YEAR BOOK

2016-2017

GOVERNMENT OF PAKISTAN

MINISTRY OF ENERGY

(PETROLEUM DIVISION)

A-BLOCK PAK-SECRETARIAT

ISLAMABAD

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PREFACE

This report has been prepared in accordance with Rule 25(2) of the Rules of Business, 1973, which stipulates that at the beginning of each financial year, each Division shall, for the information of the Cabinet and general public, set up as a permanent record, a Book which shall contain:

a. The details of its activities, achievements and progress during the preceding financial year giving only the unclassified information which can be used for reference purposes;

b. The programme of activities and targets set out for itself during the preceding financial year and the extent to which they have been realized; and

c. The relevant statistics properly tabulated.

The report gives an overview of the activities, achievements and progress of the Petroleum Division, its attached departments and organizations/companies that were working under its administrative control, during the Financial Year 2016-17. However, the reflection of activities and achievements provides a bird's eye view on the broader parameters of policies and functions. For details on particular topics, the website of the Division may kindly be referred to, which is updated on regular basis to reflect the current issues and policies pertaining to the oil, gas and mineral sectors of Pakistan.

I hope that this Year Book will serve as a useful reference document.

Islamabad: 2018

Sikandar Sultan Raja
Secretary

CHAPTER 1: GENERAL

1.1 INTRODUCTION

Ministry of Energy has been established after the reorganization of the Federal Secretariat on 4th August, 2017. Ministry of Energy comprises of two Divisions, namely Petroleum Division and Power Division. Prior to that, the Petroleum Division was known as Ministry of Petroleum and Natural Resources, which was created in April 1977 after bifurcation of Ministry of Fuel, Power and Natural Resources. This Year Book covers the activities and achievements of the Petroleum Division pertaining to the period 2016-17.

1.2 MISSION STATEMENT

To ensure availability and security of sustainable supply of oil and gas for economic development and strategic requirements of the country and to coordinate development of natural resources of energy and minerals, in order to cater for needs of the people of Pakistan.

1.3 STRATEGY TO ACHIEVE MISSION

- To adopt an integrated approach for promoting exploration and fast track development of oil, gas and mineral resources.
- To deregulate, liberalize and privatize oil, gas and mineral sectors through structural reforms.
- To attract private investment and to establish credible institutions for facilitating the development of petroleum and mineral sectors.
- To develop technical and professional human resources.
- To optimize existing energy delivery infrastructure (oil/gas pipelines).
- To substitute imported fuel oil with indigenous gas by optimally balancing the gas availability and supplies from local and imported sources.

1.4 FUNCTIONS OF THE DIVISION

The Division is responsible for dealing with all matters relating to oil, gas and minerals. Its detailed functions as per the Rules of Business are as under:

1. All matters relating to oil, gas and minerals at the national and international levels including:-

   (i) policy, legislation, planning regarding exploration, development and production;
   (ii) import, export, refining, distribution, marketing, transportation and pricing of all kinds of petroleum and petroleum products (Prices of all kinds of petroleum and petroleum products are determined by Oil and Gas Regulatory Authority w.e.f. 01-04-2006);
   (iii) matters bearing on international aspects;

(iv) Federal agencies and institutions for promotion of special studies and development programmes.

2. Geological Surveys.

(i) Administration of Regulation of Mines and Oil-fields and Mineral Development (Government Control) Act, 1948, and rules made there-under, in so far as the same relate to exploration and production of petroleum, transmission, distribution of natural gas and liquified petroleum gas, refining and marketing of oil;

(ii) Petroleum concessions agreements for land, off-shore and deep seas areas;

(iii) Import of machinery, equipment, etc., for exploration and development of oil and natural gas.

3. Administration of:-

i) Marketing of Petroleum Products (Federal Control) Act, 1974 and the rules made there-under;

ii) Matters relating to Federal investments and undertakings wholly or partly owned by the Government in the field of oil, gas and minerals, excepting those assigned to the Industries and Production Division.

4. Administration of:-

i) The Petroleum Products (Development Surcharges) Ordinance, 1961, and the rules made there-under:

ii) The Natural Gas (Development Surcharges) Ordinance, 1967, and the rules made there-under

iii) The Esso Undertakings (Vesting) Ordinance, 1976; and

iv) Hydrocarbon Development Institute of Pakistan Act, 2006 (I of 2006) and the rules made there-under.

5. i) Coordination of energy policy, including measures for conservation of energy and energy statistics;

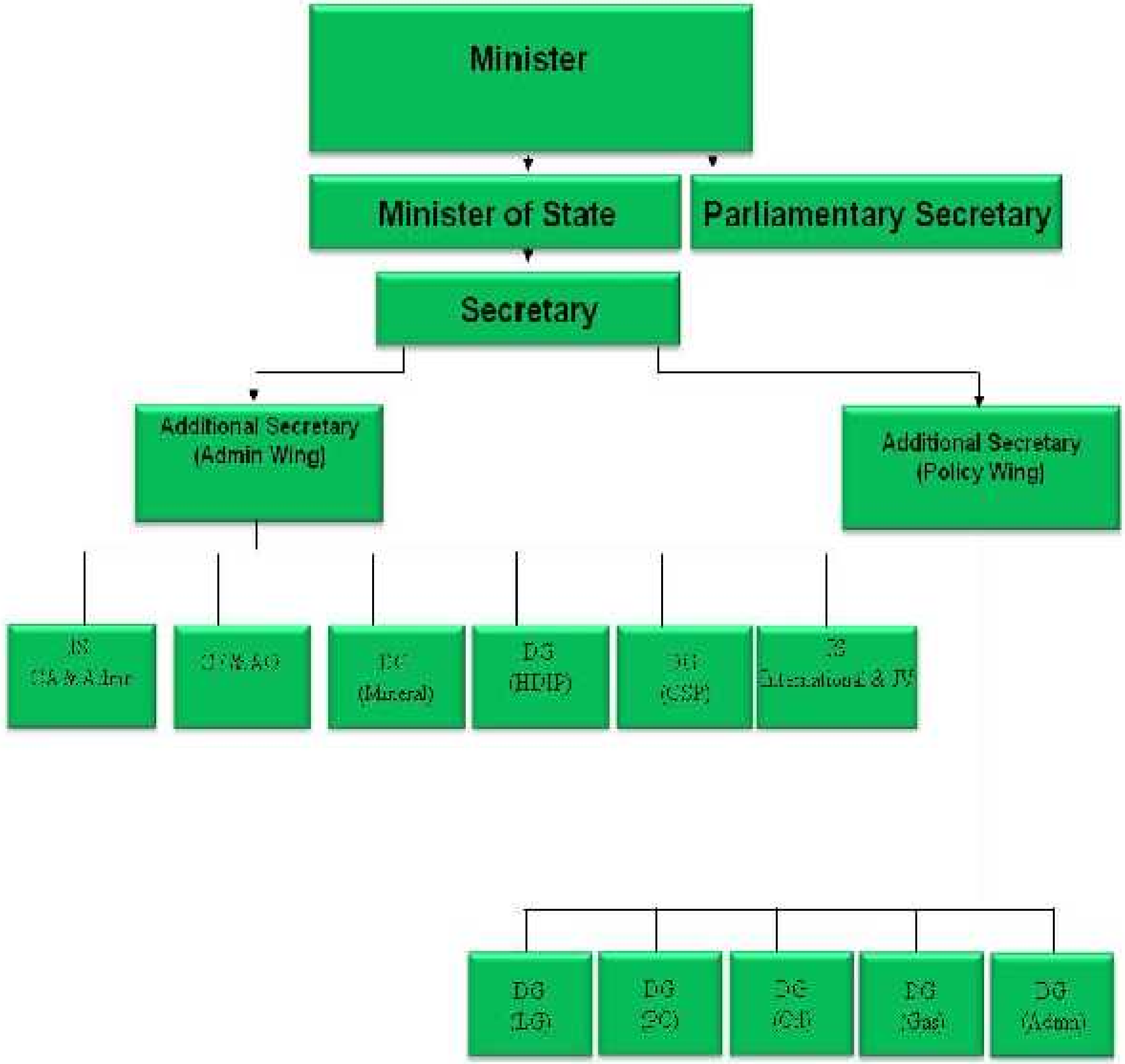
ii) Secretariat of National Energy Policy Committee.

6. Central Inspectorate of Mines, Islamabad.

7. Federal Government functions in regard to Oil and Gas Regulatory Authority.

1.5 ORGANIZATION OF THE DIVISION

The Petroleum Division has been organized into four wings i.e. Administration, Development, Mineral and Policy. The Division has one Attached Department, one Subordinate Office, one Autonomous Body and thirteen companies that are working under its administrative control. The Secretary is assisted by two Additional Secretaries, two Joint Secretaries and five Directors General.



1.5.1 ADMINISTRATION WING

Administration Wing consists of a Joint Secretary, two Deputy Secretaries and six Section Officers along with the supporting staff and one IT Network Administrator. The Wing is responsible for the following functions:

- Personnel and general administration of the Division (Main Secretariat).
- All matters relating to administration of the Policy Wing, oil and gas companies, Geological Survey of Pakistan (GSP), Pakistan Mineral Development Corporation (PMDC) and Hydrocarbon Development Institute of Pakistan (HDIP).
- Corporate affairs of oil and gas companies.
- All matters relating to technical assistance, tours and training.
- Coordination work of the Division and its attached organizations.
- All matters relating to web-site and networking of the Division.
- Coordination work related to Energy (Petroleum Division) Committee on Defense Planning.
- All matters relating to the Parliament Business.

1.5.2 DEVELOPMENT WING

This Wing comprises one Joint Secretary, two Deputy Secretaries and four Section Officers along with the supporting staff. The Wing is mainly responsible for coordination on policy matters, processing and seeking approval of oil and gas infrastructure and mineral sector projects, and monitoring of development schemes. It also processes foreign aid/loan and coordination with the World Bank, ADB, CIDA, IDB, JICA; handles Joint Ministerial Commissions, ECO & bilateral relations; and prepares development budget (PSDP), long term plans, economic survey & budget speeches. Matters relating to ECNEC, ECC, CCOI, CCOP, Cabinet and implementation of decisions, foreign investment, privatization and import of natural gas projects are also undertaken by this Wing.

1.5.3. MINERAL WING

Mineral Wing is a technical arm of the Division and looks after the following functions:

- Frame, update and monitor implementation of National Mineral Policy.
- Review and dissemination of geological data.
- Provide support to federating units in improving regulatory regime, negotiation of international mineral agreements and capacity building etc.
- Facilitate local and foreign investment in the mineral sector.

- Provide inputs for formulating sectorial development plans in consultation with the federating units.
- Process mineral development schemes and operational issues of federal public sector bodies /attached departments (PMDC/SML/LCDC/GSP/ PASDEC).
- Monitor progress of public sector mineral development projects.
- Promotion of mineral sector through publications, seminars, workshops, road shows and participation in the world fora etc.

1.5.4 POLICY WING

The Policy Wing comprises (i) Directorate General of Petroleum Concessions, (ii) Directorate General of Oil, (iii) Directorate General of Gas, (iv) Directorate General of Liquefied Gases and (v) Directorate General of Admn/Special Projects. Each Directorate is headed by a Director General. The Policy Wing is responsible for developing policies for oil and gas sectors, forecasting future requirement and assessing the impact of existing policies, rules and regulations.

1.5.5 ATTACHED DEPARTMENT, AUTONOMOUS ORGANIZATIONS, CORPORATIONS AND COMPANIES OF THE PETROLEUM DIVISION

The Division has one attached department, one sub-ordinate office, one autonomous body and thirteen organizations/companies under its administrative control:

- Geological Survey of Pakistan (GSP) [Attached Department].
- Central Inspectorate of Mines (CIM) [Sub-ordinate Office]
- Hydrocarbon Development Institute of Pakistan (HDIP) [Autonomous Body].
- Oil and Gas Development Company Limited (OGDCL).
- Sui Northern Gas Pipelines Limited (SNGPL).
- Sui Southern Gas Company Limited (SSGCL).
- Pakistan State Oil Company Limited (PSOCL).
- Pakistan Petroleum Limited (PPL).
- Pak Arab Refinery Company Limited (PARCO).
- Saindak Metals Limited (SML).
- Lakhra Coal Development Company (LCDC).
- Government Holdings (Pvt.) Limited (GHPL).
- Pakistan Mineral Development Corporation (Pvt.) Limited (PMDC).
- Inter State Gas Systems (Pvt.) Limited (ISGSL).
- Pakistan LNG Limited (PLL)
- Pakistan LNG Terminal Limited (PLTL)

1.6 WEBSITE OF THE DIVISION

The Division has been regularly updating its website www.mpnr.gov.pk on the basis of feedback received from stakeholders. The website provides information about the activities of the Division, Policies, Projects, Press releases, News/Highlights, Publications, Tenders/Public Notices and Career/Opportunities.

CHAPTER 2 : ACTIVITIES, ACHIEVEMENTS AND PROGRESS DURING 2016-17

2.1 MINERAL WING

Pakistan is blessed with a variety of mineral resources that include metallic minerals, coal, building stones, industrial minerals and precious gemstones. More than 50 minerals are known to occur and thousands of mines are operative producing chromite, ores of copper (gold, silver), iron & lead-zinc, coal, rock salt, limestone, gypsum, dolomite, barite, bentonite, china clay, fireclay, rock phosphate, silica sand marble, granite, sand stone, emerald, ruby and tourmaline etc. Both public and private sector organizations including foreign entrepreneurs are engaged in exploration, development and mining of these natural resources. As per Constitutional provisions, the Federal Government is mandated with geological surveys, regulation of nuclear minerals and those occurring in federally controlled areas [Islamabad Capital Territory (ICT), FATA & offshore beyond the territorial waters], co-ordination and formulation of policy/plan for mineral sector at national and international levels.

2. The Government has been encouraging investment in mineral exploration and development. With a view to enhance international competitiveness of this sector through attractive fiscal and regulatory regimes, Government of Pakistan announced first National Mineral Policy (NMP) in 1995 with the consensus of all federating units. This initiative brought about significant direct foreign investment to the hitherto neglected mineral sector, which resulted into discovery of world-class mineral deposits of coal, copper-gold, gemstones and manifold increase in the revenue receipts to the public exchequer. The Policy was updated in 2013 in consultation with all stakeholders/Provinces and approved by the Council of Common Interests for implementation.

3. Mineral Wing is a technical arm of the Petroleum Division and is entrusted with the following functions:

- Frame, update and monitor implementation of National Mineral Policy.
- Provide support to federating units in improving regulatory regime, negotiation of international mineral agreements and capacity building etc.
- Review and dissemination of geological data.
- Facilitate local and foreign investment in the mineral sector.
- Provide inputs for formulating plans for mineral sector in consultation with the federating units.
- Process mineral development schemes and operational issues of federal public sector bodies/attached departments (PMDC, SML, LCDC, GSP, PASDEC).
- Monitor progress of public sector mineral development projects.
- Promotion of mineral sector through publications, seminars, workshops, road shows and participation in the World fora, etc.

4. Achievements of Mineral Wing during the year 2016-17 are summarized as under:-

- Monitoring of implementation of National Mineral Policy, 2013 envisaging reforms like easy access to the data required by investors, well-defined corporate social responsibility, research and development activities, local value-addition/beneficiation of minerals, compliance with internationally recognized reporting standards for mineral resource evaluation/estimation, improved safety & health considerations, emphasis on infrastructure development & environmental impact mitigation and joint mechanism for implementation by federal & provincial governments.

- Assistance to federal public sector organizations; Geological Survey of Pakistan, Pakistan Mineral Development Corporation, Pakistan Stone Development Company, Gem & Jewelry Development Company, Lakhra Coal Development Company, Saindak Metals Limited and Bolan Mining Enterprises in their mineral project operations.
- Preparation and processing of mineral sector project port-folios and suggestion for bilateral cooperation with other countries and international aid agencies.
- Facilitated the national and international mineral sector companies in obtaining security clearance and work visas for their expatriates enabling them to work in Pakistan at mineral sites for copper, gold, lead, zinc, iron, chromite, marble, granite, etc.
- Designated as focal point for monitoring under PMES of PSDP Projects being executed by the Division and its attached organizations – GSP, SNGPL & SSGC.
- Provided support services for defence of Federal & Provincial Governments in the International Arbitration Reference instituted by Tethyan Copper Company regarding Reko-Diq Copper-Gold Project (District Chagai, Balochistan) before ICSID.
- Conducted Parliamentary Business for inputs relating to mineral sector in both the Houses i.e. National Assembly and Senate of Pakistan.
- Collection of data from various sources – Provincial Departments, Pakistan Bureau of Statistics, Trade Development Authority and GSP and its transmission to local and international organizations.
- Representation of mineral sector in seminars/workshops of ECO & SAARC, etc.

2.1.1 CENTRAL INSPECTORATE OF MINES

Central Inspectorate of Mines is entrusted with enforcement of the Mines Act, 1923 and rules/regulations framed thereunder [Consolidated Mines Rules, 1952 and Oil & Gas (Safety in Drilling & Production) Regulations, 1974 etc.] concerning occupational safety and health aspects in the mines falling in federal domain i.e. oil & gas-fields in the country. These enactments regulate the competent supervision of mine operations, appropriate working procedures, provision of protective equipment and safety gadgets, first-aid and health-care, working hours and rest intervals etc.

For accomplishment of its organizational objectives, the Inspectorate carries out inspection visits of oil and gas-fields; drilling wells sites, seismic survey sites and oil/gas production facilities to ascertain the status of implementation of legal safety requirements; follow-up of inspection observations for remedy of shortcomings; and inquiry/follow-up of accidents for adoption of prevention measures to avert recurrence and help for the payment of compensation to the affectees. Besides the regulatory functions, the Inspectorate conducts information dissemination and training/awareness raising programs for workers, supervisors and managers regarding occupational safety & health concerns and related laws to promote safety culture at workplace.

2.2 POLICY WING

2.2.1 Directorate General of Oil

- Consumption of petroleum products in the country remained around 26.4 million tons during 2016-17. Indigenous crude oil meets only 15% of total requirements, while 85% was met through imports in the shape of crude oil and refined petroleum products. The crude oil is refined by six major and two small refineries.
- Refineries are importing crude oil, after uplifting local crude oil, form any source allocated. Oil Refineries have their own commercial Standards Terms Contract for importing crude oil from supplier i.e. Saudi ARAMCO and Abu Dhabi National Oil Company (ADNOC).
- At present, oil refineries have long term commercial Agreements for import of crude oil from Saudi and UAE, PARCO: 60,000 bpd (Saudi Arabia) and 39,000 bpd from UAE, NRL 50,000 bpd from Saudi Arabia, PRL 29,000 bpd from UAE, whereas Byco imports crude oil as per their requirements on spot price basis form Gulf Region
- During 2015-16 and 2016-17 indigenous oil refineries produced 11.7 million tons of oil and 12 million tons of POL products, respectively. Oil refineries processed during 2015-16 and 2016-17, 8.6 million tons & 8.7 million tons of imported crude oil and 3.7 million tons and 3.9 million tons of indigenous crude / condensate, respectively.

<u>Oil Marketing & Refining Policy</u>

- In pursuance of the de-regulation liberalization and privatization reforms policy of Government of Pakistan, Petroleum Division had adopted the phase-wise deregulation of Petroleum sector. In the first phase, import of Furnace Oil (FO) was deregulated w.e.f 1st July, 2000 and Oil Marketing Companies, Power Plants, Industrial Consumers and Private Traders were allowed to import it. In the second phase, import of High Speed Diesel (HSD) was outsourced w.e.f 1st April, 2001 and Oil Marketing Companies were allowed to import deficit products. From 1st September, 2002 the Oil Marketing Companies and Bulk Consumers were allowed to import HSD from sources of their own choice, as per their requirements, on cost competition basis.

- As per policy, locally produced HSD has the ‘first right of consumption’ i.e. production of local refineries has to be uplifted first. Only the deficit balance demand is met through imports. Pakistan State Oil (PSO) imports about 2.3 million tons of HSD from Kuwait under a long term contract. The remaining requirement of HSD and FO is imported by PSO and other Oil Marketing Companies (OMC). Import of MS (Petrol) and Jet Fuel is also arranged by OMCs to meet the demand.

- Import of deficit petroleum products has been deregulated under the Government policy. Oil Marketing Companies (OMCs) are importing Furnace Oil, Mogas (Petrol) and Diesel oil from the international market on the cost competition basis through open tenders. Traders and bulk consumers have also been allowed to import furnace oil. Major supply of diesel oil is arranged from Kuwait on long term contract basis while balance quantity is procured through open tenders from Gulf region by OMCs.

- Pakistan offers good opportunity for establishment of new oil marketing companies and new oil refinery project in view of its fast growing demand of petroleum products market. In order to create healthy competition, achieve efficiencies and attract investment in the downstream oil sector, following steps have been taken by the Government:-

  a) Criteria has been developed for establishment of new oil marketing companies in the country which requires a minimum investment of Rs. 500 million over a period of three years after obtaining marketing license for infrastructure/storage and retail outlets development with upfront equity of Rs. 100 million at the time of grant of license.
  b) A new State of the Art oil refinery project of capacity of 100,000 barrels per day set up at Coastal Area of Balochistan, especially at Gwadar, can avail 20 years tax holiday.

ACHIEVEMENT DURING THE YEAR 2016-17.

1) Installation Of Crude Oil Decanting Facility At Mid-Country Refinery (MCR):

There was no Crude Oil decanting facility at PARCO Mid Country Refinery for decanting of local crude/condensate. E&P Companies i.e. OGDCL, MOL and PARCO were advised to construct decanting facility at MCR on equal share basis. The said facility was commissioned in December 2015.

2) Collection Of Revenue:

During the financial year 2016-17, GOP earned revenue on petroleum products as follows:-

Earning through	(Rs. In Million)
Petroleum Levy	166.70
Discount	9.10
Windfall Levy	1.60

3) Up-Gradation Of Existing Refineries:

i) Attock Refinery Limited (ARL) was equipped to produce Euro-II (0.05% Sulphur) HSD. Besides, they have also installed isomerization plant and enhanced the production of Motor Gasoline in 2016.

ii) Pakistan Refinery Limited (PRL) has also installed isomerization plant in 2016 and doubled its production of Motor Gasoline.

iii) Diesel Hydro Desulphurization (DHDS) and isomerization projects of National Refinery Limited (NRL) have commissioned in June, 2017.

4) Enhancement Of Storages Capacity

During the period 2016-17, the following storage capacities have been added to meet the enhanced demand of Petroleum Products:-

Figure in M. Tons

S. No.	Product	Storage Capacity 2015-16	Storage Capacity 2016-17	Total Quantity Added 2016-17
1.	MS	313,266	406,568	93,302
2.	HSD	10,83,733	1,142,584	58,851

5) Introduction Of Environment Friendly Fuel

i) In order to promote fuel efficiency, Government has introduced marketing of 92 RON Premier Motor Gasoline replacing the existing 87 RON PMG under the regulated environment effective from November, 2016. In addition to above, the marketing of 95/97 PMG has also been allowed under deregulated environment.

ii) With effect from 1st January, 2017, OMCs have been allowed to import entire high Speed Diesel (HSD) as per Euro-II specification (0.05% Sulphur content)

2.2.2 DIRECTORATE GENERAL OF GAS

Natural Gas is a clean, efficient, economical and environment friendly fuel. It contributes about 38% of the total primary energy mix in the country. Government of Pakistan has been pursuing policies of enhancing gas production to meet the increasing demand of energy in the country through aggressive exploration activities. Natural Gas consumption including Re-gasified Liquefied Natural Gas (RLNG) during 2016-17 remained 3,671 MMCFD.

i) SECTORAL GAS CONSUMPTION:

The sector-wise gas consumption in Million Cubic Feet per Day (MMCFD) along-with percentage during 2016-17 is appended below;

Unit: MMCFD

Sectors	Natural Gas (Indigenous)	RLNG	Total	Percentage
Power	986	197	1,183	32.2%
Domestic	797	-	797	21.7%
Commercial	89	-	89	2.4%
Transport (CNG)	141	44	185	5%
Fertilizer	611	60	671	18.3%
General Industry	578	168	746	20.3%
Total	**3,202**	**469**	**3,671**	**100%**

ii) NEW CONNECTIONS ACHIEVEMENTS:

With the intention to benefit maximum households, gas utility companies have set their objective to enhance consumer base. The company-wise and category-wise new gas connections provided during Fiscal Year (FY) 2014-15, 2015-16, 2016-17 and its accumulative status as on 30.06.2017 is given below;

a. SNGPL

Sectors	FY 2014-15	FY 2015-16	FY 2016-17	Cumulative Status as on 30.06.2017
Domestic	251,784	261,356	420,421	5,592,726
Commercial	190	272	282	53,553
Industry	2	1	1	5,755
Total	**251,976**	**261,629**	**420,704**	**5,652,034**

b. SSGCL

Sectors	FY 2014-15	FY 2015-16	FY 2016-17	Cumulative Status as on 30.06.2017
Domestic	96,007	95,028	86,012	2,812,211
Commercial	329	294	318	22,764
Industry	30	31	29	4,196
Total	**96,366**	**95,353**	**86,359**	**2,839,171**

iii) COMPANY-WISE TRANSMISSION AND DISTRIBUTION PIPELINES NETWORK (TARGETS AND ACHIEVEMENTS)

The gas utility companies focused on extending their infrastructure by laying additional transmission & distribution pipeline. The company-wise details of gas network extended during Fiscal Years 2014-15, 2015-16, 2016-17 and its accumulative status as on 30.06.2017 is given below;

a. SNGPL

(Figures in Km)

Gas Pipeline Network	FY 2014-15	FY 2015-16	FY 2016-17	Cumulative Status as on 30.06.2017
Transmission Network	80	336	463	8,547
Distribution Mains	1,884	3,050	7,102	87,773
Services	915	881	1,515	23,327
Total	**2,939**	**4,074**	**9,412**	**119,647**

b. SSGCL

(Figures in Km)

Gas Pipeline Network	FY 2014-15	FY 2015-16	FY 2016-17	Cumulative Status as on 30.06.2017
Transmission Network	17	46	337	3,973
Distribution Mains	420	545	519	35,431
Services	381	326	239	10,088
Total	**818**	**917**	**1,095**	**49,492**

iv) NATURAL GAS ALLOCATION AND MANAGEMENT POLICY, 2006

During 2005-06, the Government announced natural gas allocation and management policy to set out priorities for use of natural gas in an optimal manner and also to manage demand during short supplies in an economically efficient manner. The priority order defined in the Natural Gas Allocation and Management Policy, 2006 has been reviewed in 2013 and accordingly different sectors have been prioritized as per the following order:

CATEGORY OF CONSUMERS	PRIORITY ORDER
Domestic and Commercial Sectors	First
Power Sector	Second
General Industry, Fertilizer & Captive Power	Third
Cement Sector including its Captive Power	Fourth
CNG Sector	Fifth

v) CNG FOR AUTOMOTIVE USE:

Government of Pakistan initially encouraged use of Compressed Natural Gas (CNG) as an alternate fuel for auto-motives in order to control environmental degradation, reduce foreign exchange expenditure on import of liquid fuel and generate employment. Pursuant to government's investor friendly initiatives, Pakistan became the world leading CNG user country with more than 3 Million NGVs (Natural Gas Vehicles) plying on the roads. Currently more than 3,416 CNG stations have the CNG marketing licenses in the country. However, keeping in view the mushroom growth of CNG stations in the country vis-à-vis depletion of natural gas reserves, Government imposed a ban on establishment of new CNG stations in the country w.e.f. 07.02.2008. For sustainable growth of this sector, Government has approved provision of RLNG to this sector with fiscal incentives of no GIDC and Sales Tax at the rate of five percent.

2.2.3 DIRECTORATE GENERAL OF LIQUEFIED GAS

i) <u>Liquefied Natural Gas:</u> -

- Pakistan is currently facing a severe shortage of natural gas, both for its electricity generation plants and for general use by all sectors. Domestic gas production of 4,000 MMCFD is unable to meet the country's demand; the current supply-demand gap is approximately 2,000 MMCFD and the unconstrained gap is over 4,000 MMCFD. The shortage of energy is not only causing hardship for the people but is also inhibiting the economic growth of the country; the Government of Pakistan is pursuing, inter-alia, import of LNG to minimize the gas shortfall. It was decided to follow an unbundled approach, with separate contracts for LNG procurement and re-gasification rather than integrated approach to import LNG.
- For re-gasification of LNG, pursuant to a transparent and competitive bidding process, ECC as well as Cabinet approvals dated 28th Feb 2014 and 18th April 2014, respectively, Sui Southern Gas Company Limited (SSGC) and Engro Elengy Terminal (Pvt.) Limited (EETPL) executed an LNG Services Agreement (LSA) on 30th April 2014 for provision of LNG receiving, storage and re-gasification services under a levelized tolling fee of $0.66/MMBTU for 15 years. For the first year the tariff is $1.42 per MMBTU for 200 MMCFD and from 2nd year onwards with RLNG supply volume of 400 MMCFD, it is $0.63 per MMBTU. The terminal was commissioned on 27th March 2015 and since then upto June 2017, 95 LNG cargoes have been handled at LNG terminal. The terminal has an additional re-gasification capacity of 200 MMCFD which can be procured after full-filling the codal formalities.
- For import of LNG, the ECC vide decision dated 2nd July 2013 authorized the Ministry to negotiate with Qatargas on Government to Government basis for import of LNG upto 500 MMCFD on delivered ex-ship (DES) basis. Accordingly, Pakistan State Oil Company Limited (PSO) and Qatargas Operating Company Limited (Qatargas) were nominated by the respective governments to negotiate the LNG Sales Purchase Agreement (SPA).
- To negotiate the LNG price and other important aspects with Qatargas, ECC vide decision dated 15th August 2014 approved constitution of a LNG Price Negotiation Committee (PNC) comprising Secretary Petroleum (Chairman), Representatives of Finance Division, Ministry of Water and Power and BOI; not below the rank of Additional Secretary, Managing Director SNGPL, Managing Director SSGCL, Managing Director PSO and Managing Director ISGSL (Secretary Committee).

- The ECC vide its decision dated 6th June 2015 has allowed that PSO, being a commercial entity, has the autonomy to import LNG either on FOB or C&F basis and take appropriate commercial decisions for import of LNG at its own level. The ECC however, directed that PSO must keep commercial prudence and provision of the relevant rules and regulations in view, while making such decisions.
- PSO floated 2 separate (5-year term) tenders for supply of 0.75 Million Tonnes Per Annum (MTPA) LNG; lowest prices of 13.37% of three month Brent were received from the tender. Accordingly, M/s Gunvor was awarded the contract for supply of 0.75 MTPA at 13.37% of 3-month Brent in December 2015.
- The 15-year SPA initially for 2.25 MTPA with deliveries started in March 2016 has been signed by PSO in February, 2016. The volumes would increase to 3.75 MTPA on 1st Jan 2017. There is a price review provision which allows either party to seek a price review after 10 years and if not agreed, the SPA may be terminated. The price of LNG is pegged with oil prices and is priced as a direct percentage of Brent; at a notional $40 average Brent index, the value of potential LNG supply over 15 years under the SPA is over US$ 15 billion.
- In order to independently deal with LNG Terminal and LNG supplies, two independent companies have been established i.e. Pakistan LNG Terminal Limited (PLTL) and Pakistan LNG Limited (PLL).
- PLL has floated two tenders of 0.75 MTPA respectively for a period of five and fifteen years.
- PLTL has singed operation and services agreement with PGPCL on 01.07.2016 to establish 2nd LNG re-gasification Terminal on Built, Own, Operate and Transfer (BOOT) basis for a period of 15 years. PLTL is customer while PGPCL operator of LNG Terminal. Under the contract, PGPCL will finance, design, develop, construct, procure, install, operate and maintain the RLNG services facility for fifteen years (15 years).

PRESENT LNG IMPORT STATUS AND FUTURE FORECAST

At present one LNG terminal is in operation and is handling 4.5 MPTAD of LNG which is equal to 600 MMCFD of RLNG. With the establishment of 2nd LNG terminal which is expected to be completed by end of 2017, LNG import volume may reach 9 MTPA i.e. 1200 MMCFD of RLNG.

ii) Liquefied Petroleum Gas:

- The producer and consumer prices of LPG have been de-regulated by the government since September 2000. Oil and Gas Regulatory Authority (OGRA) is regulating the LPG sector with effect from 15th March 2003 under the LPG (Production & Distribution) Rules, 2001.

- OGRA is responsible for issuing licenses to construct and operate LPG production, storage/ filling facilities and re-fueling stations under the LPG (Production and Distribution) Rules, 2001.

- There are three main sources of LPG supply i.e. refineries, gas producing fields and imports Currently 12 LPG producers are producing around 1,964 MT/ day of LPG which is being marketed by around 100 licensed LPG marketing companies all over the country through their more than 4,000 authorized distributors.

- It may be noted that producer and consumer prices of LNG has been deregulated by the Government since September, 2000.

- Since deregulation, the domestic LPG market has been experiencing various challenges including demand supply imbalance, cartelization, litigations and price distortions.

- Taking cognizance of the issue, Petroleum Division has reviewed the issue in its entirety and has concluded that price deregulation policy has failed to achieve its intend objective of availability of the product for the affordable prices LPG is considered as poor-man fuel, yet the same is being priced at over 20 time higher than Natural Gas for domestic consumers.

- The situation warranted immediate intervention and Petroleum Division considered it expedient to put in place a framework to regulate the LPG prices both at producers and consumers levels. For the purpose, Petroleum Division has undertaken a consultative process with LPG Producers as well as LPG Marketing companies.

- In order to address the issue of fluctuation in LPG prices and to benefit the domestic / commercial consumers, Petroleum Division submitted a summary to the CCI on 25.08.2015 to Inter-Provincial Coordination Division. It was proposed in the said summary to regulate the LPG prices for domestic and commercial sectors.

- The above policy was considered by CCI in its meeting held on 29-02-2016 and was approved.

- The said decision was conveyed to OGRA for its implementation and necessary notification of the LPG prices.

- In compliance, OGRA proposed amendments in LPG (Production & Distribution) Rules, 2001 to Cabinet Division for approval, which have now been approved by Cabinet and has been notified.

2.2.4 DIRECTORATE GENERAL OF PETROLEUM CONCESSIONS (PC):

Achievements during the year 2016-17

Leases Granted	9
Wells Spudded	**84 against the target of 90**

Exploratory	36
App./Development	48
Discoveries announced	**16**
Initial flow from **these discoveries**	
Oil (BOPD)	1,065
Gas (MMCFD)	152
Oil Production added (BOPD)	**13,806**
From new discoveries	4,060
From existing discoveries	9,746
Gas Production added into the system (MMCFD)	**359**
From new discoveries	114
From existing discoveries	245
Seismic Acquired	
2D (L.kms)	6,106
3D (Sq.Kms)	3,412

Discoveries announced during 2016-17

						Initial Flow Rates	
S#	**Discovery Name**	**Discovery date**	**Status**	**Company**	**Province**	**Oil (BOPD)**	**Gas (MMCFD)**
1	Khamiso-1	July-2016	Gas	OGDCL	Sindh		2.95
2	Shahbaz-1	September-2016	Gas	MPCL	Sindh		10.86
3	Rawat-1	September-2016	Oil	UEP	Sindh	144	1.3
4	Bashar X-1	September-2016	Gas	PPL	Sindh		8.7
5	Makrani-1	October-2016	Gas	UEP	Sindh	150	4.8
6	Gundanwari-1	November-2016	Gas Cond.	OGDCL	Sindh	15	19.4
7	Mithri-1	November-2016	Gas	OGDCL	Sindh		6.44
8	Dang-1	November-2016	Oil	UEP	Sindh	120	
9	Mohib-1	January-2017	Gas	UEP	Sindh		2
10	Shaheen-1	February-2017	Gas	MPCL	Sindh		12.334
11	Chhutto-1	March-2017	Gas Cond.	OGDCL	Sindh	285	8.66
12	Zafir X-1	April-2017	Gas Cond.	PPL	Sindh	310	29.2

13	Aqeeq-1	May-2017	Gas Cond.	MPCL	Sindh	21	5
14	Chabaro-1	June-2017	Gas Cond.	OGDCL	Sindh	20	15.1
15	Khanan-1	June-2017	Gas	OMV	Sindh		11.65
16	Ali-2	June-2017	Gas	UEP	Sindh		13.6
	Total					**1065**	**152**

Development & Production Leases granted during 2016-17

S.No.	Lease	Province	Operator	Grant date	Area (sq. kms)
1	Sofiya	Sindh	OMV Maurice	22-09-2016	30.91
2	Shahdadpur East	Sindh	PPL	11-08-2016	7.29
	Grand total				**38.2**

Receipts Collected by: Directorate General of Petroleum Concession

S.No.	Receipt Name	2016-17 Re-Budget Estimates	2016-17 Actual Collection
1	ROYALITY		
	(a) Crude Oil	15,621.520	18,550.38
	(b) Gas	32,638.490	35,340.38
	SUB TOTAL	**48,260.010**	**53,890.76**
2	LEASE RENT & FEE	350.000	278.607
	SUB TOTAL	**350.000**	**278.607**
3	DIVIDENT RECEIPTS		
	(a) PPL	8,652.00	8652
	(b) MGCL	83.390	103.37
	(c) GHPL	-	
	SUB TOTAL	**8,735.390**	**8755.37**
	GRAND TOTAL	**57,345.400**	**62,924.74**

GOVERNMENT OF PAKISTAN RECEIPTS 2016-17

S#	Classification	MM Pak. Rs.
1	Advance yearly rent for Exploration/ Prospecting Licenses, Mining D&P leases and application fees	351.400
2	Royalty	
	Oil	18,550.381
	Gas	35,341.251
	Sub total	**53,891.632**
	Grand Total	**54,243.032**

CHAPTER 3

GEOLOGICAL SURVEY OF PAKISTAN
(GSP)

http://www.gsp.gov.pk/

Geological Survey of Pakistan (GSP) is an attached department of the Petroleum Division with its head office located at Quetta. As per charter, GSP is responsible for study of geology of the country in all pertinent details and to assess its geological resources potential. With a balanced, efficient and competitive structure, GSP is fully capable to explore mineral resources and to undertake geological, geophysical, drilling and geo-technical investigations. During the recent years, the GSP's technical services were frequently availed by different organizations in public and private sector. The GSP also undertakes development projects to cater to immediate needs in the fields of geological mapping and mineral exploration.

3.1 FUNCTIONS AND CORE ACTIVITIES OF GSP

1. Geological mapping and other geoscientific surveys.

2. Scientific investigations for an accurate understanding of the country's natural resources and their prudent management.

3. Geotechnical investigations in connection with the construction of heavy civil engineering projects, soil conservation, watershed management and other environmental and engineering geological studies including geothermal energy, land use, and town planning.

4. Description of onshore and offshore geological framework and understanding its formation, evolution and resource potential.

5. Study and evaluation of geological hazards associated with earthquakes, volcanic activity, waste disposal, landslides, subsidence and other ground failures, and development of methods for hazard prediction.

6. Provision of scientific support and technical advice for legislative, regulatory and management decisions of the federal, provincial and local governments.

3.2 INSTITUTIONAL STRUCTURES

The GSP was established in 1947 with the creation of Pakistan. The department is headed by the Director General. The technical and other activities of the department are planned and controlled by the Management Advisory Committee (MAC) with all Deputy Director Generals (BPS-20) and Directors (BPS-19) as its members under the Chairmanship of the Director General. Region and category wise distribution of the manpower available in the department are given below:

REGION WISE DISTRIBUTION OF GAZETTED AND NON-GAZETTED STAFF OF GEOLOGICAL SURVEY OF PAKISTAN

S.No.	**Name of Office**	**Gazetted Staff**	**Non-Gazetted Staff**	**Total**
1.	GSP Headquarters Office, Quetta.	141	378	519
2.	GSP Regional Office, Lahore.	54	109	163
3.	GSP Regional Office, Karachi.	43	97	140
4.	GSP Regional Office, Islamabad.	26	53	79
5.	GSP Regional Office, Peshawar.	21	53	74
6.	GSP Regional Office, AJK.	4	13	17
7.	Geoscience Advance Research Lab, Islamabad.	24	39	63
	TOTAL	**313**	**742**	**1055**

CATEGORY WISE DISTRIBUTION OF GAZETTE AND NON-GAZETTED STAFF OF GEOLOGICAL SURVEY OF PAKISTAN

S.No.	**Category**	**Number**
1.	Geologist	154
2.	Geophysicists	21
3.	Chemist	27
4.	Drilling Engineers	25
5.	Photogrammetrist	07
6.	Other Technical	08
7.	Administration & Accounts	61
8.	Technical Staff	299
9.	Ministerial Staff	132
10.	BPS 1-2 Staff	321
	TOTAL	**1055**

3.3 BUDGET AND FINANCE

GSP gets its annual budgetary allocation in the federal budget every year and some allocation is also made for the department in the federal PSDP for undertaking its Development Projects. The budget figures for the last three financial years are given below:

GSP's BUDGET FOR LAST THREE YEARS

(In Millions)

YEAR	2014-15	2015-16	2016-17
Regular Budget	378.472	410.00	444.310
Development Budget	50.00	348.926	587.476
Total	428.472	758.926	1031.786

3.4 ACTIVITIES, ACCOMPLISHMENTS AND PROGRESS (2016-17)

3.4.1 GEOLOGICAL MAPPING (1:50,000)

The regional geological mapping of total area of 3200 sq. km on 1:50,000 scale was completed in different regions of Pakistan. The geological mapping and details of mineral investigations are summarized below:

- Regional geological mapping (on 1:50000 scale), structural interpretation and mineral investigation of Toposheet No 39 E / 3, Sur Kach Area, District Zhob, Balochistan, Pakistan.
- Geological Mapping and Mineral Investigation of Chunjan Quadrangle Toposheet No 34 N/14, Zhob and Loralai Districts Balochistan.
- Geological Mapping and Mineral Investigation of Chorka Quadrangle of Toposheet No. 39 F/2 Loralai and Zhob Districts Balochistan.
- Geological Mapping and Mineral Investigation of Kangoro Quadrangle Toposheet No. 35 O/1 Khuzdar and Lasbela Districts Balochistan.
- Geological Mapping and structural characterization of a part of Sulaiman fold belt, Hamoi Quadrangle Toposheet No. 34 M/16 Loralai District, Pakistan.
- Geological Mapping on 1:50000 scale and Mineral Investigation of Quadrangle 42H/6, District Ghizer, Gilgit-Baltistan, Pakistan.
- Geological Mapping and Mineral Investigation in the Ahmadun Quadrangle (Topographic sheet No 34 N/7) District Ziarat Balochistan Pakistan.
- Geological Mapping and Mineral Investigation of Harnoi Quadrangle (Toposheet No. 43F/8) District Abbottabad, Khyber Pakhtunkhwa, Pakistan.

3.4.2 ECONOMIC GEOLOGY

During this period (2016-17) investigations were carried out for the following Economic Geology projects:

- Mineralogy and Genesis of Langrial Iron Ore, District Abbottabad, KPK.
- Geological Sampling for Gold and Precious Metals in Ranthak area (52-A/12) near Skardu, Ladakh Range, Northern Pakistan.
- Mineral Investigation and Geochemical Sampling in Ghizer area, Karakorum Range, Gilgit-Baltistan, Pakistan.
- Preliminary Study of the Occurrence of the Aquamarine from Garam Chashma, Lutkho Valley, Chitral District (Chitral Valley), Khyber Pakhtunkhwa, Pakistan.

- Exploratory Studies of the Copper Mineralization of Bekaria (Toposheet 38-M/16) and Adjacent Areas, District Upper Dir, Khyber Pakhtunkhwa, Pakistan.

- Phosphate Zone Delineation & Reserve Evaluation of Garhi-Habibullah Quadrangle (Toposheet No. 43F/7), District Mansehra, Khyber Pakhtunkhwa, Pakistan.

- Fluorite Mineralization and its Evaluation in Loralai, Mekhtar and surrounding areas Balochistan Pakistan.

- Evaluation of Aggregates Resources for Construction Material in Sulaiman Range District D.G Khan & Taunsa.

- Sulfide Mineralization Studies of Bagrot Valley, Tehsil Danyor, District Gilgit, Gilgit-Baltistan, Pakistan.

- Geo-Chemical Exploration for Precious and Base Metals including Gem Stones from Aliabad to Ishkomen and Surrounding Areas, Gilgit, Baltistan, Pakistan.

- Genesis and Economic Potential of Sulfide Deposits of Bagrot Valley, Tehsil Danyor, Gilgit Baltistan.

3.4.3 RESEARCH STUDIES

- Subsurface Mapping for Geothermal Energy Resources at Tatta Pani, District Kotli, Azad Jammu Kashmir (AJK) using Electrical Resistivity Survey.

- Exploration of Geothermal Energy Resources in Dadu District Sindh.
- Preliminary Geological Studies to Determine the Optimum Sites for Small Dams in Qilla Saifullah and Loralai Districts, Balochistan.

- Raw Material Investigation and Evaluation of Limestone Resources for Cement Industry in Toposheet No. 35-O/3, District Lasbela, Balochistan.

- Identification of High Risk Areas with Reference to Geological Hazards (Flash Flood and Debris Flow), Chitral District, KPK, and Ghizer, Skardu, Gilgit Disttrict, Gilgit Baltistan (GSP-NDMA Collaboration).

- Quaternary Geological Mapping Groundwater Investigation and Geoenviromental Studies of Jampur Quadrangle 39 K/10, District Dera Ghazi Khan, Muzaffargarh and Rajanpur.

- Detail Geochemical Analysis and Diagnostic Modification of Cambrian Dolomite and their Implication on Hydrocarbon Exploration in Salt Range and Khisor Range of Pakistan.

- Tectono-Stratigraphic Model of Eocene Succession in the Upper Indus Basin, Pakistan.

- Imbalance of Essential Micronutrients in Serum Samples of Viral Hepatitis Patients of District Jafferabad Balochistan, Pakistan in Perspective of Medical Geology.

- Environmental Impact of Fluoride Mining and its Implications on Local Population (in the Perspective of Medical Geology) of Loralai District, Balochistan.

- Role of Electrolytes and Toxic Metals in Blood and Serum of Kidney Disorders Related to Drinking Water (In Perspective of Medical Geology) in Quetta, Balochistan, Pakistan.

- Seismic Geo-hazards Micro-zonation and Active Tectonics of Palandari, Namb, Baral, and Surrounding Areas of Sudhanoti and Kotli Districts, Azad Kashmir, Pakistan.

- Geochemical Investigation and Economic Evaluation of Baska Shale (Gypsum) of Ghazij Group Eastern Sulaiman Range, D.G. Khan Area and Surroundings.

- Larger Benthic Foraminiferal Biostratigraphy and Paleoenvironment Study of Early Eocene Ghazij Formation around Taunsa (Toposheet No. 39-J/6 and 39-j/1), Punjab, Pakistan.

- Tectono-Stratigraphic Model of Eocene Succession in the Upper Indus Basin, Pakistan.

- Imbalance of Essential Micronutrients in Serum samples of Viral Hepatitis Patients of District Jafferabad, Balochistan, Pakistan (In the Perspective of Medical Geology).

- Follow-up Fluid Geochemical Study of Tatta Pani, District Kotli, Azad Jammu Kashmir (AJK), Toposheet No. 43-G/14.

3.4.4 GEOPHYSICAL EXPLORATION

Geophysical Studies were undertaken for metallic minerals and to assess the geothermal energy resources in different regions of Pakistan, Induced Polarization (IP) and Magnetic Surveys were carried out at Sukhan, Sap Dohro and Shumali areas near Uthal, Balochistan, for copper mineralization and Electrical Resistivity investigations were carried out for Geothermal Energy Resources in Dadu District, Sindh and Tatta Pani, Kotli District, Azad Kashmir, respectively.

3.4.5 DRILLING OPERATIONS

The Geological Survey of Pakistan undertakes drilling operation under various programmes for energy (coal) and mineral exploration. During this period, GSP undertook drilling operations under its different development projects for coal exploration, under Badin Coal Project by completing 03 bore holes with a cumulative depth of 1190 meters in Badin and Mirpur Khas Districts Sindh and 05 bore holes with a cumulative depth of 742 meters under Tertiary Coal Project in Chakwal District Punjab.

3.4.6 CHEMICAL ANALYSES

Total 1498 samples for 20397 estimations were analyzed in GSP laboratories at Quetta, Lahore, Karachi and Geoscience Lab, Islamabad. 1049 powdered samples, 750 thin sections and 76 ore block were analyzed. 438 samples by XRD/-DTA, 157 samples by Scanning Electron Microscope (SEM), 616 samples by EDS and Petrographic studies of 42 samples completed at the Geoscience Advance Research Laboratories (GARL), Islamabad.

3.5 <u>INTERNATIONAL COLLABORATIONS</u>

During 2016-17 Geosciences investigations were carried out under the following international collaborative projects:

3.5.1 GEOCHEMICAL MAPPING: PAK-SINO GEOLOGICAL SURVEY

A collaborative project between Geological Survey of Pakistan (GSP) and China Geological Survey (CGS) under an MoU between two countries, with an objective to geochemically map the country and to collect the geochemical stream sediments from all over Pakistan, was implemented during 2016-17. Under this project a training program for capacity building of 48 geoscientist from GSP was also arranged. Up till now more than 3,500 stream sediment samples were collected from 350,000 sq.km. area on 1: 1,000,000 scale from Punjab, Sindh, KPK, Balochistan, AJK and Gilgit Baltistan. The potential anomalies will be chosen for further work on 1:250,000 scale to extend the investigations. The collected samples are being analyzed for 69 elements.

3.5.2 RESEARCH STUDIES IN NEOTECTONICS AND QUANTIFICATION OF SEISMIC DEFORMATION IN NORTHERN PAKISTAN.

Technical cooperation between the Geological Survey of Pakistan and University of Savoie, Chambery & Joseph Fourier University, Grenoble, France was initiated just after 2005 earthquake. After the earthquake, a GPS network was installed to monitor the post seismic displacements in earthquake affected areas and in other areas of Northern Pakistan. Initially 2005 earthquake affected areas were selected for quantification of post seismic deformation and Neotectonics and afterwards research areas were extended to the Gilgit-Baltistan, Khyber Pakhtunkhwa, Azad Jammu & Kashmir, and Pothwar Plateau including Islamabad, Salt Range and Kirana Hills in the Punjab Plains. GSP and France have been in technical collaboration from 2005 to 2012. Under the project, 70 GPS-Geodesy Network Stations have been installed for monitoring of active faults in northern Pakistan. The monitoring strategy was defined in such a way as to identify the spatial and temporal evolution of the post seismic displacements and other areas. GSP and University of Savoie, France have again agreed for the upcoming research activities for 2016-17 in continuation of Neotectonics and Quantification of Seismic Deformation in Northern Pakistan. The Nepal working model will be included in the upcoming research. One GSP officer will be sent to Nepal for training. The upcoming collaborative phase will largely contribute in providing GSP a leading role for solving the problems of Neotectonics and Seismology in Pakistan.

3.6 TRAININGS (HUMAN RESOURCE DEVELOPMENT)

3.6.1 TRAINING OF NEWLY APPOINTED OFFICERS

After a long process of recruitment extending for almost one year period, FPSC finally recommended 62 officers who joined GSP, Quetta in 2016-17. GSP, Quetta being the Headquarter of this premier organization has been serving as a training institute for newly appointed officers since its creation. Apart from serving as a training facility for its own officers GSP has been facilitating officers from all cadres of the Government hierarchies of various occupational groups, undergoing promotional courses.

As a mandatory exercise practiced around the globe, holding a crucial place in scientific organization, specifically, in the streamlining of the newly inducted technical officers according to the customs and norms practiced therein and to enlighten familiarize with the protocol and standard operation procedure in the area of interest in terms of minerals prospects / field- work/geological mapping), High – tech laboratory work or routine matters official / economic affairs, an extensive and orientation program was planned out as per the direction and guidance of the higher administration Director General, accompanying senior brass of GSP which holds a competent place and proven skills in the geoscientific regime across the Pakistan.

Therefore, in order to materialize the conceived plans as envisaged by GSP from the very start of recruitment process, senior official's having vast experience of working within the country and immense exposure of international standardization, conducted multiple short and long term seminars/technical workshops as a part of on- the job training program for newcomers.

Many notable speakers/geoscientists were engaged in this activity throughout the training period, for imparting the practical knowledge to succeeding asset of GSP.

Fig 01: Training of newly appointed officers at Headquarters Office, Quetta.

3.6.2 INTERNSHIP PROGRAM

Geological Survey of Pakistan being a major stakeholder in the exploration of mineral resources of the country is fully engaged with the aim to provide training and internship in the respective disciplines of geosciences. Currently 11 internees are getting training under National Internship Program in the different offices of GSP.

The list of internees is as follows:

S.N.	NIP NO.	Name of Internee	Education	GSP Office
1	31274	Mr. Daniyal Khan s/o Tumraiz Khan	B.S. Earth Science	Geological Survey of Pakistan, Plot No 84, Sector H-8/1, Islamabad.
2	60921	Mr. Anees ur Rehman s/o Hafiz Karim Ullah	B.S. Geology	Geological Survey of Pakistan, Plot No 84, Sector H-8/1, Islamabad.
3	68081	Mr. Ahsan Ullah s/o Khalil Ullah	B.S. Geology	Headquarter, Geological Survey of Pakistan, Sariab Road, Quetta
4	38686	Mr. Umar Hameed s/o	B.S. Earth Sciences	Geological Survey of Pakistan, Plot No 84, Sector H-8/1,

		Abdul Hameed		Islamabad.
5	59764	Mr. Muhammad Tahir Munir s/o Muhammad Munir Awan	B.S. Geology	Geological Survey of Pakistan, Plot No 84, Sector H-8/1, Islamabad.
6	4858	Mr. Ansar Shehzad s/o Muhammad Sadiq Khan	B.S. Applied Geology	Geoscience Advance Research Laboratories (GARL), GSP, Chak Shahzad, National Park, Islamabad.
7	42355	Mr. Aminullah s/o Abdul Rasheed	M.Sc. Geology	Headquarter, Geological Survey of Pakistan, Sariab Road, Quetta
8	25020	Muhammad Panezai s/o Faizullah	B.S. Geology	Headquarter, Geological Survey of Pakistan, Sariab Road, Quetta
9	2426	Rooman Haider s/o Jamil Hussain	B.S. Geology	Geological Survey of Pakistan (GSP), St.17/2, Gulshan e Johar, Scheme No. 36, Karachi.
10	8976	Sayyed Ali Hassan s/o Syed Zulfiqar	B.S. Geology	
11	25430	Mr. Naseer Uddin s/o Hamid-Uall	M.Sc. Geology	Pet-Min Branch, Geological Survey of Pakistan, Headquarter, Sariab Road, Quetta.

3.6.3 NATIONAL WORKSHOP ON OPTICAL MICROSCOPY, HARD ROCKS PETROLOGY, AND PETROGENESIS.

Geoscience Advance Research Laboratories (GARL), Islamabad organized its 7 National Workshop on Optical Microscopy, Hard Rocks Petrology and Petrogenesis from 21 -25 November, 2016. The refresher course was designed for earth scientists, researchers, faculty members, students and professionals working in the fields of mineralogy and economic geology.

One day fieldwork was conducted in Attock-Cherat Ranges. Pan-concentration was demonstrated by Mr. Yasir Shaheen, Assistant Director, GSP at the confluence of the Indus River and the Kabul River. The workshop was attended by 24 participants from all over the country. Dr. Junko Komoto, Project Director, JICA Pakistan was the guest of honor during certificate distribution ceremony.

3.7 GEOLOGICAL MUSEUM OF EARTH SCIENCES

Geological Survey of Pakistan houses Museum of Earth Sciences at its headquarters office, Quetta. General purpose of this museum is to create awareness among students, researchers, and general public about the country’s rich mineral wealth. This museum stands out very prominently among all such institutions in the country on the basis of richness of scope and the variety of its collection.

GSP museum now has seven thematic sections like Rocks and Minerals Gallery, Gem Hall, Balochistan Minerals Gallery, Building and Decorative Stone Gallery, Astrology Gallery, Invertebrate and Vertebrate Paleontology Gallery. The Paleontological galleries are most exquisite and have been embellished with endeavors of GSP and joint collaboration with foreign paleontologist. Startling fossils are displayed in this section of vertebrate viz walking whale and Balochiterium, mammoth, and extinct marine organisms especially ammonites in invertebrate section. The tour to paleontological galleries of the museum is a special itinerary through geological time scale for all walks of life.

Fig 02: Gem Hall of Geological Museum at GSP, Quetta.

Senior government officers, delegates, students and visitors from all fields of life visited GSP museum with curiosity to know about museum of earth sciences and its associated sections (approximately one thousand during 2016-17).

Following is the list of few major categories who visited GSP museum during 2016-17.

- National Management College, Lahore,
- National Institute of Management, Karachi.
- Department of Mining Engineering, BUITEMS, Quetta.
- Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS), Quetta.
- Sardar Bahadur Khan Woman University (SBKWU), Quetta.
- Jinnah Academy, Quetta.
- National Accountability Bureau (NAB), Lahore.
- Institute for Development Studies and Practice, Quetta.
- Muslim Hands High School, Quetta.

3.8 LATEST PUBLICATIONS

3.8.1 TECHNICAL REPORTS

- Micaceous Hematite Deposits from Balapir-Belanoor Shah area of Muzaffarabad District Azad Kashmir, Pakistan. (IR. No. 977).

- Good Quality Marble Deposits from Nauseri Jhugian area of Muzaffarabad region Neelum valley, Azad Kashmir, Pakistan. (IR. No. 978).

- Coal Resources of Pakistan: Entry of New Coal Fields. (IR. No. 980).

- Flourite from Loralai-Mekhtar and celestite from Barkhan Dera Bugti, Kohlu, Loralai and Musakhel districts (Sulaiman fold belt) and Karkh area of Khuzdar district (Kirthar Range): a glimpse on tectonic and sedimentary mineral resources of Indus Basin, Pakistan. (IR. No. 981).

- Mineral Resources of Sindh, Pakistan. (IR. No. 994).

- Mineral Resources of-North & South Punjab, Pakistan. (IR. No. 995).

- Mineral Resources of Khyber Pakhtunkhwa and FATA, Pakistan. (IR. No. 996).

- Mineral Resources of Balochistan Province, Pakistan. (IR. No. 1001).

- Revised Stratigraphy and Mineral Resources of Balochistan Basin, Pakistan. (IR. No. 1002).

- Mineral Resources of Azad Kashmir, Gilgit Baltistan, Pakistan. (IR. No. 1003).

- Gemstone and Jewelry Resources of Pakistan. (IR. No. 1004).

- Cement Resources, Agrominerals, Marble, Construction, Dimension and Décor Stone Resources of Pakistan. (IR. No. 1005).

3.8.2 GEOLOGICAL MAPS PUBLISHED ON 1:50,000 SCALE

- Geological Map of Tablai Quadrangle (39A/8), Zhob District, Balochistan, Pakistan.

- Geological Map of Malghat Quadrangle (39A/10), Zhob District, Balochistan, Pakistan.

- Gelogical Map of Ashewat Quadrangle (39 A/11), Zhob District, Balochistan Pakistan.

- Geological Map of Shahu Garhi Quadrangle (34 D/15), Washuk District, Balochistan, Pakistan.

- Geological Map of Manikhawa Quadrangle (39 E/15), Shirani District, Balochistan Pakistan.

- Geological Map of Karezat Quadrangle (34 N/6), Khanozai District, Balochistan Pakistan.

- Geological Map of Shaigalu Quadrangle (39 A/16), Zhob District, Balochistan Pakistan.

- Geological Map of Toisar Quadrangle (39 E/16), Musakhel District, Balochistan Pakistan.

- Geological Map of Malikhore Quadrangle (35 I/5), Khuzdar District, Balochistan Pakistan.

- Geological Map of Windri Zard Quadrangle (35 J/6), Khuzdar District, Balochistan Pakistan.

- Geologoical Map of Khajuri Quadrangle (39 F/11), Musakhel District, Balochistan Pakistan.

- Geological Map of Qila Abdullah Quadrangle (34 J/10) District, Qila Abdullah, Balochistan Pakistan.

- Geological Map of Kan MehtarZai Quadrangle (34 N/10), Qila Saifullah District, Balochistan, Pakistan.

3.9 PUBLIC SECTOR DEVELOPMENT PROJECTS (2016-17)

For the financial year 2016-17, four projects, with total demand of Rs. 587.476 Million were proposed; two projects were for Fuel Sector (Rs.142.969 Million) and two projects for Mineral Sector (Rs.444.507 Million).

The projects details areas given under:

A. Mineral Sector

1. Exploration and Evaluation of Metallic Minerals, in Uthal and Bela Areas, District Lasbela, Balochistan.
   (Total Cost: 56.70 millions).

2. Acquisition of Four Drilling Rigs with Accessories for the Geological Survey of Pakistan.
   (Total Cost: 665.807 millions)

B. Energy Sector

1. Appraisal of Newly Discovered Coal Resources of Badin Coal Field and its adjoining areas of Southern Sindh (BCP).
   (Total Cost: 170.00 millions).

2. Exploration of Tertiary Coal in Central Salt Range, Punjab (TCP).
   (Total Cost: 43.350 millions).

3.9.1 APPRAISAL OF NEWLY DISCOVERED COAL RESOURCES OF BADIN COAL FIELD AND ITS ADJOINING AREAS (BCP)

1.	PSDP No:	700
2.	Location:	District Badin, Mirpurkhas, Sanghar Sindh.
3.	Project Period:	Original Planned: Three Years (2009-2012)
4.	Revised Project Period:	2013-2019
5.	Cost:	Rs.170.633 Million
6.	Date of Approval:	CDWP on19.11.2009
7.	Actual Date of Commencement:	1.07.2013
8.	Completion Date:	30.06.2019 (extended for 2 years)
9.	Expenditure upto 30.06.2017:	128.920 Million
10.	PSDP Allocation (2017-18):	37.977 Million
11.	Total Physical Progress:	85 %
12.	Total Financial Progress:	75%

UP TO DATE PROGRESS

- Ten bore-holes with a cumulative depth of 4,019 meters, have been completed in Pingrio, Jhudo, Tando Bagho and Nando Town, Badin by pass Kingri and south of Pingrio areas in district Badin and Mirpurkhas, covering an area of 2000 sq.km.
- Coal seams encountered in all holes at various depths.
- Core samples collected and their chemical analysis have been completed.
- Geological logging has been completed of exploratory boreholes. Digitization of borehole log data is in progress. Technical report of the project is in progress.
- Two newly purchased multipurpose drilling rigs have been deployed at Badin Coal Project site, to enhance the drilling activities round the clock.
- Mud pits, foundation for rigs, ramps and mud ways have been prepared to start the drilling activities at next bore hole site.
- An amount of Rs. 37.977 million has been allocated for the FY 2017-18.

Fig 03: Drilling Activities at Badin Coal Project Site (Sindh)

3.9.2 ACQUISITION OF FOUR DRILLING RIGS WITH ACCESSORIES FOR THE GEOLOGICAL SURVEY OF PAKISTAN

1.	PSDP No:	699
2.	Location:	Quetta
3.	Project Period:	Original plan one year (2009-2010)
4.	Revised Project Period:	(2013-2019)
5.	Cost:	Rs.665.807Million
6.	Date of Approval:	CDWP on 19.11.2009
7.	Actual Date of Commencement:	01.07.2015
8.	Completion Date:	30.06.2018 (extended for one year)
9.	Expenditure upto 30.06.2017:	249.272 Million
10.	PSDP Allocation (2017-18):	Rs.415.807 Million
11.	Total Physical Progress:	45 %
12.	Total Financial Progress:	38%

UP TO DATE PROGRESS

- Two, new, 275 HP, Hydraulic, Truck Mounted Multipurpose Drilling Rigs with drilling capacities of 1300-2000 meters HQ and 2000-3000 meters NQ, with accessories and spare parts of rigs and trucks have been purchased from Italy on FOR basis. Rigs with accessories have been received in GSP, Headquarters Quetta on 10.09.2016.

- Preparation of technical specification and tenders for purchase of 2 more drilling rigs with accessories have been prepared in strict adherence to PPRA rules. Tenders have been published in national print media.

Fig 04: Two Newly Purchased Multipurpose Drilling Rig

3.9.3 EXPLORATION OF TERTIARY COAL IN CENTRAL SALT RANGE, PUNJAB (TCP).

1. PSDP No: 702
2. Location: Central Salt Range District Chakwal, Punjab
3. Project Period: Original planned one year (2010-13)
4. Revised Project Period: (2013-2018)
5. Cost: Rs.43.350 Million
6. Date of Approval: DDWP on 27.01.2010
7. Actual Date of Commencement: 01.07.2013
8. Completion Date: 30.06.2018 (extendedfor2years)
9. Expenditure upto 30.06.2017:: Rs. 36.285 Million
10. PSDP Allocation(2017-18): Rs. 3.492 Million
11. Total Physical Progress: 84 %
12. Total Financial Progress**:** 94 %

UP TO DATE PROGRESS

- Geological mapping over 470. Sq. km area on 1:10,000 scale has been completed. Section measurement completed at 12 sites.
- Potential sites have been selected for drilling.
- Collected 100 coal samples and their chemical analysis have been completed.
- Drilling of 5 exploratory borehole with a cumulative depth of 742 meters, have been completed in Kharli, Bhadrar, Hussainabad, Bochal and Bolla Towns in District Chakwal and surrounding areas. Coal seams encountered in all holes in various depths. Core samples collected and their chemical analysis has been completed.
- Geological logging has been completed of the boreholes.
- Digitization of stratigraphic section and borehole log data is in progress.
- Technical report of the project is in progress.

Fig 05: Drilling activities at Tertiary Coal Project, Punjab

3.9.4 EXPLORATION AND EVALUATION OF METALLIC MINERALS IN UTHAL AND BELA AREAS, DIST. LASBELA, BALOCHISTAN.

1. PSDP No: 701
2. Location: Uthal and Bela, Dist. Lasbela, Balochistan.
3. Project Period:Original Planned: Two Years (2015-2017)
4. Revised Project Period: (2015-18)
5. Cost: Rs.56.70 Million
6. Date of Approval: DDWP on 11.09.2015
7. Actual Date of Commencement: 1.07.2015
8. Completion Date: 30.06.2018
9. Expenditure upto 30.06.2017: Rs. 33.099 Million
10. PSDP Allocation (2017-18): Rs. 8.992 Million
11. Total Physical Progress: 53 %
12. Total Financial Progress: 60%

3.9.5 UP TO DATE PROGRESS

- Study of the maps, toposheets, aerial photographs and satellite imageries of the area.
- Review of previous geological literature of the area.
- Transferred data from aerial photographs and satellite imageries to topographic maps.
- Maintained the technical equipments and vehicles for the project.
- Teams of geophysicists and geologists are carrying out the detailed geophysical surveys and geological mapping at selected sites.
- Samples of different exposed rock units and stream samples have been collected and are in process of analyses.
- Base map on the basis of previous literature has been prepared.
- Induced Polarization and Magnetic Surveys have been carried out at the Sukhan, Sap Dohro and Shumali areas near Uthal Town.
- Potential bodies have been selected for large scale mapping on the basis of Integrated Geophysical Surveys.
- Preliminary Geological data of different formations / rock units has been collected for map compilation.
- Integrated geophysical data has been collected to generate the Integrated Geophysical Maps.
- Geological Mapping in north of Sap Dhoro near Uthal is in progress, uptill now 3,000 sq.km area on 1:40000 scale has been completed.
- Preparation of Map and Report IS in progress.

Fig 06: Induced Polarization (IP) Survey for opper at Uthal-Bela Project.

CHAPTER 4

HYDROCARBON DEVELOPMENT INSTITUTE OF PAKISTAN

HDIP

4.1 INTRODUCTION:

Hydrocarbon Development Institute of Pakistan (HDIP) is an autonomous body under Petroleum Division. HDIP was established in 1975 through a Resolution of the Government of Pakistan. It has been re-established as an autonomous body through an Act of Parliament in January 2006. The activities of the Institute are regulated by a Board of Governors which is chaired by the Federal Minister for Energy (Petroleum Division), while its Chief Executive is designated as Director General and Secretary of the Board.

HDIP carries out applied research and renders advice to the Government on scientific and technical matters in the oil, gas and energy sectors including environment, planning and energy policy issues. The HDIP also provides consultancy and laboratory services for the oil and gas industry in Pakistan in diverse fields of its expertise.

The Head Office of the Institute is at Islamabad while its main laboratories are located at Islamabad and Karachi. In addition, it maintains four Petroleum Testing Centers at Lahore, Peshawar, Quetta, and Multan. HDIP also operates four CNG Stations, one each at Islamabad, Lahore, Peshawar and Quetta and five Cylinder Testing Labs at Islamabad, Karachi, Lahore, Peshawar and Quetta. The HDIP has 303 employees including 58 Scientists and Engineers.

The following activities were undertaken and the achievements made during the year 2016-17:

4.2. <u>UPSTREAM ACTIVITIES-OIL & GAS EXPLORATION:</u>

A. Ongoing Research Activities:

- **"**Geochemical Investigation of Origin of Heavy Crude Oils from Southern Potwar, Upper Indus Basin**".**

B. Proposed Projects:

- Study of Petroleum System of Kohat Sub-Basin to establish Oil-Oil and Oil-Source correlation.
- Up gradation Laboratory facilities of HDIP for Upstream Activities.(subject to allocation of funds). Up-gradation is a part of PETCORE PC-I submitted for approval.

C. Consultancy and Laboratory Services

1. Contracts/Bids:

a) Contract with PPL:

HDIP Operation Office signed a Contract with PPL for Geochemical Analysis for cuttings/cores 230 samples from Kharan-X1 for geochemical screening.

b) Contract with PPL:

2nd contract was signed with PPL for geochemical screening of 120 well cuttings from Maluk, Sara-01 and Sabzal-1 from Sadiaqabad Block and also Geochemical screening of 150 ditch cuttings from Kalat-1 field of PPL.

2. Samples Analyzed for Geochemical Parameters:

760 samples have been analyzed for geochemical parameters, 372 for Geological and 48 for reservoir characteristics during the reporting period.

3. Clients Served:

The Institute offered services to the following Companies/Organizations:

a) Mari Petroleum Company Ltd.
b) Pakistan Petroleum Ltd.
c) Oil & Gas Development Corporation Ltd.
d) Shell Pakistan Ltd.
e) Pakistan Oilfields Ltd.
f) Schlumberger Pakistan.
g) Saif energy, Islamabad.
h) Pakistan Tobacco Company.
i) Bahria University Islamabad.
j) University of the Punjab, Lahore.
k) Bacha Khan University Charsadda, KPK.
l) University of Azad Jammu and Kashmir, Muzaffarabad.
m) University of Peshawar, KPK.
n) Quaid-e-Azam University, Islamabad.
o) University of Sindh, Jamshoro.
p) National Centre of Excellence in Geology, University of Peshawar, KPK.

D. Organization of Well Core Cuttings in Pakistan Petroleum Core House (PETCORE):

During the report period, Pakistan Petroleum Core house received cores of 9 wells and drill cutting samples of 108 wells. Around 270 drill cutting samples were processed for E&P companies. The Petroleum database at PETCORE was updated.

For value-addition of well samples stored at PETCORE and addition of new techniques/ R&D labs in PETCORE, a PC-1 was prepared and after approval from various forums submitted to Planning Commission.

PETCORE assisted to various oil companies and academia for their ongoing research activities. Samples were provided to Pakistan Petroleum Limited, OMV Pakistan and Center for excellence in Geology, University of Peshawar for analysis.

4.3. DOWNSTREAM ACTIVITIES:

"Petroleum Testing and Quality Control":

HDIP's Downstream (Petroleum Testing and Research Facilities):

On the downstream side, HDIP's main petroleum analytical labs located at Karachi and Islamabad together with smaller units at Peshawar, Lahore, Multan, and Quetta, cover a range of analytical facilities for crude oil, petroleum products and natural gas. These labs provide standard analytical services to the national oil and gas industry and work for the Government as the authorized labs for quality certification.

As per directives of OGRA, HDIP laboratories complex Karachi Operations is providing round the clock laboratory services for sampling and testing of ship samples and imported lubricants to Oil Marketing Companies.

The details of services being provided on behalf of OGRA and M/o Energy (Petroleum Wing) are given hereunder:-

- **a)** Product Quality Control Inspections of Ship samples.
- **b)** Products quality control inspections for imported lubricants.
- **c)** Annual inspections to Blending/Reclamation plants.
- **d)** Quarterly products Quality Control Inspections of Blending/Reclamation/Grease and Transformer plants.
- **e)** Monthly and bi-annual products quality control inspections of OMC, s depots.
- **f)** Monthly and weekly product quality control inspections of refineries.
- **g)** Retail outlet inspections for product quality control as and when directed by OGRA.
- **h)** HDIP has prepared two (2) major projects for the up-gradation of lab facilities through out Pakistan. In this regard 02 XPC-1 have already been submitted to authorities (M/o Planning, Development and Reforms) for approval.

  Total samples analyzed by HDIP Petroleum Testing Labs during the review period are 5,858 resulting in revenue of Rs. 117.66 Millions.

4.4. HDIP CNG OPERATIONS:

HDIP is a technical support Institution for Ministry of Energy (Petroleum Division), operating four CNG Stations located at Islamabad, Lahore, Peshawar, Quetta and five Cylinder Testing Laboratories in the country. For the past 3 decades, HDIP is known for the success story of introducing CNG as an alternative fuel and with continuous endeavor, since 1997, elevating Pakistan to the highest level of global CNG area. HDIP has also initiated function of training of Technical manpower, increase in sale at HDIP CNG Stations by increasing compression capacity, provision of consultancy services to CNG industries, outsourcing of CNG Cylinder Testing Laboratories in major cities of Pakistan, annual inspection of CNG converted vehicles and annual testing of CNG conversion kits manufactured locally/supplied from abroad.

i) CNG Inspection Wing:

During the review period, 468 CNG safety inspections (including Annual Inspections, Re-Inspections, Pre-Commissioning and Accident Inspections) of different CNG Stations were performed, which resulted in revenue of Rs. 7.89 Millions.

ii) CNG Sale at CNG Stations:

During the review period, revenue for sales of CNG at CNG Stations Islamabad, Lahore, Peshawar and Quetta was about Rs. 138.048 Millions.

iii) CNG Cylinder Testing Laboratories Karachi, Islamabad, Lahore, Peshawar, Quetta and outsourced Laboratories:

During the review period, 27,306 CNG Cylinders from the different vehicles and from different CNG Stations were tested in which 5,028 were Vehicle Cylinders and 22,278 were Storage Cylinders of different CNG Stations in Karachi, Islamabad, Lahore, Peshawar and Quetta. Revenue generated from CTLs Islamabad, Karachi, Lahore, Peshawar and Quetta was Rs. 64.26 Millions.

4.5. PUBLICATIONS AND INFORMATION DISSEMINATION:

This Institute maintains the National Energy Database and also plays an effective supportive role in the development of domestic energy sector by disseminating vital technical information in the form of an annual publication “Pakistan Energy Yearbook”. HDIP also provides energy sector data to Ministry of Energy (Petroleum Division) and line ministries, universities, national and international companies/organizations such as WEC, IEA, Oil and Gas Sector Companies etc.

Pakistan Energy Yearbook 2015 and Pakistan Journal of Hydrocarbon Research, Volume 24 has been published by this Institute 2016-17. The publication of Pakistan Energy Yearbook 2016 and Pakistan Journal of Hydrocarbon Research Volume 25 were also worked on.

4.6. CONCLUSION:

HDIP works as the scientific and technical arm of the Ministry of Energy (Petroleum Division) in the oil, gas sectors while at the same time it facilitates private sector investment by providing professional guidance and advice. Although a public sector outfit, it meets about 79% of its budget from its own resources performed to high professional standards.

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CHAPTER 5

OIL AND GAS DEVELOPMENT COMPANY LIMITED

5.1 BACKGROUND:

Oil & Gas Development Company Limited (OGDCL) is the largest Exploration & Production (E&P) Company in Pakistan, listed on Pakistan Stock Exchange as well as on London Stock Exchange.

OGDCL was initially created under an Ordinance in 1961, as a Public Sector Corporation and was later converted from a statutory Corporation into a Public Limited Company w.e.f October 23, 1997. Currently, Government of Pakistan holds 74.97% equity in the Company.

Government of Pakistan (GOP) divested 4.98% of its shareholding in the Company in November 2003 through Initial Public Offering (IPO). GOP further divested 9.5% of its shareholdings through secondary offering in the form of Global Depository Shares (GDS) to international and local institutional investors in December 2006 and 0.5% to the general public in February 2007.

5.2 Physical Achievement during fiscal year 2016-17:

Exploration and Development Activities:
OGDCL's concession portfolio contains a diverse portfolio of exploratory assets with the potential to offer robust short, medium and long term growth opportunities. As on 30th June, 2017, the Company's exploratory assets constituted 58 owned and operated joint venture exploration licenses along with of holding working interest in five (5) blocks operated by other Exploration & Production companies. Having spread across all four provinces of the Country, the Company's exploratory licenses covered an area of 114,581 sq. km as of 30th June 2017, which is the largest exploration acreage held by any E&P Company in Pakistan.

5.3 Seismic Activities:
During the fiscal year 2016-17, the Company carried out intensified exploratory efforts which culminated in 2D and 3D seismic data acquisition of 4,034 Line km and 1,153 sq. km, respectively in various exploratory blocks including Shaan, Mari East, Kharan-3, Kulachi, Pezu, Zorgarh, Ranipur, Khanpur, Dakhni, Nur, Bagla, Soghri, Latamber, Samandar, Wali, Kohat, Baratai, Rasmalan, Rasmalan West, Parkini-A, Parkini-B and Pasni West. During the year, the Company processed/ reprocessed 6,744 Line km of 2D and 5,419 sq. km of 3D seismic data of various blocks. The Company also carried out geological field work of 200 Line km and 58 Line km in Zhob and Lakhi Rud exploration licenses, respectively.

5.4 Wells:
OGDCL during the year under review spud twenty-two (22) wells including eleven (11) exploratory/appraisal wells namely Gundanwari-1, Ranipur-1, Chabaro-1, Kachakhel-1, Bhambhra-1, Dhok Hussain-1, Rasmalan West-1, TAY SW-1, Khanjar-1, Thal West-2 and Thal East-3 and eleven (11) development wells namely Mela-5, Chanda-4, Rajian-10, Nashpa-8, Palli-3, Pasakhi Deep-7, Bitrism West-2, and Qadirpur-56, 57, 58 and HRL-12.

5.5 Discoveries:

OGDCL's exploratory endeavors to locate new hydrocarbon reserves during the year resulted in five (5) new oil and gas discoveries having expected cumulative daily production of 53 MMcf of gas and 320 barrels of oil. Discoveries include Gundanwari-1, Mithri-1 and Chabaro-1 in district Khairpur, Khamiso-1 in district Ghotki and Chutto-1 in district Hyderabad, Sindh province.

5.6 Production:

OGDCL is making every viable effort to accomplish production targets and augment oil and gas production volumes from its owned and operated joint venture fields. The Company's consistent efforts are contributing towards long term production enhancement by focusing on expediting completion of ongoing development projects to further improve oil and gas production of the Company. During fiscal year 2016-17, OGDCL net production stood at 44,041 bpd of oil, 1,051 MMcf per day of gas, 455 tons per day of LPG and 63 tons per day of Sulphur. Likewise, average daily net saleable production of crude oil, gas, LPG and Sulphur including share in both operated and non-operated joint venture fields during the year under review viz a viz fiscal year 2015-16 is as follows:

Fields	Crude oil (Barrels per day)		Gas (MMcf per day)		LPG (Tons per day)		Sulphur (Tons per day)	
	2016-17	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17	2015-16
Operated fields	45,671	41,929	980	973	271	180	63	39
Partners' share in Op JVs	(12,048)	(11,122)	(137)	(144)	(62)	(44)	-	-
Net Production – Op Fields	**33,623**	**30,807**	**843**	**829**	**209**	**136**	63	**39**
Share in Non-Op JVs	10,418	9,802	208	227	246	206	-	-
Average Net Production	**44,041**	**40,609**	**1,051**	**1,056**	**455**	**342**	63	**39**

OGDCL during fiscal year 2016-17 injected twenty-two (22) new operated wells in the existing production gathering system. Injected wells included Qadirpur HRL-11, Kunnar-11, Rajian-9, Nashpa-6 & 7, Unnar-1, Palli Deep-1, Thora Deep-1 & 2, Pasakhi West Deep-1, Pasakhi East-1, TAY-2, 3 & 4, Dars-1, Dars Deep-1, Dars West-1, Shah-1, Khamiso-1, Hakeem Daho-2 and Qadirpur-56 & 57 which cumulatively yielded gross crude oil and gas production of 2,012,718 barrels and 17,185 MMcf respectively. Furthermore, production testing was completed at Sur Qamar-1, Dachrapur-3, Pirkoh Deep-1, Qadirpur HRL-12 and Chutto-1.

5.7 Milestone Achieved:

For the very first time in the history of OGDCL, the Company set a new record by achieving highest ever crude oil production of 50,354 barrels per day on November 28, 2016. Overcoming the psychological barrier of 50,000 barrels per day was part of the Company's Business Plan and has been achieved through sheer hard work, use of best practices and deployment of latest technology. The increase in production has been observed mainly from Nashpa, Sinjhoro, Rajian, Kunnar and Kunnar Pasakhi Deep-Tando Allah Yar.

5.8 Future Outlook:

OGDCL, although operating on a level playing field, still enjoys an edge over other oil companies operating in Pakistan due to its largest technical skill base in the industry, and a strong equipment base, coupled with knowledge and experience of exploring in varied terrains of all four provinces of Pakistan. However, its greatest challenge to date has been to provide impetus to the Government's efforts to attain self-reliance in energy.

Looking ahead, OGDCL on account of financial strength and determination to enhance Country's energy security will spare no effort to continue the intensified exploratory activities and capitalize on new growth opportunities while ensuring that health and safety of people and fulfilling social obligations remain a business priority. The Company believes that the extensive exploration program including fast track seismic data acquisition, data processing/interpretation and active drilling campaigns not only offers the potential for near term value creation but will also provide a platform to embark upon new tasks and opportunities.

CHAPTER 6

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PAKISTAN PETROLEUM LIMITED

(PPL)

6.1. INTRODUCTION:

Pakistan Petroleum Limited was incorporated in 1950 as a public limited company. Being the pioneer of natural gas industry in the country, PPL has been a frontline player in the energy sector, mainly conducting exploration, prospecting, development and production of oil & gas resources since the mid-1950s. As a major supplier of natural gas, PPL today contributes around 22 percent of the country's total natural gas supplies besides producing substantial quantities of Crude Oil, Natural Gas Liquid, Liquefied Petroleum Gas and Barytes.

6.2. VISION:

To achieve energy self-sufficiency for Pakistan by becoming the most successful and efficient discoverer and producer of oil and gas.

6.3. MISSION STATEMENT:

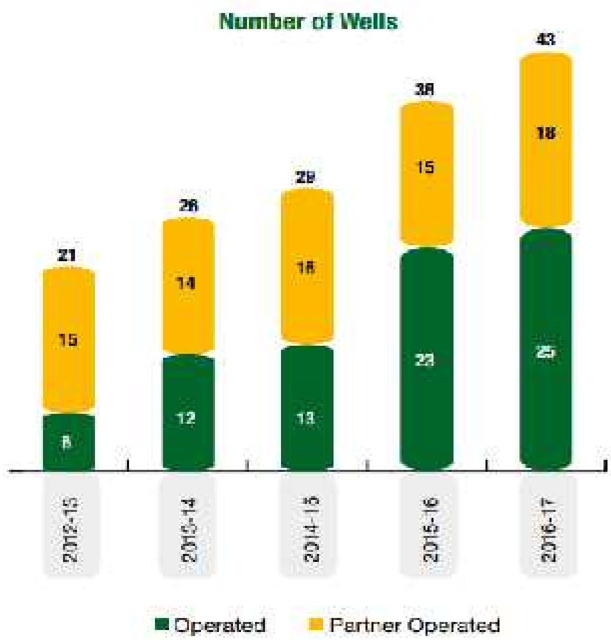
To serve the people of Pakistan in an area critical to their economic development by employing, training and developing the best people available and empowering them to deliver extraordinary results while insisting that they conform to the highest standards of professional and ethical conduct.

6.4. MAJOR ACHEIVEMENTS DURING THE YEAR 2016-17:

2016-17 has been another exceptional year for the Company with the following major achievements:

- The highest ever 43 wells drilled in 2016-17, breaking the record of 38 wells set last year.
- A record number of 25 wells drilled in PPL operated fields during the year, breaking the previous year’s record of 23 wells.
- Second consecutive year of production increase, crossed the mark of 1 Bcfd (annual average), 8% increase over the previous year despite natural decline in major producing fields.
- 5 new development and production leases were granted.
- Achieved 108% Reserve Replacement Ratio, adding 8% more reserves than the entire year’s production.
- Three oil and gas discoveries, two in the Company-operated blocks (Zafir X-1 and Bashar X-1 ST) and one in partner-operated block (Khanan X-1).
- Continuous improvement in drilling efficiency; new records made for fastest wells drilled at Gambat South, Adhi, Kandhkot and Sui fields. Zafir X-1 in Gambat South block was the fastest well (14.3 days) drilled in the Lower Indus basin.

- Drilled one of the longest and deepest horizontal well in Naushahro Firoz tight gas reservoir, the Country's first well to be completed with provision for 10 stage multi-frac.
- Added production of 50 MMscfd gas from the Company's Gambat South Gas Processing Facility-II.
- Successfully obtained formal allocation of gas sales from Kandhkot gas field to Guddu Power Plant, based on 200 MMscfd sales with 72.5% Take or Pay. Thereafter, delivered additional demand from Kandhkot through aggressive infill drilling and facility upgrade resulting in increased field deliverability from 200 to 250 MMcfd.

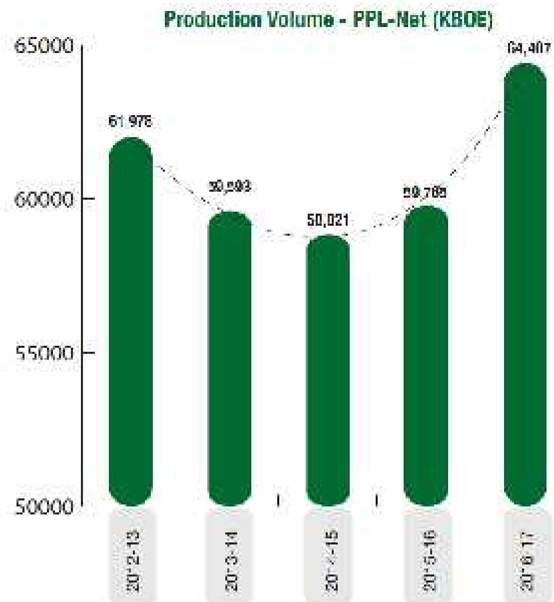


- Acquired 70 MMscfd capacity Rehmat gas plant for production enhancement in Gambat South.
- Finalized agreement to sell gas from Kabir-X1, Gambat South block to third party through virtual pipeline technology (compressed gas transportation through trucks), first time in the Company's history.
- Acquired 336 line Km 2D and 1,987 Sq Km 3D seismic data in operated blocks.
- First ever in-house 3D depth imaging completed with good quality processing results.
- In-house processing of 1,111 line Km 2D and 539 Sq Km 3D.
- Introduced e-Procurement portal providing web based platform for integrated procurement workflow, reducing processing time and simplifying process.
- Delivered over 60,000 man hours of training with more than 200 in-house sessions, including 40 sessions conducted by foreign facilitators.
- Initiated Corporate Donation Programme to further strengthen the Company's CSR efforts for deserving communities in the urban areas of the country.
- Organized the biggest ever sponsored football tournament of the country, PPL-Balochistan Football Cup 2017, to nurture local talent at the grassroots.
- Implemented an HSE related software for efficient Incident Reporting and Risk Management.
- Set up a Legal Compliance system for the Company.

6.5. OPERATIONAL OVERVIEW:

I. OPERATIONS:

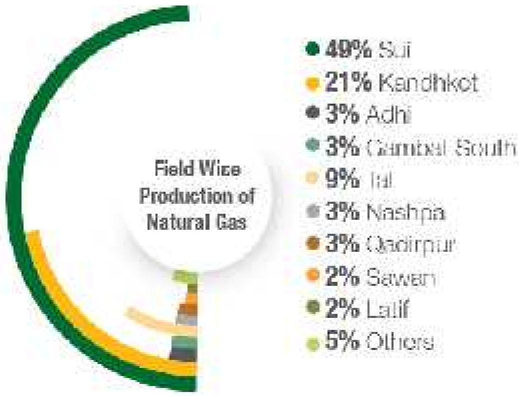
The Company currently operates ten producing fields, i.e. Sui, Kandhkot, Adhi, Mazarani, Chachar, Adam, Adam West, Shahdadpur, Shahdadpur East and Shahdadpur West. In addition, the Company has working interests in 17 partner-operated producing fields. The Company strives to play its role in meeting the country's energy requirements by focusing on production enhancement through the use of advance technology and management skills. Furthermore, the Company has an operated interest in Bolan Mining Enterprise (BME), which is a joint operation between the Company and Government of Balochistan for extracting mineral resources in Balochistan.

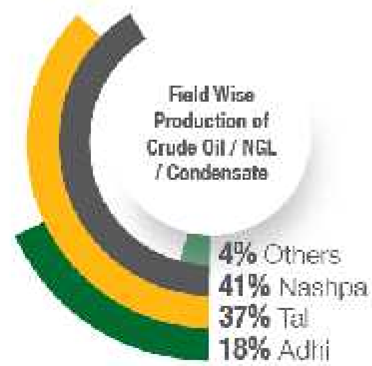


The Company recorded a notable increase in production of hydrocarbons as compared to the previous year. A comparison of the current year's production (net to PPL) to the previous year is given below:

	2016-17	2015-16
Natural Gas (MMcf)	329,367	306,604
Crude Oil / NGL / Condensate (Thousand Barrels)	5,949	5,424
LPG (Metric Tonnes)	81,267	66,597

Production of hydrocarbons during the year including the Company's share from joint operations averaged at about 902 MMscfd of gas, 16,299 bbl per day of oil / NGL / condensate and 223 metric tonnes of LPG per day. The Company's major clients comprise of Sui Southern Gas Company Limited, Sui Northern Gas Pipelines Limited, Central Power Generation Company Limited and Attock Refinery Limited.





Overall, 28 development wells were drilled during 2016-17. It includes 15 wells in PPL operated areas and 13 wells in partner operated areas. Asset-wise key initiatives taken by the Company during the year are given below:

6.6 OPERATED FIELDS:

SUI Gas field:

- Two development wells drilled and completed and one workover undertaken during 2016-17 adding 6 MMscfd. Development well, Sui-95 (P) was also successfully commissioned during 2016-17 adding 10 MMscfd.
- Thirteen production optimization jobs (including workover, water shut-off and stimulation) were carried out during the year. Rig-less well intervention jobs including production logging and pressure build-up testing were carried out on thirty-five wells.
- Production in 2016-17 remained 1% above 2015-16 in addition to arresting 6-7% natural annual decline, the total impact being greater than 8%.

6.7 KANDHKOT Gas field:

- Successfully got formal allocation of gas sales from Kandhkot gas field to Guddu Power Plant, based on 200 MMscfd sales with 72.5% Take or Pay arrangement. Gas sales agreement is finalized and will be signed this year.
- Highest ever production of 250 MMscfd recorded in June 2017. Full year production increased by 30% from last year due to aggressive field development campaign coupled with better offtakes by the customer during the second half of 2016-17.
- Five development wells were successfully completed and commissioned, enhancing field deliverability by 50 MMscfd. Further, three development wells were spud in during the last quarter of 2016-17. Subsequent to the year-end, these wells have been commissioned adding another 30 MMscfd.
- Workover of one well was carried out enhancing 6 MMscfd. Well intervention jobs performed at five wells resulted in gas flow increase of 15 MMscfd.
- Underground loop lines were commissioned resulting in increased gas deliverability of 15-20 MMscfd.

- In-house full field simulation models were updated which assisted in the finalization of optimum locations for future wells.
- Additional compressors are being installed to increase gas compression capacity of the field.

6.8 ADHI Oil-field:

- Adhi field achieved highest ever production of gas: 78 MMscfd, oil: 8,500 BBL/day and LPG: 270 MT/ day.
- Three development wells Adhi-26 (T/K), 27(T/K) and 17 (T/K/S) were completed and commissioned, adding 15 MMscfd of gas and 2,100 bbl/day of oil.
- Development well Adhi-28 was drilled and completed. Commissioning is in progress.
- Workovers of wells Adhi-15 (T/K/S) and Adhi-9 (T/K) were successfully completed, adding 14 MMscfd gas and 1,000 bbl/day oil.
- Development wells Adhi-29 (T/K) and Adhi-30 (T/K) and exploratory well Adhi South X-1 were spud-in and their drilling is progressing successfully.
- Adhi Plant-III completed with average production of gas: 30 MMscfd, oil: 3,000 BBL/day and 120 MT/ day.
- FEED study of Adhi compression project was completed and contract for project execution was awarded.
- Process initiated for the extension of Adhi Mining Lease beyond its expiry i.e. 2024.

6.9 GAMBAT SOUTH, HALA AND MAZARANI GAS FIELDS:

- Successful commissioning of 50 MMscfd GPF-II at Gambat South.
- Tie-in of Sharf-2 well and increase of 50 Bcf reserves in Gambat South.
- Completion of third party reserves certification of five fields of Gambat South (Shahdadpur, Shahdadpur West, Shahdadpur East, Hatim-Faiz and Kabir) and three fields of Hala (Adam, Adam West and Fazl).
- D&PLs granted for three Gambat South fields (Shahdadpur, Shahdadpur West and Shahdadpur East) and one Hala field (Adam West).
- LOA was signed for third party EWT sale of Kabir-X1 gas through virtual pipeline (compressed gas transportation through trucks).
- Acquired 70 MMscfd capacity Rehmat plant for capacity enhancement from Gambat South as GPF-IV.
- Agreement reached with SSGCL to sell gas from Gambat South fields.
- An LPG Sale Purchase Agreement was signed with marketing companies for the first year of sale from Gambat South block fields.
- Added 2 MMscfd gas to production in Mazarani field through drilling of development well Maz-5.

6.10 PARTNER OPERATED AREAS:

TAL Block (operated by MOL Pakistan):

- Exploratory well Mardankhel-1, a recent discovery, was successfully commissioned. The well flowed at 40 MMscfd of gas with 4,000 bbl/d of condensate.
- Development well Makori East–5 was drilled, completed and commissioned. The well flowed at 8 MMscfd of gas with 1,400 bbl/d of oil.
- Appraisal wells Mardankhel-2 and 3 were tested at 13 & 14 MMscfd of gas with 1,770 and 450 bbl/d of condensate respectively.
- Development well Maramzai-4 was also completed and tested with flow rate of 23.5 MMscfd of Gas and 600 bbl/d of condensate.
- Drilling of Tolanj East-1 exploratory well is in progress.
- Drilling of Makori East-6 appraisal well has been completed and well logging is in progress.

6.11 KIRTHAR Block (operated by POGC Pakistan):

- Development and Production Lease granted for Rehman field.
- Exploratory well Rizq-1, a recent discovery, was successfully commissioned. The well flowed at 11 MMscfd.
- Development well Rehman-2 was also commissioned with flow-rate of 4 MMscfd.
- Development well Rehman-3 was successfully completed and tested as a gas producer with 13 MMscfd.

6.12 QADIRPUR Gas field (operated by OGDCL):

- Development wells QP-56, QP-57, HRL-11 and HRL-12 were successfully drilled, completed and commissioned. Incremental production of 20 MMscfd was achieved from these wells.
- Development well QP 58 was spud in 2016-17 and well completion is in progress.

6.13 SAWAN Gas field (operated by OMV Pakistan):

- Rig-less workover / stimulation jobs were carried out at five wells that resulted in incremental production of 15 MMscfd gas, arresting the overall natural decline.

6.14 NASHPA Oil field (operated by OGDCL):

- Development wells Nashpa-6 and Nashpa-7 were commissioned in 2016. Incremental production from these wells were 23 MMscfd of gas with 4,430 bbl/d of oil.
- Drilling of development wells Mela-5 and Nashpa-8 is in progress.
- Drilling of exploratory wells Khanjar-1 and Kachakhel-1 is in progress.

6.15 MIANO Gas field (operated by OMV Pakistan):

- Development well Miano-20 was plugged and suspended due to tight sands while development well Miano-21 was plugged and abandoned due to water bearing sands.

6.16 BOLAN MINING ENTERPRISES:

Barytes production and sales remained relatively less viz-a-viz previous year primarily due to reduced drilling activity in the region. Efforts are under-way to increase sales by offering competitive prices. Export orders are gradually picking up as a result of competitive prices and improvement in drilling activity.

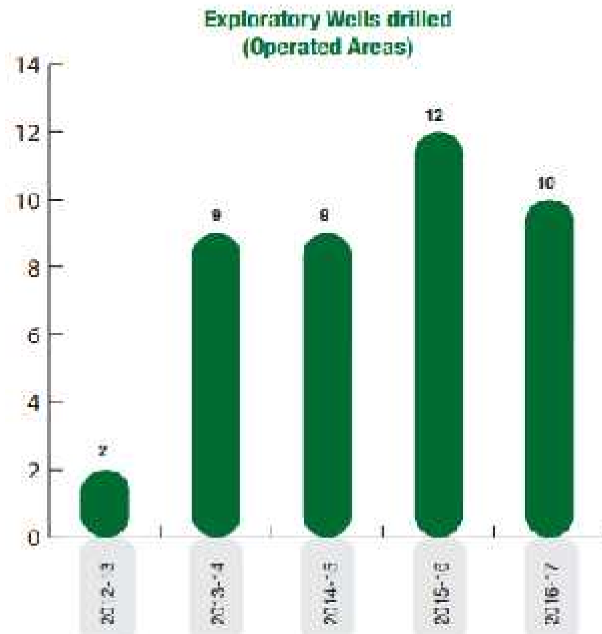
In addition to barytes production, major enhancement in the scope of BME operations is being considered through Baryte Lead Zinc (BLZ) project and installation of an iron ore beneficiation plant.

The details of projects are as under:

Projects	Status
• Nashpa Fields: EPCC LPG Plant	75% of construction and procurement activities were completed. Remaining work in progress.
• Tal: Markori EPF Relocation to Tolanj	75% of engineering, procurement and construction has been completed. Remaining work is in progress.
• Tal: Markori East Compression	Procurement completed. 60% of construction and fabrication activities were completed. Remaining work in progress.
• Tal: Mamikhel Compression	50% construction work has been completed, the remaining work is in progress.
• Sawan Gas Field: Revamping of Front End Compression	Construction work is in progress.
• Latif Field: De-bottlenecking of Latif Sawan flow-line project	Engineering works have been completed, procurement is in progress.
• Nashpa: Mela Development Project	Third Party feasibility study is ongoing for development option of LPG recovery.
• Kirthar: De-bottlenecking project	Rehman debottlenecking study is being initiated.

6.17 EXPLORATION:

The Company along with its subsidiaries has a portfolio of 44 exploration blocks, of which 26 are operated blocks, including one in Iraq, and 18 are partner-operated including three off-shore blocks in Pakistan and two onshore blocks in Yemen.



The Company strategically holds a diversified exploratory portfolio with a mix of high-risk, high-reward and low risk, low/medium-reward assets. Furthermore, as evident historically, from the Company's business cycle, with production starting within a few years of exploration investment, this strategy will position the Company on the frontline in reaping benefits when oil prices rebound in future.

The Company's seismic operations increased several-fold after addition of blocks acquired during the 2009 and 2013 bidding rounds. During the last six years, the Company as an operator acquired 7,405 L Km 2D seismic data and 8,740 Sq Km 3D seismic data, including 318 Sq Km 3D seismic in Block-8, Iraq. After the seismic surveys in these blocks, drilling of wells started from 2012-13 and a total of 42 exploration wells have been drilled resulting in 16 discoveries in the Company's operated areas with a success ratio of 1:2.6.

During the year, the Company acquired 336 L Km 2D seismic data in three blocks – Khipro East, Malir and Dhok Sultan – and 1,987 Sq Km 3D seismic data in another seven blocks: Dhok Sultan, Gambat South, Shah Bandar, Sirani, Kotri, Kotri North and Block-8 (Iraq).

Block wise details of exploratory work program delivered during the year in the company's operated blocks is provided as under:

The Company spudded ten exploratory wells in North, South and Frontier areas across the country during the year and made two hydrocarbon discoveries in the Company operated blocks, while one discovery was made in a partner-operated block.

Company Operated Frontier Block:

Kharan, Kharan, East and Kharan West	• First exploration well, Kharan X-1 was plugged and abandoned. • Acquisition of 500 L Km 2D seismic is in progress
Kalat	• Drilling of first exploration well, Kalat X-1 is in progress • Acquisition of 300 L Km 2D seismic is planned to mature additional leads into drillable prospects.
Hub	• Rig mobilization for drilling of first exploration well Hub X-1 is in progress • Land acquisition for second exploration well Hub X-2 is in progress • Microbial Geo-Chemical Exploration (MGCE) survey completed
Bela West	• Land acquisition for first exploration well, Bela West X-1 is in progress
Nausherwani	• Site construction for first exploration well Nausherwani X-1 is in progress
Khuzdar	• Acquisition of 100 L Km 2D seismic data is planned to mature remaining leads into drillable prospects.
Margand	• Acquisition of 225 L Km 2D Seismic data is planned from September 2017. • OMV assigned its working interest of 50% to the Company with effect from July 1, 2016.
Company Operated North Blocks:	
Dhok Sultan	• 3D seismic data acquisition of 350 Sq Km for appraisal area and 2D seismic data acquisition of 261 L Km for exploration completed. • Plan to sidetrack the existing Dhok Sultan X-1 due to suspension in production from original well. • Another prospect is being matured for drilling of 2nd exploration well.
Hisal	• Location of 1st exploration well is asked on ground with possible spud-in during February, 2018
Sadiqabad	• Petroleum Modelling study and 3D seismic interpretation is in progress to de-risk the deeper prospects.
Karsal	• Location of 1st exploration well Talagang X-1 finalized and land acquisition is being pursued with Punjab Forest Department
Zindan	• Due to remaining low prospectivity of the area, block has been relinquished w.e.f 15th Nov, 2016

Company Operated South Blocks:	
Gambat South	• 13th exploration well Samar X-1 was plugged and suspended for further evaluation. • 14th exploration well, Zafir X-1 completed as gas / condensate producer. During testing, well flowed 34.2 MMscfd of gas and 358 bbl/d condensate. • 3D seismic acquisition of 800 Sq Km completed • Evaluation of tight gas potential for appraisal of Hadi X-1A discovery is in progress.
Hala	• 5th exploration well Bashar X-1 St was completed as gas producer. During testing, well flowed 8.7 MMscfd of gas. • Drilling of 6th exploration well Zarbab X-1 completed and testing is underway.
Kotri	• 2nd exploration well Kotri X-2 was plugged and abandoned. • 3D seismic data acquisition of 375 Sq Km completed • Evaluation of Tight Gas potential for appraisal of kotri X-1 discovery is in progress.
Kotri North	• 3D seismic data acquisition of 475 Sq Km completed • Operatorship with 50% working interest of the Block transferred to UEPL.
Sirani	• 3D seismic data acquisition of 312 Sq Km completed
Zamzama South	• 1st exploration well Manchar X-1 was plugged and suspended for further evaluation
Naushahro Firoz	• Drilling of NF X-1 appraisal well was completed by re-entry in to the existing well. Horizontal section of 1,300m was completed with 10 stages open hole multi stage frac completion. During initial testing, the last stage interval with natural fractures flowed 1.3 MMscfd. Further testing, including multistage frac is in progress.
Malir	• In-fill 2D seismic data acquisition of 34 L Km completed. • Reprocessing of 2D seismic data over Malir X-1 structure is planned to confirm any leftover potential.
Shah Bandar	• 3D seismic data acquisition of 372 Sq Km completed. One prospect matured for drilling.
Jungshahi	• NoC from Ministry of Defence for northern part of the block and DGPC approval for extension in EL is awaited.
Khipro East	• In fill 2D seismic data acquisition of 110 L Km completed. One prospect matured for drilling.

CHAPTER 7

Government Holdings (Private) Limited

7.1 INTRODUCTION

Government Holdings (Private) Limited (GHPL) manages Government of Pakistan's working interest in upstream petroleum Joint Ventures. GHPL participates in all Joint Ventures as non-operator. The company monitors the activities of the Joint Ventures on behalf of the Government of Pakistan.

GHPL is non-operating partner with local and foreign oil and gas exploration and production companies. Major operating companies in partnership with GHPL are UEPL, OPII, OMV, Hycarbex, OMEL, MOL, OGDCL, MPCL, PPL, POL and PEL.

GHPL has been assigned GOP's working interest in 90 joint ventures. Current portfolio consists of:

a. 18 onshore concessions in exploration stage under Petroleum Concession Agreement (PCA),

b. 08 concessions in offshore area under Production Sharing Agreement (PSA),

c. 76 Development and Production Leases (D&PLs), and

d. 03 Farm-in onshore exploration licenses with 25% interest on full participation basis with PPL.

e. 26 onshore exploration licenses with OGDCL, PPL, OMV, Al-Haj, KUFPEC and Tallahassee (Petroleum Policy 2012) ranging from 2.5% to 5% on full sharing basis.

f. 06 New Farm-in onshore exploration licenses with 15-20 % W.I on full sharing basis under 2001, 2009 & 2012 Petroleum Policy with OGDCL (Assignment Agreement in progress)

7.2 MAJOR EXPLORATION ACTIVITES

Seismic Acquisition Activity (during 2016-17):

Block	Operator	Seismic	
		2D L.km	3D Sq.km
Zorgarh	OGDCL	513	-
Kulachi	OGDCL	554	-
Pezu	OGDCL	218	-
Pasni West	OGDCL	245	-
Khanpur	OGDCL	-	234
Dhok Sultan	PPL	248	350
Malir	PPL	20	-
Paharpur	KUFPEC	1031	-
Mehar	OMV	146	-
Ranipur	OGDCL	-	184

Gambat South	PPL	-	526
Sirani	PPL	-	496
Shah Bandar	PPL	-	15
Zamzama	OPII	-	28
TOTAL		**2,975**	**1,833**

7.3 E&P ACTIVITES IN OFFSHORE BLOCKS

GHPL being licensee in offshore is managing the following 08 Production Sharing Agreements (PSA) by 04 different Operators:

- Offshore Indus N, G & Eastern Offshore Indus C Eni Pakistan Limited (03)
- Offshore Indus U & S UEPL (02)
- Offshore Indus R & Eastern Offshore Indus A OGDCL (02)
- Offshore Indus J PEL (01)

7.4 DRILLING ACTIVITIES

Following drilling activities were carried out in different blocks in which GHPL is Joint Venture Partner.

Wells Status	2015-16	2016-17
Exploration & Appraisal Wells	**25**	**25**
Development Wells	**07**	**12**
Discoveries	**11**	**10**

7.5 DISCOVERIES 2016-17

A total of 10 discoveries were made during the year 2016-17:

i. Rawat-1, Makrani-1 & Mohib-1 discoveries were made in MIRPURKHAS Block by UEPL.
ii. Dang-1 discovery was made in KHIPRO Block by UEPL.
iii. Gudanwari-1 discovery was made by OGDCL in BITRISM Block.
iv. Mithri-1 & Chabaro-1 discoveries were made by OGDCL in KHEWARI Block.
v. Khamiso-1 discovery was made by OGDCL in GUDDU Block.
vi. Chutto-1 discovery was made by OGDCL in NIM Block.
vii. Zafir-1 discovery was made by PPL in Gambat South Block.

7.6 PRODUCTION STATUS

GHPL's share of average daily production from all fields during FY 2016-17 is as follows:

	2015-2016	2016-2017
Oil/condensate (BPD)	**8,706**	**9,001**
Gas (MMSCFD)	**240**	**253**
LPG (MT/D)	**113**	**125**

7.7 MAJOR PRODUCTION & DEVELOPMENT ACTIVITIES

7.7.1 SAWAN – Operated by OMV
(GHPL working interest 22.5%)

Gas production from Sawan continued in the year 2016-17 through front-end compression with a natural declining trend. The average gas production from the field during June 2017 was 56 MMSCFD (Million Standard Cubic Feet Per Day). Several well intervention activities including additional perforations/scale cleanout jobs were carried out to maintain/enhance production.

FEC Revamp project has been finalized which would result in additional recovery of gas and extension of field life up to 2019. Moreover, Sawan JV agreed and commenced to process Latif JV gas resulting in efficient utilization of processing facilities and extension of field life for both fields.

7.7.2 GAMBAT / TAJJAL – Operated by OMV
(GHPL working interest 25%)

Gas production from the Tajjal field in Gambat Exploration License area continued in the year 2016-17 at 2.40 MMSCFD during June 2017. The field is on natural decline & producing through Sawan Font End Compression. Only Tajjal-1 well is on production. Scale clean-out jobs are carried out at Tajjal-1 to ensure production continuity. Operator has relinquished Gambat exploration license.

7.7.3 ZAMZAMA – Operated by **OPPL**
(GHPL working interest 25%)

Zamzama field produces gas and condensate. The Operatorship has changed from BHPP to OPII w.e.f January 2016. The field was put on front-end compression in August 2011 to arrest the production decline in Zamzama field. The average production from the field during June 2017 was 86 MMSCFD Gas and 410 BCPD (Barrels of condensate per day). The field is on natural decline. Several well intervention activities including additional perforations were carried out to maintain/enhance production. 3D seismic acquisition was carried out to confirm the structure size/further potential. Moreover, workovers were carried out to exploit the potential of Khadro formation in Zam-5 & Zam-1.

7.7.4 CHANDA – Operated by OGDCL

(GHPL working interest 17.5%)

Average production from the field during June 2017 was 3.25 MMSCFD; 1,395 BOPD (Barrels of Oil per day) and 09 MT/D of LPG (Metric Ton per Day) from 03 wells. Membrane unit was installed to control CO2 within approved limits. Chanda-4 development well is under drilling and expected to come on production by Oct. 2017. Chanda-5 well is also planned to enhance/maintain production.

7.7.5 TAL EXPLORATION LICENSE – Operated by MOL

(GHPL working interest 15%)

Project work on Makori Gas Processing & LPG Plant was successfully completed by February, 2014 and LPG production also started in March, 2014. Total average production from the Tal Block (Manzalai, Makori, Mamikhel, Maramzai,Makori East & Mardankhel) during June 2017 was 313 MMSCFD Gas, 23,406 BOPD Oil & condensate & 500 MT/D LPG. Plant and process optimization activities were carried out to enhance the production of LPG.

Development & exploration drilling continued during the year. Projects updates include; (1) work on Central Front End Compression remained in progress, (2) work was completed on water disposal facilities, (3) work is underway to develop Tolanj & Tolanj West discoveries by relocation of Makori EPF as Tolanj Processing facilities. Several well interventions and reservoir monitoring activities were carried out during the year.

a. **Manzalai**: Average production from the field during June, 2017 was 35 MMSCFD, 475 BCPD & 4 MT/D LPG from 06 wells. Compression remained operational to support the field's declining pressures & production rates.

b. **Makori:** Average production from the field during June, 2017 was 1.81 MMSCFD, 118 BOPD and 4.3 MTD of LPG.

c. **Mamikhel** is the third discovery and is on production under since June 27, 2011. DOC & FDP have been approved. Average production during June, 2017 is 22 MMSCFD, 652 BCPD & 4.90 MT/D LPG from two wells. Wellhead compression is being installed by relocating one of the Manzalai compressors.

d. **Maramzai** is the fourth discovery made in August 2009, producing since January 2011. DOC & FDP have been approved. Average production during June 2017 is 127 MMSCFD, 4,332 BCPD and 118 MTD of LPG from the three wells. Maramzai-4 development well drilling has been completed and well flow line laying and tie-in is in progress.

e. **Makori East** is the fifth discovery in the block and is producing since June 2012. Average production during is 85 MMSCFD, 14,445 BOPD and 353 MTD of LPG from five wells. Makori East-5 development well drilling was completed and well tied-in and put on production. Drilling of Makori East-6 is in progress.

f. **Mardankhel** discovery is the sixth discovery in the block. Discovery was made during 2014-15. Mardankhel-1 well was put on production under EWT after completion of flow line and tie-ins with processing facilities. Drilling of two appraisal wells continued during the year. Delays in work encountered due to local's issues, tough & difficult terrain and security access issues in Mardankhel area..

7.7.6 HASEEB (YASIN E.L) – Operated by Hycarbex
(GHPL working interest 25 %)

Haseeb-1 was discovered on May 25, 2005. Sui Main Limestone is the main producing reservoir. Gas production from the field started in April, 2011 under EWT. The production declined from 10 MMSCFD to zero due to extensive water breakthrough. The current field production is Nil as the well has watered out. Several well intervention activities were carried out to revive the production. Further appraisal well and seismic acquisition are being planned to put the field back on production.

7.7.7 MAZARANI – Operated by PPL
(GHPL working interest 12.5%)

Production from the field started in June, 2003. Average production from the field during June 2017 was 5.45 MMSCFD and around 13 BCPD. Mazarani-5 well was drilled and put on production. Mazarani Deep Exploration well was also drilled and was P&A.

7.7.8 PARIWALI – Operated by POL
(GHPL working interest 17.5%)

Average production from the field during June, 2017 was 3.85 MMSCFD, 340 BOPD and 11.5 MT/D of LPG. This field is on natural decline. Reservoir simulation study was carried out and joint venture partners are exploring different strategies to exploit available potential.

7.7.9 BADIN-III & MEHRAN – Operated by UEPL
(GHPL working interest 25%)

These small fields have depleted. 3D seismic was carried out in Mehran Block to evaluate further potential. Average production from the field during June 2017 was nil. Further drilling is being planned to exploit the remaining potential.

7.7.10 MIRPUR KHAS & KHIPRO – Operated by UEPL
(GHPL working interest 25%)

Current exploration & drilling campaign in these blocks resulted in 04 minor discoveries, which are under evaluation for development. Moreover, development wells were also drilled. Total average production from these two blocks during June 2017 was 450 MMSCFD of Gas, 3,300 BPD of Condensate and 50 MT/D of LPG.

Major projects in progress are up-gradation of Naimat LPG Plant, Naimat Flare Upgrade, Naimat Sales Gas Compression, Naimat H2S Solid Scavenger and Naimat Phase-5A3. Projects completed during the year are Rajani-Kauser Flow Line project and Wellhead control systems. Due to non-acceptance of condensate by the refineries, condensate is being exported regularly. Several efforts were carried out, for example, artificial lift, fracs, compression projects etc. of which some are implemented as per requirement to ensure production continuity and enhance recovery.

7.7.11 BLOCK-22 – Operated by PEL

(GHPL working interest 22.5%)

Average Gas production from Block-22 during June 2017 was about 11.30 MMSCFD. Water production has increased and a disposal well is planned to meet the required water disposal.

7.7.12 REHMAT & SAQIB – Operated by OMEL

(GHPL working interest 25%)

Production declined rapidly from Rehmat field. Currently there is no production from Rehmat field due to high water production and became non-commercial. Saqib-1A production reached the Plant Turn-down capacity (4 MMSCFD approx.) and was shut-in & Rehmat Gas plant was mothballed. However, Saqib-1A DOC & FDP approval is still awaited. Rehmat D & PL was relinquished and Rehmat gas plant was handed over to GoP for further disposal as per rules. Rehmat Wells are plugged and abandoned.

Some exploration prospects are under evaluation in Mubarak EL.

7.7.13 MEHAR – Operated by OMEL

(GHPL working interest 25%)

Field development plan was approved in May, 2008. M/s OMEL took over the operatorship from Petronas in December 2010. Project work on Gas Processing plant was completed in November, 2013. Average production from the field during June, 2017 was about 11 MMSCFD and 625 BOPD from three wells. Several well intervention and work over of Mehar-2 was carried out to ensure production continuity. Mehar-3 Wellhead Compression was commissioned. Mehar-3 well Sidetrack is planned to tap the reservoirs horizontally.

DOC & FDP of Sofia discovery were submitted and approved by GOP. Workover to run the completion has been carried out. Currently flow line construction, laying and installation is in progress to tie-in with Mehar Processing Facilities.

Seismic was conducted in Mehar EL and after processing & interpretation, drillable prospects are being evaluated.

7.7.14 MINWAL – Operated by POL

(GHPL working interest 17.5%)

Average production from Minwal during June 2017 was 99 BOPD. This field is being produced using artificial lift. Due to scaling issues & downhole problems, a work over was conducted during the year to enhance/stabilize production from the field. During work over, additional perforations were added to enhance production.

7.7.15 CHACHAR – Operated by PPL

(GHPL working interest 25%)

Production from the field started in August 2007. Production from the field declined rapidly and reached at minimum plant turndown capacity. Average production from the field during June 2017 was 2.8 MMSCFD through Kandhkot processing facilities.

7.7.16 MELA D & PL - Operated by OGDCL

(GHPL working interest 15%)

Mela-4 development well was completed and put on production in Dec 2015. Average production from the field during June 2017 was about 07 MMSCFD and 1,400 BOPD. Up-gradation of Mela processing facilities and Wellhead compression are planned. Mela-5 Development well is under drilling. Workover on Mela-1 is planned to revive production. Also, Mela-6 development well has also been approved and is expected to be drilled in next financial year.

7.7.17 NASHPA D & PL - Operated by OGDCL

(GHPL working interest 15%)

Nashpa field was discovered through Nashpa-1 well on 13th October 2009. The well was put on production under EWT in May, 2010. DOC & FDP have been approved. Average production from the field during June, 2017 was about 95 MMSCFD and 23,000 BOPD. Nashpa-6 & Nashpa-7 development wells were completed and put on production. Nashpa-5 exploration well is under EWT production.

Work on Nashpa EPCC project to install dedicated processing facilities to process gas, oil & LPG (started in January, 2016) remained in progress and is expected to be commissioned during 4Q, 2017.

7.7.18 NIM E.L – Operated by OGDCL

(GHPL working interest 22.5 %)

The average production from Nim E.L during 2016-17 was around 1.5 MMSCFD & 155 BOPD. An Oil discovery, Jarwar-1 well remained producing through artificial lift (Jet pump) under EWT. Chutto-1 discovery was made in this block. Options to put Chutto-1 discovery and Sand wells on production are under review.

7.7.19 SINJHORO E.L – Operated by OGDCL

(GHPL working interest 22.5 %)

Dehydration and LPG Recovery plant have been installed at Sinjhoro Gas Field. Partial production in Phase-I (without the Amine Gas treatment) started on January 4, 2013 at 10 MMSCFD and 800 BCPD.

In Phase-II of the project, construction work is completed for installation of the Gas Compressors, installation of gas gathering pipelines for the remaining wells and Membrane Unit for CO_2 removal. LPG production started by 3Q, 2015 followed by increase in production by tie-in of additional wells. Average production from the field during June 2017 was about 41 MMSCFD Gas, 2,700 BOPD Oil/Condensate and 150 MT/D of LPG.

7.7.20 JAKHRO D&PL – Operated by OGDCL
(GHPL working interest 22.5 %)

Jakhro field is being processed at Sinjhoro processing facilities. After installation of pipeline and allied facilities, production started from Jakhro Field in October 2013. LPG production started by 3Q, 2015. Jakhro is being processed at Sinjhoro Field. Separate metering & separation facilities have been installed for proper gas allocation. Average production from the field during June 2017 was about 1.21 MMSCFD , 26 BOPD and 4.30 MT/D of LPG from 01 well. Production volumes from Jakhro field are restricted to control high Nitrogen content in Sales gas commingled through Sinjhoro processing facilities.

7.7.21 GUDDU EL – Operated by OGDCL
(GHPL working interest 22.5 %)

Gas from Guddu field is being supplied to M/s Engro. After installation of pipeline and allied facilities, production started from Guddu Field in January 2014. Average production from the field during June 2017 was about 11 MMSCFD from 06 wells. DOC was submitted for Maru East and Khamiso-1 was put on production under EWT. Further exploration wells are planned.

7.7.22 ZARGHUN SOUTH D&PL – Operated by MPCL
(GHPL working interest 17.5 %)

Field development activities were completed and production started from Conventional & Tight gas wells in 4Q 2014. The facilities included Dehydration, Amine Gas treatment unit and allied facilities. Moreover, SSGCL has also actively completed the Sales gas line. GoP has approved Dunghan reservoir as a Tight Gas reserves.

Average production from the field during June 2017 was about 15.45 MMSCFD & 07 BOCD. Zarghun South-3 well was successfully drilled/completed and put on production. Security issues remain a threat, however, are being managed for smooth operations.

7.7.23 TANDO ALLAH YAR EL – Operated by OGDCL
(GHPL working interest 22.5 %)

Field development activities were completed which including Gas gathering Network, Sales gas Line, Well Head Compression, Dehydration plant, Amine Gas treatment plant & LPG Plant. TAY gas is being processed at OGDCL's KPD Plant. Production started from January 2017. Average production from the field during June 2017 was about 65 MMSCFD Gas, 2,000 BOPD Oil/Condensate and 115 MT/D of LPG. Further process and production optimization is in progress.

7.7.24 GAMBAT SOUTH EL – Operated by PPL
(GHPL working interest 25 %)

EWT production started from Kinza Well in February 2015 after installation of processing facilities, flow line & sales gas Line. The development activities included installation of Dehydration plant, Amine Gas treatment plant and allied facilities. Kinza was shut down and Shahdad Well remained on production under EWT.
Total Field production during June 2017 was about 60 MMSCFD Gas, 756 BPD condensate and 13 MT/D of LPG

Production from Shahdad (GPF-I) was about 9 MMSCFD & 90 BPD. GPF-II: Plant commissioned in August 2016 and production started from Sharaf-1 well through GPF-II. Average production during June 2017 was about 51 MMSCFD Gas, 666 BPD condensate and 13 MT/D of LPG.

Projects update includes GPF-III: Work started on EPCC-II project in April 2016. Expected completion is 1Q 2018 to process gas from Wafiq & Nasr.

EWT is planned on Kabir X-1 well. Development options are under review to exploit the reserves of Hatim discovery due to its low heating value gas. Zafir X-1 discovery has been made and development options are underway to produce from this discovery.

3D seismic acquisition was carried out in the block and further exploration activities are being undertaken. DOC & FDP have been approved as Shahdadpur West (Shahdad Discovery) and Shahdadpur (Wafiq, Sharaf & Nasr Discoveries).

7.7.25 JHAL MAGSI SOUTH D&PL – Operated by OGDCL

(GHPL working interest 22.5 %)

Field development activities were in progress including Dehydration plant, Amine Gas treatment plant and allied facilities to start production from this field. Procurement of material has been completed. However, construction work has stopped, as M/s SSGCL did not start work on Sales gas line. Alternate field development options are under review.

7.7.26 DHOK SULTAN – Operated by PPL

(GHPL working interest 25 %)

Dhok Sultan Discovery was made in 2016-17. Preparations for EWT were in progress. However, due to well downhole problems; rig work over was carried out but remained unsuccessful. Third party analysis and way forward is under investigation. Recently, 2D/3D seismic acquired and further exploration/development plans are being prepared.

7.8 INVESTMENTS, REVENUES, ROYALTY AND TAX

During 2016-17 GHPL invested Rs. 2.5 billion in the exploration activities and Rs. 14.1 Billion in the development of discovered oil and gas fields.

Revenue of Rs 48.1 Billion was generated from sale proceeds of oil, gas and LPG. Out of the revenues Rs. 4.5 Billion were paid to GOP as royalty & Rs. 9.9 Billion as income tax. The amount of Rs. 20 Billion was paid as cash dividend and Rs. 20 Billion in the form of bonus shares were made to GOP during the financial year 2016-17.

CHAPTER 8

SUI NORTHERN GAS PIPELINES LIMITED

ACHIEVEMENTS FOR THE YEAR 2016-17

S. No.	ITEM	UNIT	TARGET (2016-17)	ACHIEVEMENT (2016-17)
1	LPG Production	-	-	-
2	Gas consumers (Addition)	Million	0.5	0.421
3	Supply of Gas to Villages/ Abadies (Addition)	Nos	-	176
4	Transmission Pipelines (Addition)	Km	-	605.97
5	Distribution Pipelines (Addition) Main & Services	Km	-	8617
6	System Losses	%	-	8.10%
7	CNG Stations (Addition)	Nos	-	-
8	LPG Stations (Addition)	-	-	-

CHAPTER 9

SUI SOUTHERN GAS COMPANY LIMITED

ACHIEVEMENTS FOR THE YEAR 2016-17

	2015-16	JUL 16 - JUNE 17		Present Status as on 30.06.2017
		Target	Achievement	
NUMBER OF GAS CONSUMERS				
Domestic	95,028	103,908	86,012	2,812,211
Commercial	294	426	318	22,764
Industrial	31	33	29	4,196
Total	**95,353**	**104,367**	**86,359**	**2,839,171**
NATURAL GAS TRANSMISSION / DISTRIBUTION NETWORK				
Transmission	46	451	337	3,973
Distribution	545	522	519	35,431
Services	326	278	239	10,088
Total	**917**	**1,251**	**1,095**	**49,492**
A) INVESTMENT IN GAS SECTOR (Rs. Million)				
Transmission Projects	1,842	9,265	312	24,242
Distribution	4,637	6,403	4,612	60,800
RLNG	18,080	20,524	15,141	33,763
Others	1,806	2,911	1,151	28,561
Total	**26,365**	**39,103**	**21,216**	**147,366**
Domestic	317	424	288	4,501
Commercial	2	3	2	115
Industrial	6	8	6	410
Total	**325**	**435**	**296**	**5,026**
TOTAL INVESTMENT (A+B)	**26,690**	**39,538**	**21,512**	**152,392**

Note: Figures are un-audited and subject to change

CHAPTER 10

Inter State Gas Systems (Private) Limited

10.1 Introduction

- ISGS is a public sector company set up by the Government of Pakistan and is mandated to act as a bulk importer of natural gas for re sale in bulk to national gas distribution companies, develop gas infrastructure projects, assess augmentation requirements of gas transmission networks and identify, analyze and assess opportunities for reliable sources to import natural gas.
- The present government has laid great emphasis on the development of infrastructure particularly upgrading and emergent national roads and highway network. The road connectivity across the country shall act as a major catalyst in access to markets, greater cross country connectivity and facilitation in trade and commerce.
- Pakistan is poised to be on a sustained growth trajectory upon the successful completion of the China Pakistan Economic Corridor which under the aegis of China's landmark OBOR, One Belt One Road initiative will act as a hub of movement of goods and produce across continents.
- As the momentum of economic growth shifts towards Asia, Pakistan is ideally placed to take advantages of this shift and must position itself in reaping maximum rewards.

TRANSNATIONAL GAS PIPELINE PROJECTS

- In order to meet the gas supply-demand gap, The Government of Pakistan is pursuing multiple projects, including import of Liquefied Natural Gas (LNG) Iran Pakistan (IP) & Turkmenistan Afghanistan Pakistan India (TAPI) Gas Pipeline Projects. The Government of Pakistan has also embarked on a much needed programme of infrastructure development by conceiving the North South Gas Pipeline, a new pipeline that will transport gas from the South to the North of the country.

IRAN-PAKISTAN (IP) GAS PIPELINE PROJECT:

- Despite an adverse international scenario, stringent imposition of sanctions on Iran, Pakistan took prudent and timely decisions to avert any unwarranted situation regarding payment of heavy penalties to Iran.

- Pakistan presented and successfully defended its case on the IP pipeline. With the easing of sanctions on Iran and that country's agreement with P+5 powers on its nuclear programme, Pakistan re-engaged with Iran on this important project with high level visits from and to Iran.

- Both parties have now resolved to take the IP project forward with mutual consensus and accord.

- The nominated Pakistani entity, ISGS, has continued to constructively engage with relevant stakeholders in Iran and is working towards restarting the stalled negotiations over the pipeline.

TURKMENISTAN-AFGHANISTAN-PAKISTAN-INDIA (TAPI) GAS PIPELINE PROJECT

- The Turkmenistan-Afghanistan-Pakistan-India **(**TAPI) Gas Pipeline Project is a major project that envisages supplying 3.2 BCFD gas to three participating countries from Turkmenistan with Pakistan and India getting 1.3 BCFD each

- The TAPI gas pipeline project was beset by time lapses, inordinate delays and continued to face daunting financial and security challenges.

- A highly successful Steering Committee meeting was held in February 2015 in Islamabad hosted by the Government of Pakistan and played a major role in developing consensus amongst parties on critical issues and this was appreciated by the all present parties.

- In the 22ndTAPI Steering Committee (SC) meeting held on 6thAugust 2015 in Ashgabat, breakthrough was achieved when Turkmenistan proposed itself as Consortium Leader and SC unanimously endorsed State Concern “Turkmengaz” as the Consortium Leader of TAPI Pipeline Company Limited.
- The decades old project which was dormant since 1990’s was given a fresh impetus. Its ground breaking was held in December 2015 in Turkmenistan. Ever since the ground breaking, operational work has been initiated on the pipeline with feasibility, design, route survey completed.

- The Pakistani proposal of conceiving and developing rail, road networks from Turkmenistan to Pakistan have been highly well received by concerned parties. A fresh momentum has also been witnessed in bilateral relations in the shape of high level visits from both Pakistan and Turkmenistan.

- Physical work to start this first quarter of 2018 and commencing expected in 2020.

NORTH- SOUTH GAS PIPELINE PROJECT:

- The existing gas infrastructure of Pakistan lacks capacity to transport additional large volume of gas supplies from Southern to Northern regions of the country. Therefore, keeping in view the additional gas supplies from LNG Projects, Petroleum Division has planned to undertake the laying of about 1100 KM long gas pipeline from Karachi to Lahore under the title “North-South Gas Pipeline Project” which will carry 1.2 BCFD gas.

- This particular pipeline segment shall be capable to take injection of TAPI gas at Multan in addition to LNG to be supplied from Karachi terminal side.
- Inter State Gas Systems (ISGS) has been nominated as executing agency for the Project.
- ISGS is negotiating with a Russian company RT-Global nominated by Russian Federation for implementation of the project under Government to Government arrangements.
- The North South gas pipeline will be crucial in enhancing transportation capacity of gas molecules. It is a major infrastructure project.
- The project comes in the backdrop of high level, breakthrough visits by the Russian and Pakistani Petroleum Ministers to their respective countries.
- The North South Gas pipeline will be a major Russian investment in Pakistan after decades.

WHITE OIL PIPELINE PROJECT

- The construction of the White Oil Pipeline project is a major project that has been envisioned by the Government of Pakistan (GOP). As the country's economy expands, it has become all the more important to take necessary steps for safeguarding the country's energy security and reliability of energy supplies. The White Oil Pipeline aims to transport White Oil products i.e. (High Speed Diesel (HSD), Motor Spirit (MS), KERO, Jet fuels etc.) from Machike to Taru Jabba. The pipeline will act as a backbone to the existing Oil pipeline network upon completion.
- **Source:** White Oil Products:- HSD, MS, KERO, Jet Fuels.
- **Distance:** Section 1- Machike to Chakpirana (133 Kms), Section 2- Chakpirana to Sihala (138 Kms) and Section 3, Sihala to Taru Jabba (159 Km), Total- 430 Kms.
- **Volume:** 7 MMPTA
- **Proposed Route:**
- Machike- Chakpirana-Sihala-Taru Jabba.

Advantages of the White Oil Pipeline

- The White Oil pipeline will cater to future demand forecasts and meet the increasing volumes of white oil products that will enter into the energy mix in the years ahead.
- The pipeline would act as a backbone to the existing Oil pipeline infrastructure in the country and its completion would mean an integrated Oil pipeline network stretching from the North to the South of the country.
- This pipeline would be a highly secure and safe alternative to the present hazardous oil transportation network in the country.
- The White Oil pipeline would be a guarantee of reliable and assured energy supplies.
- It would add employment and increase economic activity of immediate and peripheral areas near the pipeline.
- The pipeline would witness considerable interest of foreign investors to the country.

CHAPTER 11

Pakistan State Oil Company Limited

11.1 INTRODUCTION

Pakistan State Oil Company Limited (PSO) is the oil market leader in Pakistan with 54.8% market share in liquid fuels in 2016-17.

The Company is engaged in import / storage / distribution and marketing of various petroleum products, including Mogas, HSD, Furnace Oil, Jet Fuel, LDO, SKO, Petro-Chemicals, LPG, LNG and CNG. This blue chip company has a market capitalization of over Rs 100 billion and has been the winner of “Karachi Stock Exchange Top Companies Award”. It has also been a topic of case studies by various Business schools in Pakistan and abroad.

PSO serves a wide range of customers throughout Pakistan, including retail, industrial, aviation, marine, and Defence sectors.

- Over 3400 retail outlets spread across Pakistan, equipped with multiple facilities, including car wash, convenience stores and business centers
- 9 installations and 23 depots across Pakistan
- 1 million MTs of storage capacity (68% of OMCs storage)
- 3 Lubricant Manufacturing Facilities
- Refuelling facilities at 10 airports and 2 sea ports
- 24 ISO 9000 certified Mobile Quality Testing Units ensure that customers get quality products
- Network of 253 CNG facilities over 34 cities
- Fuel cards portfolio include Fleet Cards, Corporate Cards and Loyalty Cards, each providing a unique proposition for different market segments

In 2016, PSO entered into a 15 year Sales Purchase Agreement with Qatargas for the import of LNG under a G2G arrangement and also executed a 5 year Term Agreement with M/s Gunvor under compliant process. The Company has successfully imported 110 ships of LNG since then.

PSO took the lead and became the first Oil Marketing Company to introduce the higher grade RON environment-friendly gasoline brands Altron Premium and Altron X High Performance in November 2016 in line with the GOP's objective of improving the quality of fuels for public. In January 2017 PSO introduced Action+ Diesel, the superior quality and environment friendly Euro-II compliant diesel.

PSO has been meeting the country’s liquid fuel needs by merging sound business sense with its national obligation. The Company imported 67% of the industry imports in 2016-17 through 181 vessels. Product disbursement is through Road (444 Cartage contractors with 8,101 tank lorries fleet), Railways and Pipelines.

For efficient handling of customer complaints, queries and suggestions, PSO has 24-hour Customer Service Center, and a comprehensive PSO website (www.psopk.com) that provides Company news and information.

Vision
To excel in delivering value to customers as an innovative and dynamic energy company that gets to the future first.

Mission
PSO is committed to leadership in energy market through competitive advantage in providing the highest quality petroleum products and services to our customers, based on:

- Professionally trained, high quality, motivated workforce, working as a team in an environment, which recognizes and rewards performance, innovation and creativity, and provides for personal growth and development
- Lowest cost operations and assured access to long-term and cost effective supply sources
- Sustained growth in earnings in real terms
- Highly ethical, safe environment friendly and socially responsible business practices

<u>Business Performance 2016-17:</u>

Sales Performance
PSO continued to lead the liquid fuel market despite the challenges of IFEM mismanagement and physical reporting, development of additional storage tanks at existing locations with NOC of Ministry of Defence, port constraint, increasing import infrastructure cost, last day sales capping and impact of dumping on Retail Outlets enforced primarily on PSO, and delay in settlement of IFEM receivables pending since 2008.

Sales volume in 2016-17 grew by 5% in White Oil and 10.5% in Black Oil over 2015-16. The market share of Black Oil rose to 73.1% from 70.5% SPLY, whereas the market share in White Oil (MOGS, HSD, SKO, Jet Fuel) stood at 43.9% vs 46.8% SPLY. PSO's sales volume grew by 9.4% in Mogas, 10.6% in FO, 18.9% in JP-1 in 2016-17 vs 2015-16.

Source: OCAC

PSO improved its sales volume to 35 KMTs i.e., a growth of 27.9% in the highly competitive lubricant segment and 25 KMTs i.e., a growth of 105.9% in LPG segment.

Retail Business

PSO's nationwide retail outlet network was expanded with addition of more than 60 New Vision Retail Outlets (NVROs) in 2016-17. The Company operates 26 flagship sites namely Company Owned and Company Operated (COCO) stations providing the best services and customer care. As part of its efforts to automate and streamline the sales order process and with the objective of providing convenience to dealers and replacing the conventional manual ordering system, the Company deployed an Online Ordering Management System (OOMS) at 1735 outlets. Keeping up with international quality standards, PSO's deployed Mobile Quality Testing Units (MQTUs) carry out random checks at retail outlets to provide products in the right quality and quantity to its customers.

PSO launched its Station-Finder App to help customers find outlets near them and also released its web-based application for the development of new retail outlets wherein the applicant is able to keep a track / status of the application through a tracking number.

Non-Fuel Retail

- The modernization of the convenience stores was initiated to improve overall service quality and ambiance while satisfying growing needs of our valued customers.
- PSO has entered into valuable alliances with various companies to offer more products' categories to customers at C stores to transform the stations into more add value places.
- PSO signed agreements with certain leading financial institutions to strengthen the concept of secure and convenient financial / banking services across the stations through an integrated alternate service delivery channel.
- The Company has taken first mover advantage in the industry and initiated the concept of vending machines at fuel stations.
- PSO has also formed valuable alliances with various banks for deployment of ATMs at PSO's retail outlets to facilitate customers and general public to perform the financial transactions in a safe & secure environment.

Cards Business

- PSO upgraded its cards infrastructure to cloud based system with Payment Card Industry Data Security Standards (PCIDSS) certification enabling faster processing and value addition for customers, reducing transaction processing by 4 times and consequently improving operational efficiency by reducing turnaround time.
- PSO is the first company to introduce Europay Master Visa (EMV) complaint proprietary chip cards in Pakistan with compliance of combined/ dynamic data authentication, dual way cryptography and dynamic customer verification method.

Commercial Fuels

Power Sector

PSO achieved 12.5% increase in Furnace Oil sales to the power sector over SPLY. Despite the challenges in the area of receivables from the Power Sector, PSO managed to continue supplies in order to enable more Power Generation in the Country and to contribute in reducing the electricity load-shedding for the masses. The increasing receivables form the Power Sector however, pose greater challenge for the cash-flow management, which needs to be addressed by the GoP.

Aviation, Marine and Exports

PSO recaptured the business of AACO (includes Air Arabia, Saudi Airline, Gulf air, Kuwait Air & Oman air) from the competition. The Company also acquired the new aviation business of KAM Air and Thai Airways at Islamabad and 50% business of Fly Dubai at Karachi airport. We also acquired the business of a new domestic Airline ‘Serene Air’. PSO successfully commissioned the fuel farm facility at the new Islamabad airport, with the allied pipeline network and infrastructure.

LNG

58 LNG vessels supplied during the year carrying 187 million MMBTU, without incurring any demurrage by managing a seamless supply chain operation.

LPG

Renewed focus resulted in the execution of a MoU with OGDCL for Surplus LPG. PSO also won 02 bidding contracts for the supply of LPG by OGDCL, securing LPG supply allocations from OGDCL’s KPD & Adhi Fields resulting in additional confirmed allocations for the next 5 years.

Lubricants & Chemicals

Successfully introduced an improved motorcycle oil Blaze 4T (3D PROTECT) launched with a 360 media campaign and new packaging across the country. In the Industrial segment a major break-through was achieved by the industrial team by winning a long term contract with Pakistan Railways for all POL products, of which approximately 10% will be Lubricants. PSO aggressively pursued opportunities in the Sugar Mill Oil segment for a growth of more than 75% Vs last year. The agricultural sector was targeted as well with various programs built around the DEO brand. PSO also ventured into the Transformer Oil business.

The company also continued to be the POL supplier of major national accounts such as the Armed Forces, Railways, NLC, POF, OGDC, and the Agriculture Department etc. Special focus remained on new opportunities where the company signed multiple sales agreements with various companies.

High Street distributors were reorganized and mechanics training program was started in all major cities of Pakistan. Oil advisors were also deployed at selected outlets to facilitate customers.

Supply Chain Performance 2016-17:

PSO sourced a record total volume of 14.1 million tons through local refineries and imports as compared to last year total sourcing volume of 13.5 million tons. Sourcing through imports constituted 10.4 million tons imported via 181 vessels while upliftment from refinery contributed 3.8 million tons. PSO kept on enhancing its refinery upliftment share which stood at 38% of their production during 2016-17 which was 29% not more than two years ago.

In view of increased Mogas demand across the Country, PSO arranged movement of 2.3 million MTs of Mogas through tank lorries which is 7% higher compared with preceding year, resulting in maintaining optimum level of inventory at all depots/installations. Similarly keeping in view the need of continual fuel oil supply to the power sector particularly in wake of energy crunch scenario, PSO ensured round-the-clock fuel oil availability to its power sector customers.

PSO signed a landmark long term fuel transportation agreement with Pakistan Railways to enhance and expedite its supply chain operation in the country. During 2016-17 PSO transported over 1 million MTs of business transportation volumes to Pakistan Railways thus achieving record aggregate growth of over 700% in last five years. Furthermore, PSO also commenced negotiations with Railways for HSD transportation through tank wagons. Following its tank lorries upgrading plan introduced in January 2017, 254 tank lorries were upgraded in 2016-17. Improving operation facilities and rehabilitation of storages was also undertaken.

PSO effectively handled RON 92/95 post its introduction in November 2016 and ensured uninterrupted supply across the country even on public holidays and Sundays. Non-IFEM depots were successfully re-opened and operated at Sanghi, Khuzdar, Daulatpur, Habibabad, Kundian, Kohat and Serai Naurang.

Financial Performance 2016-17:

During the year, the Company reported sales revenue of Rs 1.1 trillion (USD 10.5 billion) as compared to Rs 0.9 trillion (USD 8.8 billion) during 2015-16, registering a growth of 21% due to increase in sales volume coupled with positive price variance arising on account of increase in POL prices.

After tax earnings witnessed an increase of 77.4% thereby rising to Rs 18.2 billion as compared to Rs 10.3 billion in 2015-16. Earnings per share increased to Rs 67.1 in 2016-17 from Rs 37.8 in 2015-16. The main factors contributing to this increase are increase in sales volume and margins of both white oil and black oil, reduction in finance cost by 17.2% partially offset by a decline in other income by 16% and an increase in operating costs by 6%.
PSO's share price of Rs 486.05 per share was the highest on February 3rd, 2017 since May 2008. Share price remained at Rs 387.35 per share at the end of 2016-17.

PSO's won a Corporate Report Award in the Oil and Gas Sector from ICAP/ICMA for the 7th consecutive year. Further, a Certificate of Appreciation was also received from South Asian Federation of Accountants during 2016-17.

Analysis of Liquidity situation and Cash Flows

The Company closed the financial year with receivables from Power Sector amounting to Rs. 176 billion against Rs. 147 billion as of June 30, 2016. The increase in receivables from Power Sector was attributed to the circular debt situation which resulted in short payments against supply of Furnace Oil. During the financial year 2016-2017, PSO supplied Furnace Oil worth Rs. 233 billion against which it received total payments of Rs. 204 billion, resulting in a deficit of Rs. 29 billion for the year. The receivables from PIA and SNGPL against jet fuel and LNG supplies respectively also increased during the year.

The management had made relentless efforts for reduction in circular debt and submitted various proposals to the GoP, which if implemented, would have improved the liquidity position. The company proactively managed the liquidity requirements by ensuring that adequate credit lines remain available for meeting its commitments towards local and international suppliers. Further, the Company regularly apprised the GoP of its liquidity position and constantly remained in touch with the Ministry of Energy, Ministry of Finance, PIA and SNGPL for early release of funds.

Dividends and other Appropriations

Based on the performance of the company in 2016-17, PSO's Board of Management declared a final cash dividend of Rs 15 per share (150%) and stock dividend 20% which is in addition to the interim cash dividend of Rs 10 per share. The dividend (including stock dividend) for the year 2016-17 stands at Rs 27 (270%) per share vs. Rs 12.5 (125%) per share in 2015-16 translating into a total payout of Rs 7.3 billion vs. Rs 3.4 billion in 2015-16 to the shareholders.

Contribution to the national exchequer

PSO continued to be one of the largest tax contributors to the national exchequer:

	2016-2017	**2015-2016**
	Rs. In billion	
Sales Tax	**201**	**211**
Petroleum Levy	**71**	**70**
Other duties and taxes	**47**	**33**
Total	**319**	**314**

	2017	2016	2015	2014	2013	2012
			(Rupees in mn.)			
Profit & Loss Account						
Gross Sales Revenue	1,096,543	906,177	1,114,411	1,410,095	1,295,783	1,201,166
Net Sales Revenue	878,147	677,940	913,094	1,187,639	1,100,122	1,024,424
Gross Profit	37,199	22,525	22,921	36,824	34,161	34,323
Other Income (including share of profit of associates) - net of tax	11,353	13,411	14,314	20,059	6,510	10,154
Marketing & Administrative Expenses	11,301	10,511	10,672	10,480	10,207	9,871
Other Expenses	1,981	1,986	3,513	3,890	3,664	9,272
Operating Profit	34,662	22,826	22,671	41,972	26,230	24,864
Finance Cost	5,923	7,150	11,017	9,544	7,591	11,659
Profit before Tax	29,347	16,289	12,033	32,969	19,210	13,674
Profit after Tax	18,226	10,273	6,936	21,818	12,638	9,056
Earning before Interest, taxes, depreciation & Amortization (EBITDA)	36,322	24,464	24,050	43,567	27,960	26,476

	2017	2016	2015	2014	2013	2012
			(Rupees in mn.)			
Balance Sheet						
Shareholders' Equity	102,850	91,581	82,310	78,621	60,643	48,334
Non-Current Assets	23,883	68,142	65,559	58,637	57,593	10,469
Current Assests	368,560	274,174	275,749	313,514	224,356	337,796
Total Liabilities	289,593	250,735	258,997	293,530	221,307	299,931

Under the CSR umbrella, PSO has supported sustainable social development activities nationwide by partnering with reputable charitable organizations working across Pakistan in the fields of Healthcare, Education and Community Building. PSO's CSR Trust was registered during 2016-17. The focus of the Trust is to support public charitable projects in the areas of education, skill development, healthcare, community building, environment, disaster management as well as to contribute to the wellbeing and upliftment of the people of Pakistan on an individual basis too.

HSE awareness was increased through general communication meetings on the departments', Safety Observation Reporting procedure etc, HSE trainings. During 2016-17 PSO showed a remarkable improvement through reduction in incident rate to 0.07/200,000 working hours as compared to 0.37/200,000 working hours in 2015-16 worked out as per Occupational Safety & Health Administration (OSHA) definition. HAZOP studies at facilities were conducted and action plans for implementation of recommendations were developed.

For improved check and balance system on the field force of the company, an initiative was taken to keep track of all the field employees which will help to gauge the performance of employees working in the field along with better monitoring and control. A SMS based alert notification system was developed to facilitate PSO valued dealers notifying order creation, delivery, invoice creation and payment reminders. Automation of cartage contractor's bills, Real-time Dashboards, upgrade of SAP back-end database to the latest release with continuous enhancement in network and applications was carried out.

Various systems and models put in place by the in-house team for institutionalizing the reforms. Quality assurance of products through MQTU vans and PSO's labs was carried out. Employee engagement programs were started, In-house procurement committee was constituted, Market Research function was established and an independent Risk Management function was also established. Organization development through recruitment for vacant positions, restructuring, career development activities and trainings across the company at various levels. Brand equity enhancement through launch of web based applications, increasing footprints and migration to cloud based card system. Various brand building initiatives through product and corporate branding were also undertaken

CHAPTER 12

PAK ARAB REFINERY COMPANY

12.1 INTRODUCTION

Incorporated in Pakistan in May 1974, Pak-Arab Refinery Limited (PARCO) is a 60:40 joint venture between the Government of Pakistan (GoP) and the Emirate of Abu Dhabi. Since the commencement of commercial operations 35 years ago, the company's equity base has been expanded 145 times from its initial equity of Rs. 540 million to an equity base of Rs.78 billion and an asset base of Rs. 123 billion or close to US$ 1.2 billion in current dollar terms.

12.2 VISION STATEMENT

"To be a leading national energy company of choice for all stakeholders by employing a strategy of diversification and integration with the right technology and adopting best industry practices for sustained competitive advantage".

12.3 MISSION STATEMENT

"To transport, refine and market petroleum and related products in Pakistan in a safe, efficient, reliable and environment-friendly manner maintaining professional excellence and ensuring favourable returns on all employed resources".

12.4 CORE VALUES

Integrity, Teamwork, Results Orientation, Innovation and Continuous Improvement, Commitment, Courage, Communication.

12.5 EMPLOYMENT OPPORTUNITIES AND MANPOWER STRENGTH

PARCO's Refinery, cross country Pipeline network, LPG Plants and Gas Centers, etc, with their allied facilities and installations have been instrumental in expanding the country's industrial, technology and employment base.

The consistent growth in PARCO's business and introduction of new projects has enabled the Company to generate direct and indirect employment opportunities across the country especially in remote and underdeveloped areas. PARCO's human resource base is highly skilled and uniquely talented and frequently finds employment opportunities in the lucrative Gulf markets, enabling PARCO to claim that it has been contributing towards country's foreign exchange earnings.

12.6 PARCO, AN ENERGY COMPANY

PARCO is a key player in the country's strategic oil supply and its logistics, with an integrated network which includes 100,000 bpd refinery, 2000 km of oil pipeline, 1 million tons of storage of, and a significant role in marketing of petroleum products.

12.7 PIPELINE NETWORK

PARCO is the largest operator of cross country crude oil and product pipelines network of over 2000 km. It has become vitally important, for country's oil logistics in the Central and Northern areas and has resulted in major savings in freight expenses.

12.7.1 Karachi-Mahmood Kot Pipeline (KMK)

PARCO transports crude oil from Karachi to Mahmood Kot near Muzaffargarh for its Mid-Country Refinery (MCR) through its 864 km, 16" dia Pipeline, commissioned in 1981. The original pumping capacity was 3.0 million tons per annum (MTPA) however, with technological up-gradation of the system is now capable of pumping up to 4.5 MTPA.

Imported Crude oil received through KPT's jetty at Keamari and transported to Korangi for onward transportation to MCR through Booster Pumping Stations.

12.7.2 Mahmood Kot-Faisalabad-Machhike Pipeline (MFM)

PARCO's 364 km, 18" & 16" dia. MFM pipeline was commissioned in June 1997 and is transporting Diesel and Kerosene from Mahmood Kot to Faisalabad via Kot Bahadur Shah and onwards transportation to Machhike. Refined Products are received from MCR as well as through White Oil Pipeline (WOP).

The installed capacity of MFM pipeline is 3.0 MTPA and pipeline design allows for laying and tie-in of future spur lines from Faisalabad to Kharian and Sahiwal subject to commercial feasibility.

12.7.3 White Oil Pipeline (WOP)

PARCO operates and maintains the 786 km, 26" dia White Oil Pipeline (WOP) which was commissioned in March 2005 an installed capacity of 8 MTPA, which can be upgraded to 12 MTPA with the addition of booster pumps. The WOP is owned by Pak-Arab Pipeline Company Limited (PAPCO), a joint venture between PARCO (51%), Shell Pakistan Ltd (26%), Pakistan State Oil (12%) and TOTAL PARCO Marketing Ltd (11%).

12.7.4 Korangi-Port Qasim Link Pipeline (KPLP)

The 22 km, 26" dia pipeline linking PARCO's Korangi Station with PAPCO's Port Qasim Station is a bi-directional pipeline which was commissioned in March 2006. The strategic link has connected both the Karachi ports (Keamari) and Port Qasim with PARCO and PAPCO pipeline systems, providing flexibility in pipeline operations to receive crude as well as product from either port.

12.8 MID-COUNTRY REFINERY

PARCO's Mid-Country Refinery (MCR) is the country's largest and most complex refinery employing state of the art primary and secondary processing facilities. With capacity of 100,000 Barrels Per Day (BPD), the MCR was completed at a cost of US$ 886 million and commissioned in year 2000. It represents about 25% of the indigenous refining capacity of the country and helps in substituting imports of value-added refined products.

PARCO is the only refinery which is producing environment friendly Euro II compliance diesel. The air emissions and water quality discharge from the refinery are regularly monitored and remained well within NEQS limits. To cater the increasing production of local crude in Pakistan, a crude decanting facility has recently been installed at MCR in collaboration with MOL and OGDCL.

CRUDE FEED: Arabian Light, Upper Zakhum, Murban, DAS Crude, Local Crude and Condensate.

PRODUCTS: LPG, Mogas/ HOBC, Kerosene/Jet Fuel 1 (JP-1) and JP-8, High Speed Diesel (HSD)/ Light Diesel Oil (LDO), Furnace Oil, Sulfur, Asphalt.

The Refinery Complex includes thirteen Onsite Process Units besides numerous Offsite/Utilities Units and other permanent facilities with 55 tanks to store Crude Oil, intermediate feed stocks and finished products. Process units also include the mild hydrocracker unit Dieselmax which is an integrated technology of mild hydrocracker and thermal cracker and is the only in Pakistan to produce value added petroleum products like Diesel and Kerosene from gas oils. PARCO refinery also have state of the art CCR (Continues Catalyst Regeneration) Platformer unit to produce high RON reformate which is used in motor gasoline blending.

Major Process Units: Crude Distillation Unit (CDU), Vacuum Distillation Unit (VDU), Naphtha Hydrotreater (NHT), CCR Platforming unit, Diesel Max Unit, Visbreaker Unit (VBU), Gas Concentration Unit (GCU), Diesel Hydrodesulphurization Unit (DHDS), Amine Treating Unit, KeroMerox Unit, LPG Merox Unit, Sulfur Recovery Unit, Asphalt Air Blowing Unit

Offsite / Utilities Units: Steam, Feed Water and Condensate Handling System, Fuel Oil and Gas System, Water Systems, Tankage and Blending System, Product Transfer and Loading System. Flare System. Effluent Collection, Treatment and Disposal System. Safety and Fire Fighting. Chemical handling system

The Refinery also operates an automated Truck Loading Gantry for supply of Petroleum Products to Oil Marketing Companies (OMCs) besides it is linked with PSO and JIMCO terminals through pipeline for transfer of FO and HSD respectively.

12.9 MARKETING INITIATIVES

12.9.1 Retail Marketing

TOTAL PARCO PAKISTAN LTD (TPPL), is a 50:50 joint venture of PARCO and TOTAL of France is marketing consumer petroleum products through a retail outlets network across Pakistan.

12.9.2 Acquisition of Chevron's Pakistan Fuel Business

In 2015, TPPL has acquired Chevron's Fuel Marketing Business in Pakistan. After the acquisition, the Total PARCO retail fuel network has increased from 285 to 813 outlets and is now the 2nd largest OMC in the country in terms of retail network.

12.9.3 Acquisition of Total Oil Pakistan Ltd

PARCO has acquired 50% shareholding in Total Oil Pakistan Ltd, which is the 4th largest lubricants blending and marketing in Pakistan. Along with the retail fuel business, the lubricants business is now part of the TOTAL PARCO network.

12.9.4 LPG Marketing & Distribution

In 2012, PARCO acquired SHV Energy Pakistan, and renamed it to PARCO Pearl Gas Ltd (PPGL). It has 5 Filling Plants and 8 Gas Distribution Centers at strategic locations throughout Pakistan, as well as a network of over 400 distributors and is the largest LPG Marketing & Distribution Company in Pakistan.

PPGL markets LPG under two different brands, i.e. Pearl Gas and Super Gas. Super Gas offers customized solutions designed to cater to the requirements of industrial/commercial users.

12.9.5 Industrial Marketing

PARCO is engaged in its marketing activities through the brand name "PEARL" and has a base of over 500 industrial customers for furnace oil, high speed diesel, bitumen, light diesel and kerosene.

12.10 PROGRESS FOR 2016–17

PARCO, like any professional organization, strives for self-sufficiency, mitigation of risk and profitable operations. The salient features of the actual performance during the year are as under:-

Sales Revenue (PKR millions)	**225,792**
Net Profit after tax (PKR millions)	**19,062**
Payments to GOP (PKR millions)	
Income Tax	8,806
Sales Tax	61,083
Petroleum Levy	28,943
Excise Duty	11
Dividend	7,500
Total Payments to GOP	**106,343**
Refinery Production(million tons)	
Liquid Petroleum Gas	0.13
JP-1/8/Kero	0.48
Mogas	0.87
High Speed Diesel	1.89
Furnace Oil	1.13
Other	0.13
Total	**4.63**

Pipeline Thruput (million tons)	
KMK Pipeline	4.28
MFM Pipeline	3.55
Decanting (million tons)	
Korangi	0.33
MCR	0.37

12.11 GOALS/TARGETS FOR FINANCIAL YEAR 2017–18

To focus the efforts of the company in achieving its Vision, the following Corporate Goals have been set for the next year:-

1. Leading National Energy Company of Pakistan
2. Company of Choice for All Stakeholders
3. Diversification
4. Integration
5. Right Technology
6. Best Industry Practices
7. Sustained Competitive Advantage

In addition to the above, PARCO will continue its efforts towards the betterment of the country as a whole with the following objectives:

- To enhance and establish a professionally sound corporate identity.
- To operate the existing Pipeline and Refining System in a manner that establishes it as a center of excellence in Pipeline and Refining Activities in the Country.
- To embark upon Integrated Investment Program which takes cognizance of the existing bottlenecks and long-term petroleum needs of the Country.
- To provide a lead to the indigenous Petroleum Industry in finding of solution to Technical and Managerial problems.
- To develop an appropriate Human Resources for undertaking of large Energy Projects in the Country.

12.12 UP-COMING PROJECTS

12.12.1 MFM Mogas Project

PARCO's Mahmood Kot-Faisalabad-Machike (MFM) pipeline is currently pumping HSD at an annual throughput of 3 million tons per annum (mmtpa). Due increased demand of Mogas in Punjab, substantial volumes are available for transportation from Karachi to upcountry. In view of this, PARCO has proceeded to upgrade the MFM pipeline.

The project involves: (i) increased capacity to 7 mmtpa and (ii) to introduce Mogas transportation capability in the system. Additions and modifications will be executed in 2 phases. Benefits of the Project:

- Pipeline transportation is significantly cheaper than road transportation – this is will ultimately benefit the end-consumer in terms of lower retail fuel prices
- Lower road tanker movement will lead to less in traffic congestion, reduced wear and tear of road infrastructure and improved environment
- An opportunity for PARCO to increase revenues and improve profitability

12.12.2 MCR Expansion

In recent years domestic light crude/condensate production has increased significantly. It is expected that an additional 15-20k bpd of light crude/condensate will be available to MCR for processing.

Based on detailed studies and feasibility, it was concluded that MCR can be upgraded by (i) revamp of existing units and (ii) installation of 2 new units - modular isomerization and hydrogen unit. This will result in an overall capacity expansion to 120,000 bpd with higher production of valued-added. Benefits of the Project:

- Increased domestic refining capacity and value addition of indigenous resources – local crude/condensate will be processed locally instead of being exported
- Forex savings and import substitution – increased in production of gasoline and diesel - both are high-value, deficit products which are consumed domestically
- Better for environment – both gasoline and diesel will be of EURO III specifications
- An opportunity for PARCO to increase production capacity, improve product mix and increase margins/profitability

12.12.3 New Refinery Project

In April 2016, PARCO's Board has approved the New Refinery Project. The proposed project is a 250,000 bpd grass-root refinery located at Khalifa Point. It will be a significant addition to country's oil refinery infrastructure, focused on Euro IV for both domestic and export market. The Management has reinitiated a techno-economic feasibility study.

With socio-economic progress and positive market trends, the demand-supply gap has reached 15 million MT and this growing gap is unsustainable in view of port facilities, supply logistics/storage, and outflow of foreign exchange, etc.

Existing refineries and their expansion plans are not sufficient to meet current and future requirements. The New Refinery Project will add 11 million MT, significantly reducing the demand-supply gap alongwith numerous other benefits to the country.

12.13 SOCIAL RESPONSIBILITY & COMMUNITY DEVELOPMENT PROGRAM

PARCO has always been at the forefront of initiatives which have a positive and far reaching impact on society. The CSR philosophy of PARCO is based on a principle of sustainability for activities and the creation of Shared Value. Following its policy of being a good neighbor, PARCO has been working towards the development of communities located near PARCO facilities through its social investment in different areas.

12.13.1 Protection of Environment

Towards keeping the environment free from pollution, PARCO adopted the following measures.

- State of the art Waste Water and Emissions Control Systems to ensure that the air, water sources and subsoil strata of the Mid Country Refinery remain free of pollutants.
- PARCO introduced lead-free Motor Gasoline four years earlier than the deadline.
- Installation of Diesel Hydrodesulphurization Plant (DHDS) to reduce sulphur contents from the Diesel for Euro II standard and cleaner environment
- Availability of LPG in remote areas to save trees in Baluchistan and northern areas.

12.13.2 Skilled Labor Force

Through continuous launching of new projects and expansion, PARCO has been able to provide opportunities for locals in learning new technologies in order to help equip them for highly skilled jobs that improved the standard of living, contributed towards national development and saved substantial foreign exchange. PARCO also has an elaborate Trainee Program and an Internship Program where fresh Engineers, Technologists and MBAs are provided training. Through its CSR Program, PARCO provides assistance for Vocational Training Centers, Adult Literacy, Polytechnics, Universities, etc.

12.13.3 Education & Health

Our cross country pipeline network makes it next-door neighbour to many remote and underprivileged communities. Since 2007, PARCO conducts an extensive Schools & Clinics Support Program which aims at improving the education and health infrastructure in adjoining communities by supporting Rural Health Clinics, Primary, Middle and Secondary Schools, being run by Government of Pakistan.

- Up Till 2016, PARCO has provided assistance to more than 96 institutions along its pipeline and refinery across Pakistan. More than 40,000 children are enrolled in PARCO supported schools. PARCO`s assistance to these institutions has raised communities` interest in sending their children to these refurbished and well-maintained schools diverting them from child labour to primary education, raising the literacy rate.
- During 2016, PARCO has supported different institutions for blind, mentally challenged and deaf children. These institutes were managed by professional NGOs and relied mostly on philanthropic contributions. They help these children in developing skills to manage their lives in less challenging manner. PARCO’s contribution has helped these institutes sustain their operations.
- PARCO has been distributing school bags, stationary items and notebooks in the Government Schools, supported by PARCO near its Corporate Headquarter, Mid-Country Refinery and various stations and Terminals since several years. This year again more than 2000 bags were distributed among the underprivileged children of these schools.
- Under the umbrella of Schools and Clinics Support Program, PARCO has supported several Basic and Rural Health Centers based in small villages nearby PARCO cross-country pipeline and Stations and Terminals. The clinics are providing basic healthcare to the local communities within their villages. As a result, community members are no longer required to travel for long hours to the cities for the basic treatment.
- PARCO’s Mid-Country Refinery at Qasba Gujrat is surrounded by many underprivileged communities, which are deprived of the basic education and health facilities. PARCO operates a Community Welfare Clinic in order to provide basic health facilities to the domestic workers working at the Mid-Country Refinery, their families and other people from nearby areas. The clinic treats approximately 3,000 patients annually.
- In Pakistan, there are various charity hospitals that serve the underprivileged not able to afford medication, hospitalization etc. PARCO has helped several such hospital through philanthropic contributions in capacity building.

12.14 VOCATIONAL TRAINING & ENTREPRENEURSHIP

One of the areas PARCO has been heavily investing in is fostering the culture of vocational training and entrepreneurship. Several government vocational training centers in Sindh and Punjab are being supported to fulfill their infrastructural needs and equipment requirements. This support has resulted in providing students with better quality of training of modern equipment, and in some cases start their own business through equipment support program especially to female community, thus increasing their chances of employment.

In addition, PARCO is also operating a vocational training center for girls and woman to enhance their skills through higher level of training and course materials, so far more than 90 women have benefitted from this scheme.

CHAPTER 13

SAINDAK METALS LIMITED (SML)

13.1 INTRODUCTION

The Saindak Metals Limited (SML), formerly known as Resources Development Corporation of Pakistan (RDC), is a national company, which deals in exploration, exploitation and development of non-ferrous minerals and extraction of base metals like copper.

Mine development, plant installation and trial production was completed by Metallurgical Construction Corporation (MCC) in 1995 and handed over to SML in January 1996. During trial production, 1,500 Tons of Blister Copper was produced. The project remained closed between1996 to 2002. In February 2000, it was decided to restart the project through leasing option by inviting international bids. Accordingly, GoP awarded the lease to M/s Metallurgical Construction Corporation of China (MCC) for a period of 10 years to operate the project under a contract agreement. M/s **M**CC **R**esources **D**evelopment Company (Private) **L**imited (MRDL) arranged finances including working capital for maintenance, preparation, and rehabilitation and production activities amounting to US $ 25.915 million as per terms of contract. The project was handed over to M/s MCC China and commercial production started in August, 2003. 5 years extension in contract term beyond October, 2012 were signed with China with the consent of Government of Balochistan and approval of Federal Cabinet upto 31.10.2022.

13.2 ACHIEVEMENTS FOR THE PERIOD JULY 2016 TO JUNE 2017:

i) PRODUCTION

The SCGP remained in production during the period July 2016 to June 2017 and following quantities were produced:

i.	Copper Ore:	3.66 million tonnes
ii.	Copper Concentrate:	**52,807.12 metric tons**
iii.	Blister Copper:	3,322.08 metric tons

ii) SALES STATUS

MRDL exported following quantities of blister copper during the year 2016.

iv.	Blister Copper	**12,933.68 metric tons**
	Value	**US $ 102.278 Million**

The project paid **US$** 5.114 Million as royalty @ 5% on sale value to Government of Balochistan and 1% Presumptive Tax amounting to **US $ 1.098 Million** and EPZ service charges @ 0.5% amounting to **US $ 0.511 Million** were paid to EPZ authorities. On account of Corporate Social Responsibilities (CSR) **US $ 1.148 Million** paid to Government of Balochistan for Social Upliftment Activities.

13.3 VISION:

To make the country economically and financially sound through Mining and processing of metallic mineral resources.

13.4 MISSION:

To make Saindak Metals Limited, a vibrant organization, capable of mining as well as bringing the mineable resources to a stage where investors (local and foreign) are attracted.

13.5 CORPORATE SOCIAL RESPONSIBILITY (CSR) ACTIVITIES FOR SOCIAL UPLIFT OF THE LOCAL COMMUNITY:

- ✓ On account of Corporate Social Responsibilities (CSR) **US $ 1.876 Million** paid to GoB in addition, since 2005 MRDL in close collaboration/coordination with SML, spent Rs.206.932 Million on CSR related activities for instance:

- ✓ Construction and establishment of "Saindak Model School" for improving the existing educational capacities of the deprived and underprivileged community children of the locality;

- ✓ Construction and establishing of a 20 bed hospital for provision of free medical services to the residents of the nearby villages, facilities including: (chemical examination, electrocardiogram, B-Ultrasound examination, X-Ray fluoroscopy, treatment Debridement, suture, medical dressing change, injection), provision of medicines & vaccination on reduced charges, approximately 3,860 local populations are getting benefited by the Saindak Hospital.

- ✓ Flawless supply of purified/clean drinking water to the nearby villages and also for the law enforcement agencies such as, FC, Police, BC & Levies, spending more than $20,000 each year for transportation of clean drinking water from Taftan to project site Saindak.

- ✓ Installation and activation of power-supply equipment for free electric power to the neighboring villages (namely: Killi Saindak, Killi, Sarwar, Killi Amalaf, Killi Noor Ahmed & Killi Syed Abad).

- ✓ Scholarships to the talented and deserving students around Balochistan, mainly from District Chagai, to the various reputed Schools & Cadet colleges around the country.

- ✓ Establishment of state-of-the-art Technical Training Centre at Dalbandin is also one of the great achievements of SML, to enhance the technical skills of the local youth in exploration and exploration of natural resources of the mineral rich District and also creating job opportunities for the youth;

- ✓ Repair and restoration of a 15 kilometer road from Taftan to Saindak for easy trouble free easy access;

- ✓ Out of 1,500 employees at Saindak project; around 900 employees belonging from District Chagai.

- ✓ Nokkundi Pure Water Supply Project is under process for its feasibility report by GoB (PHE Department). Rs.6 Million provided to GoB (PHE Depts) for 5 No. test holes and the total cost of the project would be Rs.384 Million.

- ✓ SML in collaboration with Balochistan Welfare Agency (BWA) has established a mobile health unit and free eye camps for the deprived and disadvantaged community of District Chagai by providing, free lenses & glasses, medicines, MHU awareness programs for the community, (a highly backward and underdeveloped area of Balochistan province with scattered population lacking health facilities).

13.6 FUTURE PLANNING OF SML:

- An agreement was signed between Saindak Metals Limited and Geological Survey of Pakistan on May 5th 2015.After IP survey, the exploratory drilling of 03 holes started in December, 2015 and ended in September, 2016 up to the depth of 400 meters each in the leased area of SML in (Durbanchah and Chigendiq) with a cost of Rs. 40 Million. Assay results are very encouragable, further exploration delayed for settlement of mining license issues with Government of Balochistan.
- Further exploration of East ore body may be started by SML after 05 years further extension of agreement for exploitation of North ore body with MCC/MRDL China.

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CHAPTER 14

http://www.pmdc.gov.pk

PAKISTAN MINERAL DEVELOPMENT CORPORATION (PVT) LIMITED (PMDC)

14.1 INTRODUCTION

PMDC was established in July, 1974 as a Private Limited Company under the Companies Ordinance, 1984 to undertake exploration, evaluation, development, mining marketing and export of mineral deposits of the country. PMDC in its capacity as a Federal body is endeavoring to deliver goods in the field of mineral exploration and exploitation.

PMDC has achieved commendable physical and financial achievements in the recent past despite of constraints coupled with national and international economic crises. As a result of concerted efforts of the employees and the management, PMDC turned around in a big way and became the progressive organization with no loan liability and bank borrowing. Its yearly profit (before tax) during the year 2016-2017 was Rs. 401.959 million as compared to the profit of Rs. 501.365 million earned during last financial year 2015-16. PMDC is determined to further improve its efficiency during the years to come.

14.2 PHYSICAL PERFORMANCE

a. Production and Sale of Salt

During the Financial Year 2016-2017, production of salt was 1,310,427 tonnes as compared to the production of 1,433,152 tonnes achieved during the last year 2015-16. The sale of salt during the year 2016-2017 was 1,321,387 tonnes as compared to the sale figure of 1,387,792 tonnes during the last year 2015-16. During the period under reference, PMDC exported 807 tonnes salt to foreign countries.

Project-wise Production & Sale of Rock Salt (Tonnes) (2016-17)		
PROJECTS	**Actual**	
	Production	**Sale**
Khewra Salt Mines	393,625	395,617
Makrach salt Mines	89,975	89,975
Warcha Salt Mines	624,693	663,661
Kalabagh Salt Mines	146,687	146,687
Jatta / B.Khel Salt Quarries	55,447	55,447
TOTAL:	**1,310,427**	**1,351,387**

b. Production and Sale of Coal

Production of coal from PMDC coal mines during the financial year 2016-17 was 581,518 tonnes which comes to 97% of the budgeted target of 600,000 tonnes and registered production increase over to figure of 557,950 tonnes achieved during the last financial year 2015-16. Sale of coal during the year 2016-17 was 582,307 tonnes which is 97% of the budgeted target of 600,000 tonnes and increase over coal figure sale of 558,639 tonnes achieved during the last year 2015-16.

Project-wise Production & Sale of Coal (Tonnes) (2016-17)		
PROJECTS	**Actual**	
	Production	**Sale**
Degari Collieries	16,500	16,395
Sor-Range Collieries	59,835	60,729
Sharigh Collieries	220,646	220,646
Lakhra Coal Mining Project	284,537	284,537
TOTAL:	**581,518**	**582,307**

14.3 FINANCIAL PERFORMANCE FOR THE YEAR 2016-2017

On overall basis, PMDC earned profit of Rs. 401.959 million during the Financial Year 2016-2017 as compared to the profit of Rs. 585.005 million (before tax) earned during the last financial year 2015-16.

14.4 OTHER ACHIEVEMENTS

- The share of PMDC in the country's rock salt production/sale is over 50%.
- PMDC earned accumulated profit of Rs. 381.558 million as on 30.06.2017. It is after transferring Rs. 1,132.962 million towards General, Depletion and Insurance reserves. There is neither loan liability nor any bank borrowing.
- PMDC has already paid Rs. 463.600 million to the GOP up-to 30.06.2016 as dividend which is 4636% of the total equity fund from the Govt of Pakistan.

14.5 PMDC AS AN EXECUTING AGENCY

PMDC as an Executing Agency has undertaken exploratory work for Coal & Copper at the following projects in FATA, which have been sponsored by FATA Development Authority:

I. Exploration and development of North Waziristan Copper with a total cost of Rs.172.722 million is underway. Previous exploration in the area established existence of 35 million tonnes of copper of which 8 million tonnes is in the proved category having

0.8% copper content. The present study is aimed at enhancing the resource up to 50 million tonnes with 0.8% copper content through geophysical survey and deep drilling so that a prospective investor, local or foreign may be able to exploit the resource.

Geological mapping, sampling and geophysical survey has been completed at the project. Drilling operations have been resumed. The project activities have been started.

II. Exploration and Resource Estimation of coal in Shirani area F.R.D.I. Khan costing Rs. 92.772 million was undertaken. Huge deposits of coal occur in the Ghazij Formation in different areas of Balochistan. The same coal bearing formation is well developed in Shirani area as well. The scheme was aimed at establishing the continuation of Balochistan coal in Shirani area D.I. Khan under the similar geological environments.

Geological mapping, sampling, trenching and assaying has already been undertaken. As a result of initial surface exploratory activities, coal showings/ stringers have been witnessed on the surface as well as in the trenches. However, the project has been abandoned due to law and order situation.

14.6 JOINT VENTURE

PMDC entered into an agreement with M/s MCC, China for the development of Duddar Lead-Zinc deposits in Lasbella, Balochistan on 03.11.2003. The construction/ development work of the project involved Chinese investment of US$ 111 million. Trial production of lead-zinc and the preparation of its concentrate started in November 2008.

Production of Lead-Zinc was 189,019 during the FY-2016-17. 1,083,559 tonnes of ore was mined and processed at the plant. 44,223 tonnes of Zinc concentrate and 5,349 tonnes of lead concentrate were exported. This project is first of its kind in the underground metal mining in Pakistan and on its successful completion, will open up new avenues for development of similar type of other deposits in the Lasbella-Khuzdar metallogenic belt.

PMDC will get 20-25 % share in the profit of the project which will be further shared by PMDC and Balochistan Development Authority on 50:50 basis. However, due to geological problems and reduction in ore reserves operation of project was suspended in January, 2012. MCC has handed over the project to its subsidiary, China Huaye Group Co. Ltd. The new company is further developing and operating the project.

14.7 FUTURE OUT-LOOK

1) Coal is an important energy substitute. PMDC is endeavoring to meet the enhanced demand of coal for cement and power plants which were previously fired by the furnace oil/ natural gas. In this way, the use of coal by the above said plants will help to reduce the foreign exchange required for the import of furnace oil.

2) All efforts are being made to further increase the export of rock salt in the International market.

3) PMDC is determined to increase the profitability of the corporation by enhancing its share of coal & salt in the domestic market.

14.8 SOCIAL RESPONSIBILITY AND COMMUNITY DEVELOPMENT PROGRAMME UNDERTAKEN

- **Established Schools, College & Survey Institute** to provide education to the mining community and other people of the area.

- **Established Hospital & dispensaries** to provide health services to the workers in the remote areas of its mining projects.

- **Establishment of Asthma Resort**

  Allergic Asthma is an ailment which is hurting about 15% population of our country, who include 10% children. In order to control it through natural therapy, PMDC has established an Asthma Resort as a Pilot Project at Salt Mines Khewra. The results of the resort are encouraging which is likely to be expanded in due course of time. On this theory, two Asthma Resorts are already functioning in the world, one at Wieleczka Salt Mines in Poland and other at Ukrainian Salt Mines, Ukraine. By the grace of Allah (SBT), Khewra Allergological Asthma Resort is unique and first of its kind in Pakistan.

- **Establishment of Tourist Resort**

  PMDC has established a Tourist Resort of international standard at Khewra, which is not less than a wonder of the World because of the natural beauty inside the mountain. All cross-sections of societies from home and abroad visit the Tourist Resort as a part of recreation and study tour.

Other Facilities

- PMDC is providing free of cost drinking water to the local community regularly residing near its operating projects.
- PMDC provided land to the FC at Sharigh, Balochistan for the construction of School / College where children of employees and locals will get education.
- PMDC provides training / internship to the students of mining, business, administration deputed by the different colleges/ universities as per course requirement

14.9 PAYMENTS TO NATIONAL EXCHEQUER FOR THE FINANCIAL-YEAR 2016-17

Particulars	Rs. in million
Income Tax	74.801
Royalty	156.021
Excise Duty	10.940
Sales Tax	345.628
Total:	**587.390**

CHAPTER 15

LAKHRA COAL DEVELOPMENT COMPANY LIMITED

<u>HEAD OFFICE</u>
LCDC Bungalow No.C6-A,
Block-F, Gulshan-e-Jamal,
near Macca Motors, off. Rashid Minhas Road,
Karachi-75250
Tel: (021) 99245232,5-9
Fax: 021-99245234
www.lcdc.gov.pk
Email: secretary@lcdc.gov.pk lcdc1@pk.netsolir.com

15.1 INTRODUCTION & INCORPORATION

Lakhra Coal Development Company Limited (LCDC) was incorporated as a Public Limited Company on 6th February, 1990 under Companies Ordinance, 1984. The Company is a Joint Venture of Pakistan Mineral Development Corporation (PMDC), Government of Sindh (GOS) and Water & Power Development Authority (WAPDA) with equity capital of Rs.50 million shared in the ratio of 50:25:25 respectively.

15.2 PROJECT LOCATION

The Company project comprising operating coal mines, is situated in Lakhra Coalfield located about 70 km north-west of Hyderabad city and 200 km North-East of Karachi. Presently an area of 7943 acres of Compact Block Coal lease is in possession of LCDC at Lakhra Coalfield for development of coal mines and supply of coal to LPGCL (WAPDA) Thermal Power Station at Khanote, District Jamshoro, Sindh. The total proved reserves in the area are 42 million tonnes.

15.3 COMPANY'S OBJECTIVE

Being an State Owned Entity (SOE) of Pakistan, as approved by the cabinet on 5th August, 2009 Empowerment of Employees of SOEs / other GoP shareholding through transfer of twelve percent (12%) of the GoP shareholding and a seat on the Board, accordingly the 12% of shares of PMDC only has been allotted and a LCDCLEET trust has been incorporated. Prime objective of the Company is to develop Lakhra Coal Mines to supply Coal to 150 MW Thermal Plant of LPGCL (WAPDA) at Khanote which was originally planned for 6x50 MW with annual coal consumption of 15,00,000 M.Tonnes. However, only 3x50 MW plant was set up which also operated much below its rated capacity reducing the coal requirement to even less than 50%. At later on, it was decided that remaining 3 units would be set up by private sector instead of WAPDA and accordingly an area of 8622 acres, out of 16,564.71 acres of Compact Block was withdrawn from LCDC leased area.

15.4 INFRASTRUCTURE FACILITIES

For the purpose of development / operation of mines necessary infrastructure as stated below has been developed:-

i) Fair weather roads have been constructed for transportation of coal from mines to main road leading to market. Also fair weather roads connecting various mines have been developed

ii) Sufficient numbers of residential colonies for labour have been constructed along with necessary amenities.

iii) Water supply arrangement for residential colonies as well various mines have been made through water tanker as well as concrete water tank at colonies and mines

iv) Electric generators have been set-up for emergency lighting and mines lamp charging

v) A mobile phone communication has been set-up to facilitate fast communication with mines site office.

15.5 MINE PLANNING AND TECHNICAL SUPERVISION

LCDC has employed a technical team of Mining Engineers, Geologist and survey officer supported with mine supervisory Sirdars and clerical staff. All operations are supervised/ guided by this team to ensure that all operations are carried out in accordance with statutory guideline and maximum possible recovery is ensured. The technical team overseas that the operations are conducted in accordance with mine plan duly approved by LCDC.

15.9 STATUS OF MINE DEVELOPMENT

LCDC has 45 mines fully developed and capable of each producing average 20 Metric tones coal per day while 12 mines are under development. Coal excavation is carried out by applying shortfall retreating method after developing coal panels at 50 ft interval. When a panel is completely mined, it is sealed off and coal excavation is started from next panel. Ventilation circuit is maintained through main incline as intake and main shaft as return air way. In case mine workings are extended far away from main shaft, an additional shaft is provided to improve airflow through coalface. Shaft is also used for coal hauling and material lowering while incline is also used as traveling way for labour.

15.10 COAL SALES

Due to under capacity operation and frequent shutdowns of WAPDA Thermal Plant, coal supplies to plant are much below the planned quantity of 7,50,000 tonnes. The plant is hardly using 200,000 to 250,000 tonnes coal, which is also jointly supplied by LCDC and PMDC. The Company has sold total quantity of **206,851** tonnes of coal during the year 2016-17.

Chapter 16

Pakistan LNG Limited (PLL)

9th Floor, Petroleum House
G-5/2, Ataturk Avenue, Islamabad
Pakistan
www.paklng.com

INTRODUCTION:

Pakistan LNG Limited (PLL) is a public sector entity incorporated under the Companies Ordinance 1984 and operates under the governance of the Petroleum Division. It is a wholly owned subsidiary of Government Holdings Private Limited (GHPL).

PLL has been mandated by the GOP to carry out the business of import, buying, storing, supplying, distributing, measuring/ metering and selling of natural gas, LNG, re-gasified LNG to meet the country's gas requirements. In this capacity PLL will procure LNG from international markets and enter into onward arrangements for supply of gas to the end user, thereby managing the whole supply chain of LNG from Procurement to end user gas sale agreements.

BUSINESS MODEL:

PLL was envisioned to circumvent supply chain issues and to be Pakistan's integrated energy solutions company. By being the one-stop shop between the suppliers and consumers of LNG, PLL shall:

- Sign SPAs with LNG Suppliers
- Contract LNG Terminal Regasification Capacity
- Contract Pipeline Capacity (sign GTAs – Gas Transportation Agreements)
- Sign GSAs (Gas Sales Agreements)
- Be a Professionally Managed Contract / Risk Management Firm

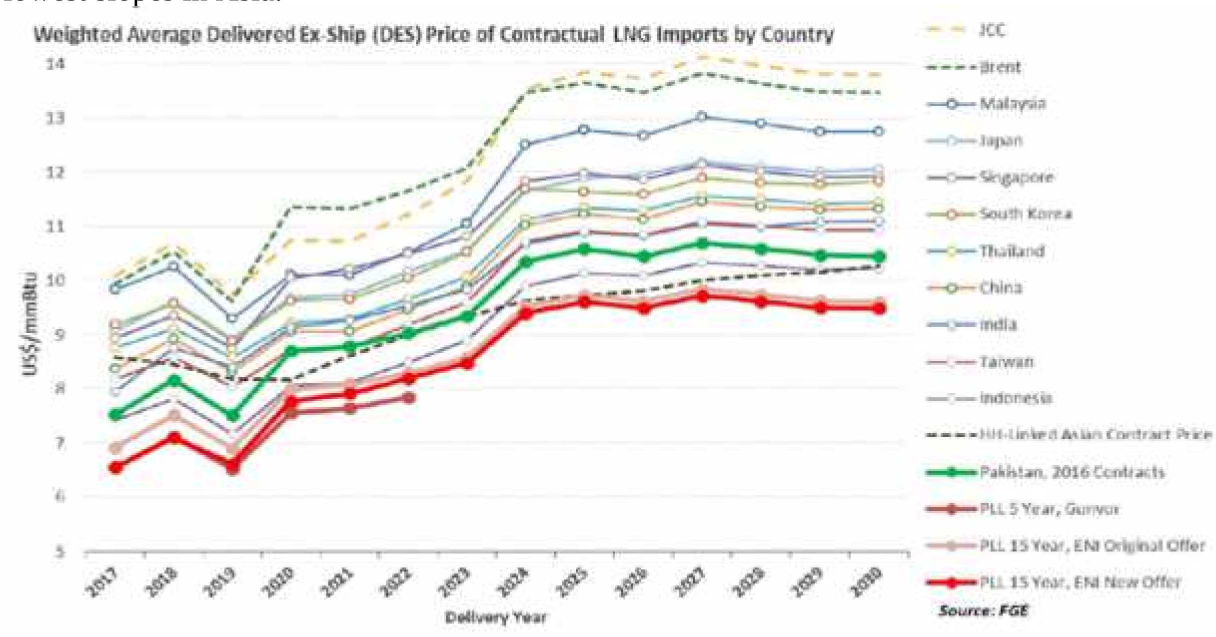
LNG PROCUREMENT – 2017:

PLL floated two term tenders for the supply of LNG. A 5 year and 15 year Term Tender was floated and awarded to Gunvor and ENI respectively, through a successful competitive bidding process.

Summary of the term tenders is shown in Table 1 below:

Company	Term	Quantum	Slope
Gunvor	5 Year	0.75 mtpa	11.62%
ENI	15 Year	0.75 mtpa	11.99%

An independent consultant, Facts Global Energy ("FGE"), was engaged to commercially review the offers received. The graph below demonstrates that Pakistan managed to secure some of the lowest slopes in Asia:



FUTURE LNG PROCUREMENT PLANS:

In addition to the above mentioned tenders, PLL is also in the process of negotiating a further supply of 4 LNG cargoes a month or the equivalent of 3 mtpa on a medium to long term basis. The additional cargoes are being negotiated on a government to government basis ('G2G"), taking up the total amount of LNG imported by PLL to 4.5 mtpa in 2018.

Chapter 17

Pakistan LNG Terminals Limited (PLTL)

5th Floor, Petroleum House
G-5/2, Ataturk Avenue, Islamabad
Pakistan
Tel: +92-051-9216901
Fax: +92-051-9216902
www.paklngterm.com

Introduction:

The ECC of the Cabinet upon consideration of summary dated 26th October, 2015 submitted by Ministry of Petroleum and Natural Resources regarding "Importing of Liquefied Natural Gas (LNG) – 2nd Terminal" and decided that GHPL may establish a subsidiary for setting up of LNG Terminal. Pursuant to this ECC decision, Pakistan LNG Terminals Limited (PLTL) was incorporated on 11th December, 2015**.**

Pakistan LNG Terminal Limited (PLTL) with its office situated in Islamabad was established by the GoP to facilitate and coordinate in carrying out the business of establishing, maintaining and operating terminals including jetty(s), docks, plants, harbours, pipelines with all machinery and equipment and supporting facilities for the handling, re-gasification (whether land or ship based), storage, treatment, transportation and processing of Liquefied Natural Gas (LNG). Re-gasified Liquefied Natural Gas (RLNG), Liquefied Petroleum Gas (LPG), Natural Gas Liquid (NGL) and other all related activities. Pertaining to LNG business, the company invited International investor to Finance, Design, develop, construct, procure, install, operate and maintain the RLNG services Facility for fifteen years (15 years) in order to satisfy the specified RLNG quality, handling and delivery requirements including development of necessary infrastructure.

After its incorporation in December 2015 PLTL's operational activities commenced in 2016. PLTL undertook signing of the OSA for the second LNG terminal in June 2016 and commencement of construction work on the second LNG Terminal in the second half of 2016, in addition to that PLTL was mandated to novate the 1st LNG Terminal from SSGC, following which PLTL initiated the novation process in the last quarter of 2016.