic feet (TCF) equivalent to about 1 billion barrels of oil. The discovery of Sui Gas Field was the first major milestone in the search for hydrocarbons in Pakistan. Following the natural gas discovery at Sui, several foreign oil companies took active interest in carrying out exploration in Pakistan. The Government of Pakistan executed agreements with Standard-Vacuum Oil Company (1954), Hunt International Oil Company (1955), Shell Oil Company (1956), Sun Oil Company (1957) and Tidewater (1958). This led to further exploratory drilling in prospective areas. Further discoveries of natural gas were made as a result of these activities during 1954-59, which included Uch and Kandhkot by PPL and Mari by Standard-Vacuum. Despite significant new gas discoveries during this period, the exploration activities registered a downward trend because of lack of oil discoveries. Government of Pakistan then decided to undertake the search for oil and gas directly and established the state oil exploration company.


Sari gas field - 1973

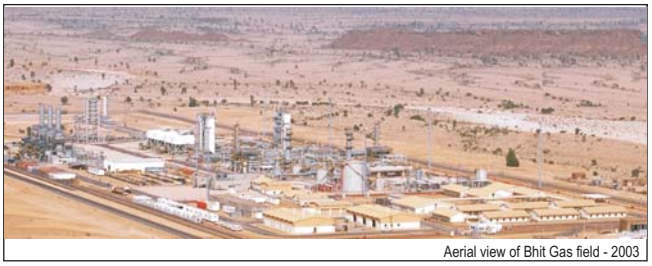

Chak Nurang field - 1976

Oil & Gas Development Corporation was established in September, 1961 subsequently, incorporated as a joint stock company with listing at local stock exchanges under the name of Oil and Gas Development Company Limited (OGDCL). OGDCL's first success was the small gas discovery at Sari Singh (Sindh, 1965), which was followed by discovery of oil at Toot (Potwar, Punjab, 1968), gas at Hundi (Sindh, 1970), Rodho (Punjab, 1972) and Kothar (Sindh, 1973) and gas/ condensate at Dhodak (Punjab, 1975). During this period POL discovered oil at Meyal (Potwar, Punjab, 1968) and American Oil Company (AMOCO) discovered a small gas accumulation at Jandran (Balochistan, 1975).

The Central and Southern Indus Basins had been regarded as gas prone areas until early 1981 when British Petroleum (BP) formerly known as Union Texas Pakistan (UTP), a USA Company, discovered oil at Khaskeli (Sindh) in the Lower Goru Sandstone of Cretaceous age.

BP came to Pakistan after the modification of the petroleum regulations in 1976, and the dramatic increase in crude prices in the mid 1970's, that saw several foreign companies entering Pakistan in search of new oil supply source. In view of this success by BP, OGDCL acquired the Sanghar North and South concessions, immediately to the north of the Badin license of BP. Todate BP has drilled 65 discovery wells in Pakistan. This opened a new oil province outside the traditional oil province of the Potwar in the north. After Sui, the discovery of oil in the Southern Indus Basin was the second milestone in search for hydrocarbons in Pakistan. This led to a boom in exploration activity in Southern Indus Basin, resulting in several oil discoveries in an area regarded heretofore as less prospective for liquid hydrocarbons. This area has attained the distinction of contributing around 59% of the total oil production of the country.

OGDCL made very large gas discovery in Eocene Carbonates of Middle Indus Basin at Qadirpur in 1989. In the same year, Eni (formerly known as LASMO Oil plc. of U.K.) made a gas discovery in Lower Goru Sandstone (Cretaceous) at Kadanwari, south of Khairpur-Jacobabad High. This discovery opened up new play fairway of Lower Goru Sandstone in which a number of significant gas discoveries have been made, including Miano (1993) and Sawan (1998) by OMV of Austria, Mari Deep (1999) by Mari Gas Company Ltd.(MGCL) and Rehmat (2002) by Petronas of Malaysia.


Aerial view of Bhit Gas field - 2003

New exploration frontier was opened when Eni discovered gas at Bhit (1998) and BHP, an Australian Company at Zamzama (1999) in Kirthar foldbelt and foredeep. Another landmark discovery that has been made in the recent past, is OGDCL's Chanda oil discovery (1999) located in Kohat Plateau which proved the petroleum potential of this under explored part of the country. As a matter of fact, this was first ever hydrocarbon discovery in NWFP province which was followed by another discovery namely Manzalai (2002) by MOL of Hungary making Kohat plateau, new focus area for exploration. Lately, MOL has made yet another gas/condensate discovery namely Makori (2005) which has reinforced the belief of many Geologist that this region can host large hydrocarbon reserves with upside touching tens of trillion cubic feet of natural gas. Nine blocks have been recently awarded in this province.


Bhit field at night - 2004

The discoveries of Bhit, Badhra Sawan, Zamzama, Miano, Chanda, Manzalai and Rehmat have been developed, adding around 1.4 BCF per day of new gas into the system and enhanced recoverable gas reserves by 6.8 trillion cubic feet.

C. Offshore-Hosting Promising Prospectivity

Offshore area of Pakistan consists of two basins; Indus Basin and Mekran Basin, both of which have been developed as a result of sedimentary deposition associated with Himalayan uplift. The sedimentation is continuing at present as the Indus River system drains the Himalayan Mountains into Indus delta.

The Indus River is about 2,900 kms long and travels about 1,200 kms in the plains after leaving the high mountains with the total drainage area of 966,000 sq. kms. This river has developed the Indus basin, which is the second largest offshore basin in the world after Bengal delta. This basin is analogous to other producing basins of the world in terms of geological setting e.g Mississippi Delta. (Gulf of Mexico, USA), Niger Delta (Nigeria), Mahakam Delta (Indonesia), Mackenzie Delta (Canada), Gipsland Basin (Australia) etc.

Exploration in the Indus Offshore dates back to 1961 when Sun Oil Company (USA) carried out seismic surveys and then drilled three near-shore wells, Dabbo Creek-1 (1963), Patiani Creek-1 (1964), and Korangi Creek-1 (1964). Subsequently, Wintershall (Germany) drilled three wells, Indus Marine A-1 (1972), Indus Marine B-1 (1972) and Indus Marine C-I (1975) which can be truly categorized as offshore wells. Husky (USA) also drilled one well, Karachi South A-I (1978). All these seven Indus Offshore wells, drilled till 1978, did not test movable hydrocarbons, although gas shows were reported in most wells. Some of these wells even failed to reach target objectives after having encountered high pressures. Non-commercial gas quantities flowed in OGDCL's PakCan-1 well (1986) drilled with Canadian assistance. Occidental (USA), after conducting modern seismic in their Indus Delta Exploration Licence, drilled a well Sadaf-1 (1989); however, the well turned out to be a dry hole. Then TOTAL, a French Company drilled Pak G-2 upto a depth of 4750 meters in ultra deep water during 2004. This well targeted to test carbonate built up on a volcanic high which was successfully penetrated. This well went dry. Subsequent to that Shell drilled Anne -1X

Drillship contracted by TOTAL to drill Pak G-2 Well - 2004

well in Ultra deep water at a depth of 3,250m during 2007 targeting to test Oligocene/Miocene reservoir sequence but the said well did not encounter Hydrocarbon saturation of any significant volume but it provided valuable information to understand the geological constraints for Indus Basin.

At present there are 17 offshore licences which are being operated by companies like BP Exploration (Apha) Limited (BPXA), Eni (Pakistan) Limited (Eni), and Nikoresources (Pakistan) Limited (NRPL) etc. In last couple of years intensive 2D & 3D survey has been conducted in offshore blocks. Eni has acquired a total of 919.52 L.Kms of 2D and 1190 Sq.Kms of 3D in Offshore Indus-M, N & C blocks and Eni has committed two exploration wells in Offshore Indus-M & C blocks. BPXA has acquired a total of 5556 L.Kms of 2D in Offshore Indus-U,V,W and S blocks and 1956 Sq.Kms of 3D in Offshore Indus-U & S blocks. Oil & Gas Development Company Limited (OGDCL) has acquired 4329 L.Kms of 2D in Offshore Indus-G, R and Eastern-A blocks and 316 Sq.Kms of 3D in Indus Delta-A Block. Petroleum Exploration (Private) Limited PEL has acquired a total of 1622 L.Kms of 2D in Offshore Indus-O, P and J blocks and 574 Sq.Kms of 3D in Offshore Indus J &O blocks. NRPL has acquired a total of 2009 Sq.Kms of 3D in offshore Indus North, X, Y and Z blocks

In Mekran offshore, one well, JalPari 1-A was drilled by Marathon (USA) in 1976-77, after conducting extensive seismic surveys. The well was abandoned due to un-controllable over pressures. Subsequently, Ocean Energy (USA) drilled two more wells during 2000-01, which also ran dry. PPL drilled an exploration well i.e: Pasni X-2 in Mekran Offshore area to test Hydrocarbon potential of Panjgur sandstone but it went dry due to high formation pressure. However it provided valuable geological information to address the future problems of Mekran Indus Basin. The data acquired in these areas is available for new exploration companies.

Drilling of Pasni X-2 well - 2005

Offshore sedimentary basins stretch over an area of about 300,000 sq.kms. and are highly under-explored exploration with drilling density of about 0.4 per 10,000 sq.kms. Following introduction of first ever offshore specific production sharing incentives package in 2001, a number of companies have focused their attention on Offshore Indus, which hopefully will help unlock prospectivity of this area.

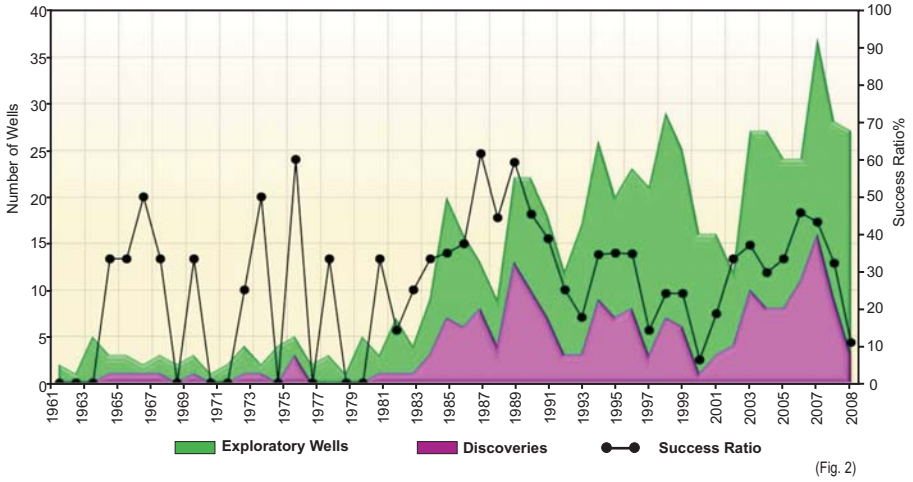
Pakistan Basin Study

Pakistan Basin Study Project has been recently carried out covering all the sedimentary basins of the country. The objective of this work is to produce a consistent overview of all the basins to produce a country wide review of the main prospective petroleum play fairways of Pakistan. The conclusion of this work is embodied in series countrywide play fairway maps that are accompanied by a mega-regional reappraisal and re-mapping of the relevant reservoir facies.

Assessment of petroleum plays and their component elements recognized in these basins comprises reservoirs from Infracambrian to Pleistocene age as under:

- Kohat Potwar Basin: Proven and potentially viable plays ranges in age from Infracambrian to Miocene.
- Central Indus Platform Basin: Proven or potentially viable plays, ranging in age from Infracambrian to Eocene.
- Lower Indus Platform Basin: Proven and potentially viable plays ranges in age from Infracambrian to Middle Eocene.
- Sulaiman Fold Belt Basin: Proven and potentially viable plays, ranging in age from Middle Jurassic to Middle Eocene.
- Kirthar Fold Belt Basin: Proven and potentially viable plays ranging from Middle Jurassic to Lower Eocene.
- Northern Punjab Basin: Potentially viable plays ranging in age from Lower Cambrian to Pliocene.
- Pishin Fold Belt Basin: Potentially viable plays ranging in age from Middle Jurassic to Oligo-Miocene.
- Balochistan Fold Belt Basin: Potentially viable plays ranging in age from Paleocene to Oligocene.
- Makran Fold Belt Basin (including Makran offshore): Potentially viable plays ranging in age from Middle-Upper Miocene to Pleistocene.
- Offshore Indus Basin: Potentially viable plays ranging in age from Lower Eocene-Middle Miocene to Oligocene-Neogene.

An assessment of Yet-to-Find reserves at an unrisked value for all of the basins studied suggests 3585 MMBO and 66.26TCF gas.



(Fig. 2)

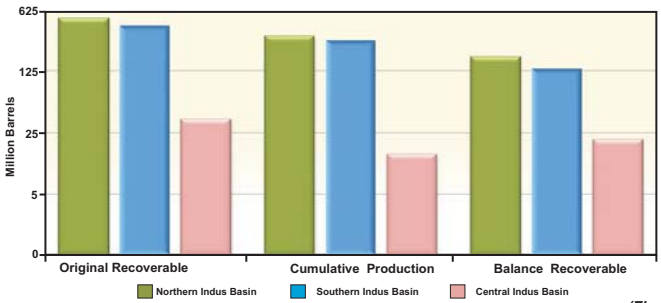
D. Successful Past & Brighter Future

Pakistan's sedimentary basins continue to hold promise for new exciting discoveries particularly in offshore, which is relatively under-explored and has become main area of focus after improved policy incentives based on production sharing agreement. A commercial discovery in offshore area is likely to bolster exploration activities transforming petroleum landscape of Pakistan in major way.

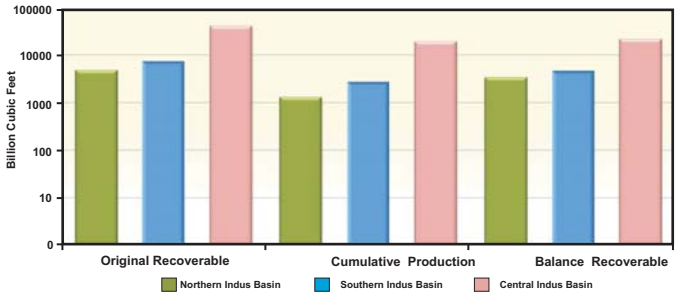
In order to remain attractive in highly competitive global exploration market, the Government has been making progressive changes in the investment polices and regulations at regular intervals. With first E&P policy of 1991, Pakistan caught the attention of international petroleum industry. Further subsequent improvements through policies of 1993, 1994, 1997 made Pakistan an attractive location for upstream investment. Pakistan overhauled the policy in 2001 and then in 2009 . On account of combination of factors such as improved returns on investment based on new fiscal incentives, transparent and open regulatory environment, induction of market reforms and technological advances, the Government expects positive influence on local upstream market and hopes that forward momentum will be maintained.

Total 725 exploratory wells (since inception) have been drilled till December, 2008 (710 onshore and 15 offshore) in the sedimentary basins of Pakistan covering 827,268 sq. km. upto December, 2008, 219 oil and gas fields (54 oil and 165 gas and gas/condensate) have been discovered in various basins of Pakistan which gives drilling density of 1.99 wells per 1,000 sq. km and success rate of 1:3.3(Fig 2). Despite lower drilling density as compared to global drilling density of 10 wells per 1,000 sq. km, the success rate of Pakistan compares favorably with international success rate of 1:10.

The total recoverable reserves of natural gas and oil are estimated at 54 trillion cubic feet (TCF) and 934 million barrels respectively. Allowing for cumulative production, the remaining reserves are 313 Million barrels (Fig. 3) and 30 TCF (Fig 4). Large areas of Pakistan's

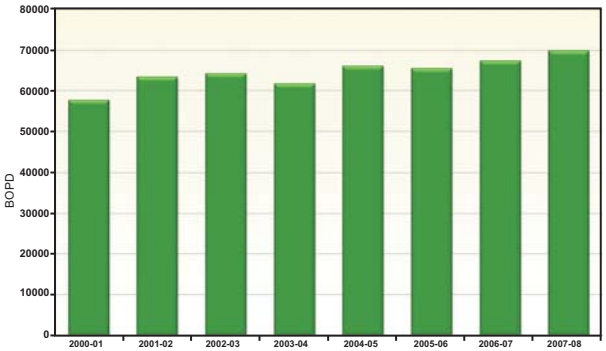


Oil Reserves as of January 2009 *(Fig.3)*

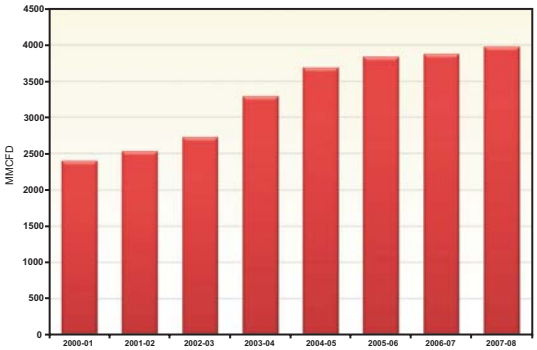


Gas Reserves as of January 2009 *(Fig.4)*

petroliferous basins still remain geological frontier and holds promise for the future in view of the multiple habitats for petroleum generation and accumulation. Independent international studies indicate an oil and gas potential that is many times more than these proven reserves.
Oil and gas production has registered a steady increase over the last few years on the back of successful exploratory efforts of the companies. The production of oil during 2007-08 was 69,954 barrels per day (Fig. 5) while gas production reached a record level of 3.973 billion cubic feet per day (Fig. 6).

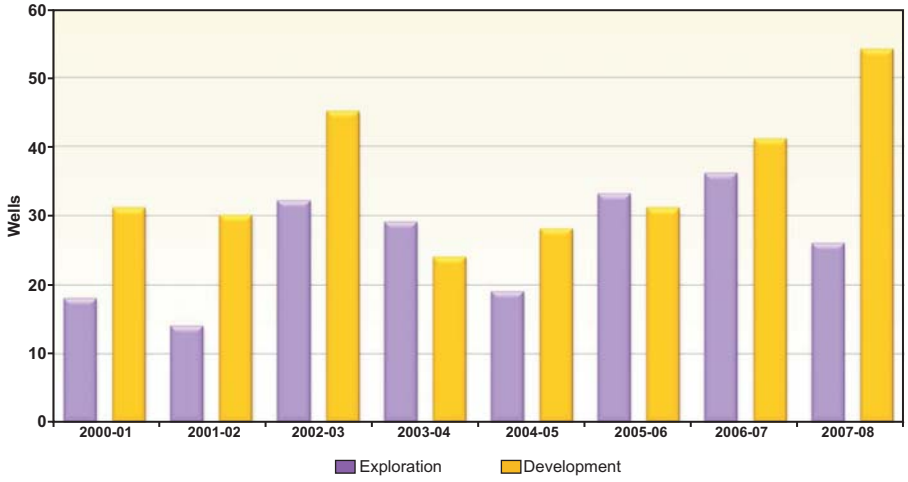


Oil Production *(Fig.5)*



Gas Production *(Fig.6)*

Drilling activity has also seen an upsurge, which is another measure of the success of the Government's policy initiatives. Total 80 wells (26 exploration and 54 development) were drilled during 2007-08 (Fig.7).



Exploration & Development Wells Drilled 2000-2008 *(Fig.7)*

During the last three fiscal years, 62 concession agreements were signed. These agreements covered an area of almost 134,005 sq. km and attracted a financial commitment of at least US $ 356 million during exploration phase.

Pakistan remains an active and prospective exploration country. Significant finds continue to be made in the existing producing areas as well as in less-explored regions. The proven rate of exploration success and a sizeable domestic oil and gas market present promising investment opportunities.

Pakistan needs to explore, develop and exploit its petroleum resources to achieve greater self-reliance in energy supplies. Attractive terms and conditions for investors are, therefore, being offered by the Government to accelerate the exploration and development of oil and gas. Under the Constitution of Pakistan, petroleum is a federal subject. The basic law that regulates the upstream sector is the Regulation of Mines and Oil Fields and Mineral Development (Government Control) Act, 1948. Current legal framework for upstream sector is given in Fig 8.

LEGAL FRAMEWORK

LAWS

Regulation of Mines and Oilfields and Mineral Development (Government Control) Act, 1948 including Amendment of 1976

Territorial Waters and Maritime Zones Act, 1976

Income Tax Ordinance, 2001 (fifth schedule)

Pakistan Environmental Protection Ordinance, 1997

Mines Act, 1923

RULES/REGULATIONS

UPSTREAM

Oil and Gas (Safety in Drilling and Development) Regulations, 1974

Pakistan Petroleum (Exploration and Production) Rules, 1986

Pakistan Petroleum (Exploration and Production) Rules, 2001

Pakistan Offshore Petroleum (Exploration and Production) Rules, 2003

Pakistan Petroleum Onshore and Offshore (Exploration and Production) Rules, 2009

(Fig.8) *illustration of the legal framework governing the upstream sector.*

The upstream activities in the oil and gas sector are administered and regulated through the Directorate General of Petroleum Concessions (DGPC) of Policy Wing, Ministry of Petroleum and Natural Resources. Policy Wing has three more directorates namely, Directorate General of Gas (DG Gas), Directorate General of Oil (DG Oil) and Directorate General Special Projects (DGSP) to provide support to the Government in formulation of policies for midstream and downstream oil and gas sector. With the formation of Oil and Gas Regulatory Authority (OGRA), midstream and down-stream oil and gas sectors are regulated by OGRA.

UPSTREAM SECTOR - Procedural and Regulatory Measures

ZONING

The country has been divided into zones based on their relative prospectivity and geological risk. Onshore areas are sub-divided in three zones; ZONE-I high risk - high cost areas, ZONE-II medium risk - high to medium cost areas and ZONE-III low risk-low cost areas. Offshore areas are also sub-divided in three zones; Shallow, Deep and Ultra Deep. (Fig. 9). Separate incentives have now been provided for the onshore and offshore areas of the country.

(Fig. 9) Zone map of the country

CONCESSION AWARD PROCESS

Onshore and Offshore E&P rights will be awarded via three distinct procedures:

1. The granting of Petroleum Exploration Licences for entering into PCA or PSA in relation to onshore and offshore blocks offered through competitive bidding.
2. The granting of Petroleum Exploration Licences for entering into PCA or PSA in relation to onshore and offshore blocks without competitive bidding to Strategic Partner Companies on Government to Government basis.
3. The granting of non-exclusive Reconnaissance Permits for undertaking studies and multi-client surveys after direct negotiation.

INVITATION TO BID

DGPC will issue an Invitation to Bid in national newspapers, the MPNR website. Invitation to Bid may cover the nominated blocks and such additional blocks as DGPC may deem appropriate. An Invitation to Bid will remain valid for at least 60 days and all companies providing the requisite information would be eligible to contest Invitation to Bid.

Within 15 days of bid opening date, the bidders offering the equal number of the highest Work Units will be asked to re-bid the Work Units and the bidder offering the higher Work Units in the re-bidding will be declared the winner, provided however, bidders cannot offer Work Units lower than the one previously offered.

EXECUTION OF AGREEMENT

DGPC will make every effort to conclude and sign a Petroleum Concession Agreement or Production Sharing Agreement as the case may be strictly based on the model provided with the bid documents.

GAS MARKET

i) E&P companies under Petroleum Exploration & Production Policy 2009 are allowed to contract with Natural Gas transmission and distribution companies and third parties, other than residential and commercial consumers, for the sale of their share of Natural Gas in Pakistan at negotiated prices in accordance with applicable laws, rules and regulations.

ii) Subject to overall market demand, E&P Companies may request and GOP will purchase their share of pipeline specification gas through a nominated buyer which is effectively controlled by it in acceptable daily, monthly and yearly volumes to meet the internal demand in an economical manner provided there are no infrastructure constraints. The delivery point shall be at the field gate. GOP/gas buyer nominated by GOP shall pay the price for gas at the field gate as set out in this Policy.

iii) If the foreign E&P Companies sell Natural Gas to third parties in Pakistan and want to remit sale proceeds in foreign currency abroad, Government shall allow such E&P Companies to freely remit a “guaranteed percentage” of their sale proceeds. The “guaranteed percentage” shall be 75% of the total gross revenues from any Lease in Zone O, Zone I, 70% in Zone II and 65% in Zone III. The remaining gross income in Rupees can be used to pay royalties, taxes, windfall levy and any other payments to the Government as well as to meet local currency expenditures.

iv) Subject to overall market demand, the E&P Company may request and the Government will purchase their share of pipeline specification gas through a nominated buyer which is effectively controlled by it in acceptable daily, monthly and yearly volumes to meet the internal demand in an economical manner provided there are no infrastructure constraints. The delivery point shall be at the Field Gate. The gas buyer nominated by GOP shall pay the price for gas at the Field Gate as set out in Petroleum Exploration & Production Policy 2009 for which details are available at our website www.mpnr.gov.pk. In addition, the "guaranteed percentage" for foreign exchange remittance as contained in (iii) above applies to such sales.

v) Where a government nominated entity agrees in principle to purchase Natural Gas pursuant to sub-section (iv) above, the gas producer is required to construct, operate and maintain the gas pipeline connecting the field to the field Gate in accordance with the applicable policy, applicable law, Rules and regulations. All costs associated with such pipeline will be borne by the Working Interest Owners and no transportation tariff will be paid by the Government/ gas buyer nominated by the Government for this purpose. The gas producer can arrange for the construction and operation of the connecting gas pipeline through an independent third party provided the title of such pipeline is transferable to the Government on expiry or early termination of relevant petroleum rights. No tariff will be payable by the Government/ gas buyer nominated by the Government for this pipeline. At the request of the Working Interest Owners, the buyer nominated by the Government for purchase of gas can consider the laying of a pipeline, if required, from the Field Gate to the nearest transmission system, at its own cost. If an inter-connecting pipeline is proposed to be constructed by a third party or the buyer, the producer will be required to confirm the requisite gas supply volumes,

pressures, reserves and other technical parameters on standard supply term contract basis for a period to be agreed between the parties and its tariff shall be determined and notified by the regulator in accordance with the applicable policy.

vi) Subject to Sub-Section (vii) below, the basis of the tariff allowed and paid monthly for delivery from field gate into the transmission system will be determined by the regulator based upon a 'rate of return on equity' basisat the rate of 12% with the capital cost being amortized over a minimum of 15 years. Allowable costs will include operating cost and interest payable on the initial capital over the minimum 15 year amortization period. Post the repayment period the Operator will be able to make a 12% margin over operating costs. If such pipeline is used by more than one shipper, the calculation basis for each year shall be done on an overall pipeline volume nomination basis at the start of each year, through the aggregation of all shippers nomination. Any shortfall or excess of volume delivered from the nomination in the year shall be deducted/ received from the tariff payment of that year or charged to the party responsible for such a shortfall.

vii) The tariff payable to any third party or the producer for pipeline connecting the field gate to the transmission system shall not exceed $0.5/MMBTU in aggregate. Any tariff in excess of this limit will be determined by the regulator on a case to case basis but only in exceptional circumstances, and subject to the approval of GOP. The indexation of the tariff limit will be based on Oil and Gas Regulatory Authority (OGRA's) recommendation and approved by GOP.

Onshore Package

The main features of the package for the three onshore zones which is available for all new awards to the E&P Companies, are enumerated in the following paragraphs:

ROYALTIES

Royalty is payable @ 12.5% of the value of petroleum produced and saved at the field gate.

CORPORATE INCOME TAX

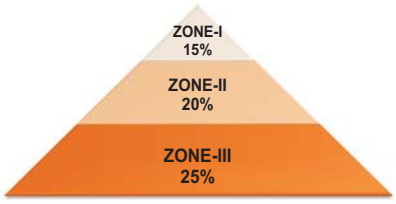
Corporate income tax is capped at 40% of profits and gains with royalty payments allowed as expense item.

PROSPECTIVITY ZONATION

Onshore area is divided into three prospectivity zones based on risk and investment as follows:

STATE AND LOCAL COMPANIES' MANDATORY PARTICIPATION

In case of Joint ventures with foreign companies, local E&P companies including GHPL shall have working interest on full participation, as mentioned below:



PRODUCTION BONUSES

Production Bonuses are payable as follows:

CUMULATIVE PRODUCTION (MMBOE)	AMOUNT (USD)
At start of commercial production	600,000
30	1,200,000
60	2,000,000
80	5,000,000
100	7,000,000

WORK UNIT CONCEPT

For the purpose of providing flexibility to the contracts in discharge of work obligations under the petroleum concession agreements, a new concept of work units has been developed which enables the petroleum right holder to finalize the Work programmes based on the best technical judgment as compared to the previous system of firm obligation of seismic coverage and number of wells.

IMPORT DUTIES AND TAXES

In accordance with SRO 678(I)/2004 dated 7th August, 2004, import duties and sales tax are payable @ 5% on the import of equipment not locally manufactured. The import duty is 10% for items locally manufactured other than wellhead on which import duty is 15%.
Moreover, no import duties, sales tax or license fees is applicable on machinery, equipment and materials etc. imported or exported by the companies providing technical services to petroleum exploration and production companies.

TRAINING CONTRIBUTIONS

Training fee is applicable as follows:

US$ 25,000 per year	-	Exploration phase
US$50,000 per year	-	Development and Production Phase

SOCIAL WELFARE CONTRIBUTIONS

The following minimum expenditure shall be incurred on welfare projects:

During Exploration Stage Until Commercial Production	USD 25,000 Per Licence Year
During Commercial Production Phase (BOE/d)	Amount/Lease Year (USD)
Less Than 2,000	50,000 (Zones O & I); 37,500 (Zones II & III)
2,000 - 5,000	100,000 (Zones O & I); 75,000 (Zones II & III)
5,000 - 10,000	200,000 (Zones O & I); 150,000 (Zones II & III)
10,000 - 50,000	400,000 (Zones O & I); 300,000 (Zones II & III)
More Than 50,000	700,000 (Zones O & I); 525,000 (Zones II & III)

WINDFALL LEVY

Windfall Levy (WLO) will be applicable on crude oil and condensate using the following Formula: WLO = 0.5 x (M-R) x (P-B)
Where:

WLO - Windfall Levy on crude oil and condensate;
M - Net production (petroleum produced & saved);
R - Royalty;
P - Market Price of crude oil and condensate;

B - Base Price, which will be as under:

A. The base price for crude oil and condensate will be USD 30 per bbl.

This base price for crude and condensate will escalate each calendar year by USD 0.25 per barrel starting from the date of first commercial production in contract area.

Notwithstanding above, in the event Market Price of Crude Oil/Condensate exceeds US$ 100/barrel, the 100% benefit of Windfall Levy will pass on to the Government. The ceiling would be reviewed as and when pricing dynamics significantly change in the international Market.

For sale of natural gas to parties other than GOP, Windfall Levy (WLG) will be applicable on the difference between the applicable GOP Zone price and the 3rd party sale price using the following formula:

WLG = 0 .5 x (PG-BR) x V

Where:

WLG - Windfall Levy on share of natural gas;

PG - Third Party Sale Price of natural gas;

BR - Base Price;

V - Volume of gas sold to third party excluding royalty.

The Base Price will be the applicable Zone price for sale to GOP . Where the 3rd party sale price of gas is less or equal to the base price, the windfall shall be zero. The windfall levy shall not apply on sales of natural gas made to GOP.

OIL, GAS, LPG AND CONDENSATE PRODUCER PRICE

Crude Oil

The Producer Policy Price for crude oil delivered at the nearest refinery gate shall be equal to C&F price of a comparable crude oil or a basket of Arabian/Persian Gulf crude oils (Reference Crude or RC) plus or minus a quality differential between the RC and the local crude oil. No other adjustment or discount will apply other than Windfall Levy. C&F pricewill be arrived at on the basis of FOB price of imported crude oils into Pakistan plus freight on AFRA, which is deemed chartered rate.

Condensate

The Producer Policy Price for condensate will be the FOB price of internationally quoted comparable condensate delivered at the nearest refinery gate plus or minus a quality yield differential, based on the value in the Arabian Gulf spot products market of the crude oil/condensate. No other adjustment or discount will apply other than Windfall Levy.

Liquefied Petroleum Gas

For new projects, the LPG producer price will be as notified by the regulator.

Gas Pricing

For all gas pricing, a Reference Crude Price (RCP) equal to the C&F price of a basket of Arabian/Persian Gulf Crude Oils imported in Pakistan during the first six months period of the seven months period immediately preceding the relevant price notification period (Import Basket) as published in an internationally recognized publication acceptable to the parties will be used. C&F price will be arrived at on the basis of FOB price of imported crude oils into

Pakistan plus freight on AFRA, which is deemed chartered rate.

The gas pricing shall be calculated according to the following formula:
Pg = Pm * Dz / Cf
Where Pg is the Gas Price in USD per MMBTU

Pm is the Applicable Marker Price in USD per barrel determined as follows:

When RCP is upto USD 20/barrel, Pm equals RCP;

When RCP is higher than USD 20/barrel and not over USD 30/barrel, Pm equals 20 plus 50% of the incremental RCP above USD 20/barrel;

When RCP is higher than USD30/barrel and not over USD 40/barrel, Pm equals 25 plus 30% of the incremental RCP above USD 30/barrel;

When RCP is higher than USD 40/barrel and not over USD 70/barrel, Pm equals 28 plus 20% of the incremental RCP above USD 40/barrel;

When RCP is higher than USD 70/barrel and not over USD 100/barrel, Pm equals 34 plus 10% of the incremental RCP above USD 70/barrel

The RCP ceiling of USD 100/barrel would be reviewed after every five years or as and when the pricing dynamics significantly change in the international market.

Dz is the zonal index which shall have the value of 67.5% for Zone III; 72.5% for Zone II, 77.5% for Zone I /Zone O (Offshore shallow) and 82.5% for Zone O (Offshore deep & ultra deep).

Cf is the Applicable Conversion Factor, the weighted average of the heating values expressed in MMBTU per barrel for the basket of Arabian/Persian Gulf Crude Oils imported in Pakistan.

Illustration of the gas price working under 2009 Policy at C&F price of US$ 35/barrel & US$ 140/barrel

- **TRANSMISSION TARIFF**

  E & P companies are allowed transmission tariff for the gas pipeline connecting the field gate to the main transmission system, if such system is constructed and operated by them.

- **EXPLORATION PERIOD**

  Exploration period consists of an initial term of 5 years comprising Phase-I of three years and Phase-II of two years together with two subsequent renewals of two-years each, for a total period of 9 years.

- **RETENTION PERIOD**

  A maximum retention period of upto 5 years is allowed on a case by case basis to enable the companies to evaluate commercial aspects of the discovery and to make market arrangements for disposal of discovered gas.

TOTAL LEASE TERM

Total term of the lease is up to 25 years plus five years renewal.

RELINQUISHMENTS

First 4 years of production	0%
Year 5	5% of field gate price
Year 6	10% of field gate price
Thereafter	12.5% of field gate price

The companies are required to relinquish 30% of the Licence Area at the end of Phase-I of the initial Term, 20% of the remaining area at end of Phase-II of the initial Term and 10% of the remaining Licence Area prior to the termination of the first renewal.

Offshore Package

ROYALTIES

Royalty schedule is as follows:

CORPORATE INCOME TAX

Corporate income tax is capped at 40% of profits and gains with royalty payments allowed as tax expense item.

DEPRECIATION

The following depreciation rates will apply:

- On successful exploration and development wells 25% on Straight Line.
  On dry holes (exploratory wells) Will be expensed immediately upon commencement of commercial production or relinquishment whichever is earlier.
- Non-commercial well (exploration wells) expensed upon relinquishment of licence
- On facilities and offshore platforms 20% Declining Balance
  (Carry forward of any unabsorbed depreciation until such depreciation is fully absorbed)

DIRECT GOVERNMENT PARTICIPATION

Sliding scale production sharing arrangement instead of direct Government participation will be used.

PRODUCTION SHARING

The production sharing agreement will be executed by the Contractor with GHPL who will be granted the Exploration Licence and Development and Production Lease. The Contractor will therefore initially receive the profit oil and profit gas shares and will be responsible for the management of the production sharing agreements.

COST LIMIT

Cost limit is 85% including the royalty of 12.5%. The Contractor can recover 100% of the costs upto a limit of 85% of the gross revenues.

PROFIT OIL AND PROFIT GAS SPLITS

The profit split is set on the basis of sliding scale. The sliding scale is based on cumulative production permitting a rapid recovery of investments and a higher net present value.

a) Profit oil & gas share for wells in shallow grid area less than 200 m water depth and depth to reservoir shallower than 4,000 m

Cumulative Available Oil / Available Gas On BOE Basis from Contract Area	Government Holdings Share of Profit Oil / Profit Gas in Contract Area		Contractor Share of Profit Oil / Profit Gas in Contract Area	
(MMBOE)	Crude Oil / LPG / Condensate	Natural Gas	Crude Oil / LPG / Condensate	Natural Gas
0 - 100	20%	10%	80%	90%
> 100 - 200	25%	15%	75%	85%
> 200 - 400	40%	35%	60%	65%
> 400 - 800	60%	50%	40%	50%
> 800 - 1200	70%	70%	30%	30%
> 1200	80%	80%	20%	20%

b) Profit oil & gas share for wells in deep grid area of more than or equal to 200 m and less than 1,000 m water depth or deeper than 4,000 m to reservoir in shallow grid area

Cumulative Available Oil / Available Gas On BOE Basis from Contract Area	Government Holdings Share of Profit Oil / Profit Gas in Contract Area		Contractor Share of Profit Oil / Profit Gas in Contract Area	
(MMBOE)	Crude Oil / LPG / Condensate	Natural Gas	Crude Oil / LPG / Condensate	Natural Gas
0 - 200	5%	5%	95%	95%
> 200 - 400	10%	10%	90%	90%
> 400 - 800	25%	25%	75%	75%
> 800 - 1200	35%	35%	65%	65%
> 1200 - 2400	50%	50%	50%	50%
> 2400	70%	70%	30%	30%

c) Profit oil & gas share for wells in ultra deep grid area of more than or equal to 1,000 m water depth

Cumulative Available Oil / Available Gas On BOE Basis from Contract Area	Government Holdings Share of Profit Oil / Profit Gas in Contract Area		Contractor Share of Profit Oil / Profit Gas in Contract Area	
(MMBOE)	Crude Oil / LPG / Condensate	Natural Gas	Crude Oil / LPG / Condensate	Natural Gas
0 - 300	5%	5%	95%	95%
> 300 - 600	10%	10%	90%	90%
> 600 - 1200	25%	25%	75%	75%
> 1200 - 2400	35%	35%	65%	65%
> 2400 - 3600	45%	45%	55%	55%
> 3600	60%	60%	40%	40%

PRODUCTION BONUSES

Production Bonuses will be as outlined in the table below.

Cumulative Production	Amount (USD)
Within 90 days of start of commercial production	600,000
Upon reaching 60 MMBOE	1,200,000
Upon reaching 120 MMBOE	2,000,000
Upon reaching 160 MMBOE	5,000,000
Upon reaching 200 MMBOE	7,000,000

WORK UNIT CONCEPT

For the purpose of providing flexibility to the contracts in discharge of work obligations under the production sharing agreements, work units will be used instead of firm obligation of seismic coverage of wells.

MARINE RESEARCH FEE

A marine research and coastal area development fee will be applicable as per the following schedule:

TRAINING CONTRIBUTIONS

Training fee is applicable as follows:

- US$ 50,000 per year during Exploration phase
- US$250,000 per year during Development and Production phase

USD 50,000 per year	Until First Discovery
US$ 100,000per year	Thereafter Until Declaration Of Commerciality
US$ 250,000 per year	During Development Phase
US$ 500,000 per year	During Production Phase

GAS TRANSMISSION PIPELINE

The first pipeline connecting a field to onshore gas transmission system is allowed as cost recoverable, if such system is constructed and operated by the E & P Companies.

IMPORT DUTIES AND TAXES

As is also applicable for onshore areas, import duties and taxes for areas located in offshore is determined in accordance with SRO 678(I)/2004, dated 7th August 2004.

EXPLORATION PERIOD

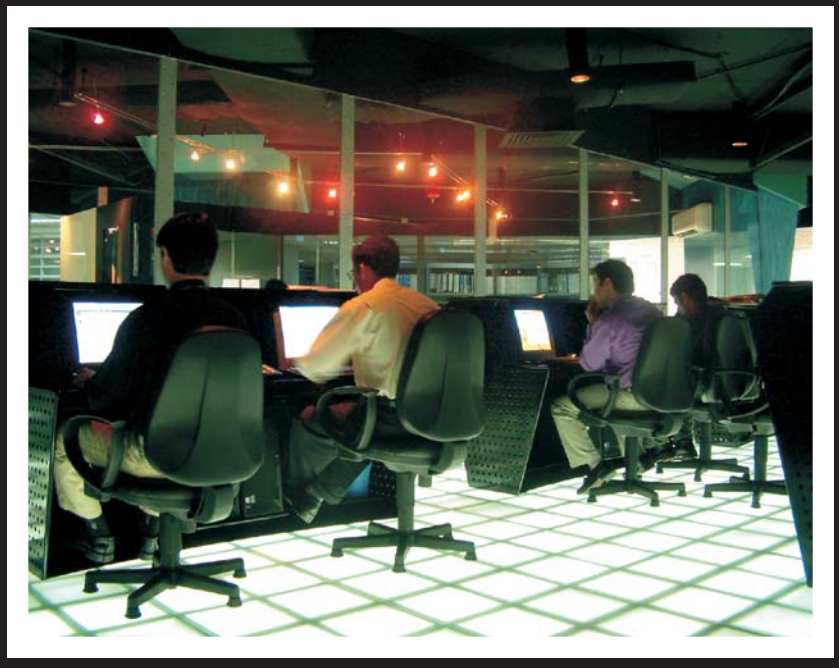
Exploration period consists of an initial term of 5 years and two subsequent renewals of two-years each, for a total exploration period of 9 years.

RETENTION PERIOD

In case of Gas discovery a maximum retention period of upto 10 years is allowed on a case by case basis to enable the companies to evaluate commercial aspects of the discovery and to make market arrangements for disposal of discovered gas.

TOTAL LEASE TERM

Initial term of 25 years based on production profile plus one possible renewal of 5 years.



Open access to public domain area

Open access to public domain data

The Government has made efforts to facilitate access to Pakistan's Oil & Gas E&P data for both foreign and local companies. Under applicable laws, the ownership of all geological, geophysical and other data acquired by E&P companies operating in Pakistan rests with the Government.

DGPC, being the regulatory agency, is the custodian of all such data and is responsible to make public domain data available to other interested E&P companies when required. Keeping in line with international trends and realizing the value as well as critical role of proper data management solutions in bolstering exploration activities, the government established a national data repository called Pakistan Petroleum Exploration & Production Data Repository (PPEPDR).

The PPEPDR web portal provides convenient online access to interested local and foreign parties that hold interest in acquiring Pakistan's oil and gas E&P data. The website offers many services amongst which one of the most noteworthy offering is online access to the national data repository. This has been achieved through the implementation of a state-of-the-art data management solution by LMK Resources.

The data management solution is a high-level enterprise system that has around 20 terabytes of quality assured petro technical data archived that can be accessed online or downloaded. It is a centralized digital database for all seismic, well and physical data. The solution incorporates cutting-edge data management, archival hardware and software technology.

The National Data Repository is equipped with a state of the art data management solution with the capability to manage E&P data online, near-line and offline. The highly scalable architecture is an integrated system, accessible through a web based GIS enabled interface. It provides an integrated view of information from multiple external databases. The process of reviewing, purchasing and transferring data uses simple subscriptions for online access via a high bandwidth connection enabling clients to view, select, and after necessary approvals, download data to their desktops.

PPEPDR has been setup to save precious time and cost while providing reliable and fast web-based access to E&P data. Since its inception, the Pakistan National Data Repository has improved speed, ease of accessing and sharing geotechnical data.

The launching pad for easy, swift and cost effective access to public data is now set and E&P companies can make full use of this cutting-edge facility. Pakistan is one of in the pioneering implementation of national data repositories in the world. Through subscription, any interested company can get online access of data falling in public domain for new blocks as well as open area.

For further information regarding online data access, visit: **www.ppepdr.net.**

Ministry of Petroleum & Natural Resources
Government of Pakistan

Ministry of Petroleum & Natural Resources
Block "A", 3rd Floor, Pak Secretariat, Islamabad,
Pakistan.
Ph: +92 (51) 9211220
Fax: +92 (51) 9201770-9206146
Email: secretary@mpnr.gov.pk

Directorate General of Petroleum Concessions
1019-A, Pak Plaza, Fazal-ul-Haq Road,
Blue Area, Islamabad, Pakistan
Ph: +92 (51) 9204176-9202200
Fax: +92 (51) 9213245
Email: dgpc@mpnr.gov.pk




www.mpnr.gov.pk