

Preface

This report is presented in compliance of Section 20 of the Oil and Gas Regulatory Authority Ordinance, 2002, for Financial Year 2004-05, in two parts as under:-

PART-I

Conduct of OGRA Affairs including Anticipated Developments next year

PART-II

State of the Regulated Segments of Pakistan's Petroleum Industry



The Authority



M.H. Asif
Member Finance

Rashid Farooq
Member Oil

Munir Ahmad
Chairman

Jawaid Inam
Member Gas/Vice Chairman



Senior Officers of the Authority



Left to right (Front): **Ahsan Maqbool** (Executive Director), **Sarfraz Ali Sheikh** (Senior Executive Director),
Brig (R) Tariq Mahmud (Secretary/Senior Executive Director), **Syed Jawad Naseem** (Executive Director),
Tauqir Ahmad Sadiq (Registrar)

Left to right (Back): **Shahid Nauman Afzal** (Joint Executive Director), **Sarmad Aslam** (Joint Executive Director),
Muhammad Yasin (Joint Executive Director), **Muazzam H. Chaudhry** (Joint Executive Director),
Shehzad Iqbal (Joint Executive Director)



Oil and Gas Regulatory Authority's Employees



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Abbreviations and Acronyms

ACGR	Annual compound growth rate
AJK	Azad Jammu & Kashmir
APCA	All Pakistan CNG Association
APL	Attock Petroleum Limited
ARL	Attock Refinery Limited
Bcf	Billion Cubic Feet
Bhp	Brake horsepower
BSCFD	Billion standard per cubic feet per day
BTU	British Thermal Unit
BTU/SCFT	British Thermal Unit per standard cubic feet
CBA	Collective Bargaining Agent
CBR	Central Board of Revenue
CIDA	Canadian International Development Agency
CNG	Compressed Natural Gas
CPGCL	Central Power Generation Company Limited
DTRR	Determination of Total Revenue Requirement
E&P	Exploration & Producing Companies
ECA	Economic Consultant Associates
ECPL	Engro Chemical Pakistan Limited
ERR	Estimated Revenue Requirement
FFC	Fauji Fertilizer Company
FKPCL	Fauji Kabirwala Power Company Limited
FY	Fiscal year
FRR	Final Revenue Requirement
FRSH	Ford Rhodes Sidat Hyder
FO	Furnace Oil
GDP	Gross Domestic Product
GDS	Gas Development Surcharge
GoP	Government of Pakistan
HSD	High Speed Diesel
HSE	Health, Safety and Environment
HSFO	High sulfur fuel oil
HR	Human Resource
IDF	Institutional Development Fund of World Bank
IFC	International Finance Corporation
ILBP	Indus Left Bank Pipeline
IPO	Initial public offering
IRBP	Indus Right Bank Pipeline
KAPCO	Kot Addu Power Company
KESC	Karachi Electric Supply Company
KM	Kilometer
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum gas



MGCL	Mari Gas Company Ltd.
MMcf	Million cubic feet
MMsfd	Million standard cubic feet per day
MPNR	Ministry of Petroleum & Natural Resources
MTOE	Million tonnes of oil-equivalent
MTD	Metric ton per day
NGRA	Natural Gas Regulatory Authority
NSC	National Security Council
NWFP	North West Frontier Province
OGDCL	Oil and Gas Development Company Limited
OGRA	Oil and Gas Regulatory Authority
O&M	Operation and Maintenance
OMC	Oil Marketing Companies
PARCO	Pak-Arab Refinery Company
PCA	Petroleum Concession Agreement
PDC	Petroleum Development Consultants
PKR	Pakistan Rupee
PPC	Pakistan Panel Code
PPEPCA	Pakistan Petroleum Exploration and Producing Companies Association
PPIAF	Public Private Infrastructure Advisory Facility
PPL	Pakistan Petroleum Ltd.
ROA	Return on Assets
RoR	Rate of Return
RR	Revenue Requirement
SCADA	Supervisory control and data acquisition
SMS	Sales meter station
SOPs	Standard operating procedures
SNGPL	Sui Northern Gas Pipelines Ltd.
SSGCL	Sui Southern Gas Company Ltd.
T & D	Transmission and distribution
TCF	Trillion Cubic Feet
TOE	Tonnes of Oil Equivalent
TPA	Third party access
TRR	Total Revenue Requirement
UK	United Kingdom
UFG	Unaccounted for Gas
USA	United States of America
USOA	Uniform system of Accounts
WAPDA	Water and Power Development Authority

Part - I

Report on Conduct of OGRA Affairs





1. Chairman's Review

The financial year 2004-05 was a good, successful and eventful period for the Oil and Gas Regulatory Authority (OGRA) as it remained fully engaged in the grant of licences for transmission and sale of natural gas, construction of compressed natural gas (CNG), production and marketing of liquefied petroleum gas (LPG), determination of revenue requirements of gas utilities, expeditious resolution of complaints against the gas, CNG and LPG companies, improvement in quality of service and enforcement of performance and service standards by the licensees and drafting of new rules, regulations etc.

OGRA was established in March 2002 under the OGRA Ordinance to regulate midstream and downstream oil and gas sector. To carry out its regulatory functions effectively, the Authority has laid down a comprehensive regulatory framework for natural gas, CNG & LPG sectors. Although the oil sector has not been transferred to OGRA as yet, the Authority has drafted rules/regulations for the same and circulated to the stakeholders for their comments. The Authority has completed all the mandatory actions within the timeframe stipulated in the Ordinance.

OGRA has made significant progress during the FY 2004-05 towards achieving the objectives of its establishment. The estimated revenue requirement of the two gas utilities in the country for FY 2005-06 was determined in due time. Review motions against these determinations were disposed of. The final revenue requirement of the two gas utilities for FY 2003-04 was also determined. During the year under review, the Authority issued 32 notifications of wellhead gas prices. Capacity for regulating oil sector was also developed. Study on the development of new tariff regime for natural gas licensees was completed and OGRA started work on the formulation of recommendations for consultation with the stakeholders.

Earlier, efficiency-based incentive-oriented targets for Unaccounted for Gas (UFG) were enforced in the natural gas sector. The Authority, after a detailed review and consultation with gas utilities, introduced a new concept of lower and upper UFG targets for determination of revenue requirements of the gas companies. In order to arrest the abnormal increase in HR cost and to obviate the need to micromanage, the Authority has introduced, on an experimental basis, the benchmark for HR cost in order to protect the interest of the consumers and incentives the licensees to strive for optimization of its human resource. Benchmarking of the perennial problem of high level of UFG has resulted in recurring reduction in the cost of supply of natural gas by about Rs.1.31 billion per annum. Further reduction of almost the same magnitude has been achieved through disallowance of imprudent expenditure taking the total saving for the consumers to about Rs.2.721 billion per annum i.e. Rs. 3.26 per MMBTU.



During the year under review, the Authority decided 12 cases relating to revenue requirement of the two gas utilities. These decisions were made after in-depth scrutiny of the capital and operating expenditure based on prudence, optimization, improved service to customers and safeguarding public interest. The Authority gave full opportunity to all stakeholders to express their viewpoint which were given due consideration before taking the decisions. Consequently the Authority issued 5 notifications of prescribed prices for each category of consumers for natural gas in respect of FY 2004-05 and FY 2005-06. In accordance with the provisions of OGRA Ordinance, the Authority also notified the sale prices of each category of consumers of natural gas w.e.f. 1st July, 2004 and 2nd February, 2005. The differential between the prescribed prices and sale prices is paid by the gas companies as Gas Development Surcharge (GDS) to the government.

The procedure for grant of CNG and LPG licences was streamlined to accelerate the pace of investment in these sectors. 618 new provisional and 183 marketing licenses were issued during the year in CNG Sector and 44 licences were issued in LPG Sector for production, marketing and construction of storage and filling facilities. These activities paved the way for an estimated investment of Rs. 11.00 billion and about 9,000 additional job opportunities. The Authority also issued three licences for transmission of natural gas to large consumers for their self use.

To protect consumers' rights and to ensure quick redressal of their grievances, the Authority had notified Complaint Resolution Procedure Regulations in respect of natural gas, LPG and CNG sectors and set up a cell to deal with the complaints efficiently. 362 complaints against the natural gas companies and 45 complaints against CNG & LPG companies were resolved. Penalties on 16 CNG stations and 2 LPG licensees for contravention of rules/standards were imposed. The Wafaqi Mohtasib Secretariat also transferred the work of public complaints against the gas companies to OGRA in March, 2005, which is now processed in accordance with Complaint Resolution Procedure Regulations, 2003.

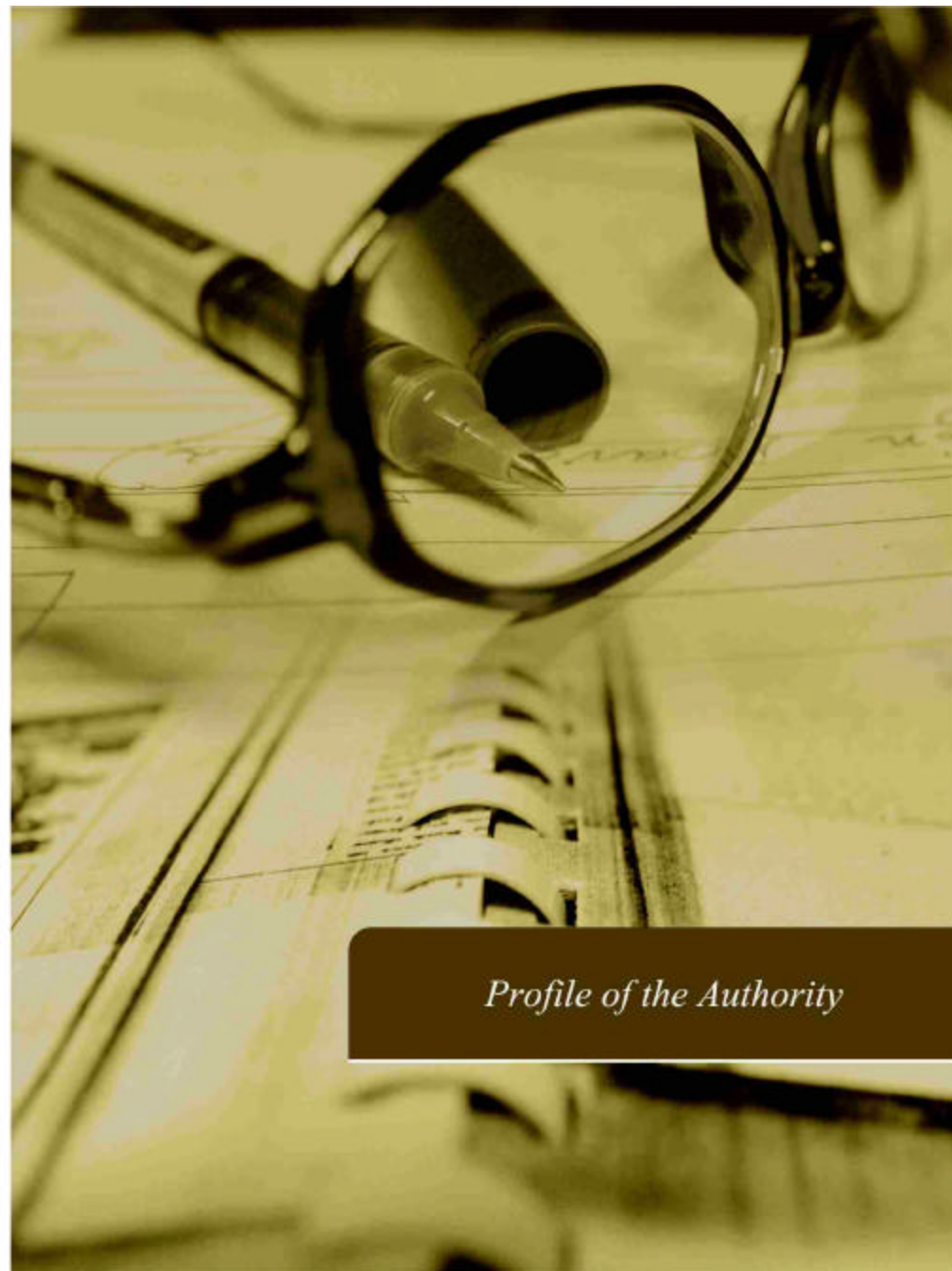
The Authority approved a number of Gas Sales Agreement between producers and licensees and Gas Sale/Supply Agreements between licensees and retail consumers. OGRA granted approval of SNGPL/SSGCL's projects related to expansion in the transmission and distribution networks, with some deletions and disallowances where prudence of investments was not established in the light of design parameters or the assumptions on which the project was based. The Authority also revised the standard Gas Sale Contract for domestic consumers to make it uniform for the gas companies and equitable, safeguarding consumers' interest as well as protecting other stakeholders, which will be enforced by the gas companies from FY 2005-06. The Authority also finalized in consultation with SNGPL & SSGCL a uniform policy and procedure to deal with theft of gas cases.



I would like to place on record my appreciation to the employees of the Authority who showed an exceptional spirit of cooperation and professionalism in the discharge of their responsibilities as assigned to the Authority under the Ordinance. The achievements of the Authority were possible only due to dedicated team work.

Today, the results speak by themselves about the impartiality and effectiveness of OGRA as an effective regulator. I earnestly hope that OGRA, in keeping with the spirit of OGRA Ordinance, will continue to strive for financial and operational efficiencies in the downstream petroleum sector through effective and meaningful regulation in the larger public interest.

(Munir Ahmad)
November 30, 2005



Profile of the Authority



2. Profile of the Authority

2.1 Composition

The Authority, established under the Oil and Gas Regulatory Authority Ordinance, 2002, comprises a Chairman, Member (Gas), Member (Oil) and Member (Finance). They have been selected by the Federal Government through open competition and appointed on tenure basis. The qualifications and other terms & conditions of their appointments as provided in the Ordinance are:

- a) The Chairman shall be an eminent professional of known integrity and competence with a minimum of twenty years of related experience in law, business, engineering, finance, accounting, economics or petroleum technology.
- b) The Member Oil shall be a person who holds an appropriate degree in the relevant field and is an experienced, eminent professional of known integrity and competence with a minimum of twenty years of related experience in the field of oil, including the transportation thereof.
- c) The Member Gas shall be a person who holds an appropriate degree in the relevant field and is an experienced, eminent professional of known integrity and competence with a minimum of twenty years of related experience in the field of natural gas, including the transmission and distribution thereof.
- d) The Member Finance shall be a person who holds an appropriate degree in the relevant field and is an experienced, eminent professional of known integrity and competence with a minimum of twenty years of related experience in the field of corporate finance or accounting.
- e) The Chairman shall be appointed by the Federal Government for an initial term of four years and shall be eligible for reappointment for a similar term.
- f) The Member Oil and Member gas shall be appointed by the Federal Government for initial terms of three years and shall be eligible for reappointment for a term of four years.
- g) The Member Finance shall be appointed by the Federal Government for an initial term of two years and shall be eligible for reappointment for a term of four years.
- h) The Chairman and the other Members shall retire on attaining the age of sixty five years.



2.1.1 Chairman

Mr. Munir Ahmad



Mr. Munir Ahmad is currently the Chairman of OGRA. He has 39 years extensive experience of dealing with the economic, operational and regulatory matters of the petroleum sector. He holds a Master's Degree in Petroleum Geology and has attended a number of professional courses on gas tariffs,

regulation, privatization etc. at home and abroad. Before joining OGRA he held the position of Director General (Gas), Ministry of Petroleum and Natural Resources, GoP for 17 years. He had been a Director on the Board of several petroleum sector companies for over 20 years. He also held the position of Managing Director of Sui Southern Gas Company Limited in 1989 and of Sui Northern Gas Pipelines Limited in 1999. After completion of his first term of 4 years as Chairman OGRA, he has been reappointed by the Federal Government for the second tenure of 4 years effective September 7, 2004.



2.1.2 Member (Gas)

Mr. Jawaid Inam



Mr. Jawaid Inam currently holds this position. He obtained a Bachelor's Degree in Fuel Science and Technology from the University of Leeds, UK and started his professional career as a Research Engineer at British Gas, UK. He joined SNGPL in 1966 and held important engineering and management positions including the Managing Director. He has received training at reputable universities such as Oxford, Chicago, Florida, Oklahoma and Texas in the fields of Engineering, Management and Utility Regulation. Mr. Inam has also been designated as Vice Chairman to perform the duties of the Chairman during the latter's absence. After completing first tenure of 3 years, he has been re-appointed in September, 2003 for a second tenure.



2.1.3 Member (Oil)

Mr. Rashid Farooq



Mr. Rashid Farooq was appointed as Member (Oil) on October 09, 2002 for the first tenure of 3 years. He holds Bachelor's Degree in Chemical Engineering from University of the Punjab and Master's Degree in Energy Engineering from University of Surrey, UK. He has attended a number of relevant international seminars, conferences and training programmes and has also obtained post graduate certificates in Petroleum Management, Business Management and Environment, and Impact Assessment from reputed foreign institutions. He has 29 years' experience in regulatory and policy matters in the upstream and downstream petroleum sectors, mostly with the Ministry of Petroleum and Natural Resources, GoP. He was Director General (Oil) before joining OGRA. He has also been on the Board of Directors of a number of petroleum sector companies.



2.1.4 Member (Finance)

Mr. M.H. Asif



Mr. M H. Asif was appointed as Member (Finance) on March 29, 2004 for an initial term of 2 years. He is Fellow Member of the Institute of Cost and Management Accountants of Pakistan and also holds Masters Degree in Economics and Bachelors Degree in Commerce. He has to his credit over

42 years exposure in leadership positions in the fields of finance, management, marketing, planning, human resource development and professional education. He has been associated with gas sector, GoP and public sector autonomous bodies. He has also been a member of the management team of the Institute of Cost and Management Accountants of Pakistan for a long time in honorary positions including the President. He served for 2 years as Technical Advisor to the Public Sector Committee of the International Federation of Accountants which is developing International Accounting Standards for public sector entities. He has received training abroad on market-based free economy operations in gas and oil industry, gas chain concept and regulation of utilities.



2.2 Powers and Functions

The salient features of the Powers and Functions of the Authority as embodied in the Ordinance are as under:-

- ▶ **Exclusive power to grant, amend or revoke licenses for regulated activities and enforce compliance of license conditions to promote efficiency, cost effectiveness, best practices, high safety and service standards etc. The regulated activities are:**
 - **Natural Gas**
 - Construction or operation of pipelines or storage facilities or other installations
 - Transmission
 - Distribution
 - Sale
 - **OIL**
 - Construction or operation of refinery, pipelines, storage facilities, blending facilities and installations;
 - Marketing and storage of refined products;
 - **Liquefied Petroleum Gas (LPG)**
 - Construction or operation of pipelines, production or processing facilities, storage facilities and installations
 - Transporting, filling, marketing and distribution
 - **Compressed Natural Gas (CNG)**
 - Construction or operation of testing or storage facilities.
 - Transporting, filling, marketing and distribution
 - **Liquefied Natural Gas (LNG)**
 - Construction or operation of production or processing facilities, testing or storage facilities and installations.
 - Transporting, filling, marketing and distribution
- ▶ **Exclusive power to employ officers, staff, experts, consultants, advisors and other employees on such terms and conditions as it may deem fit.**
- ▶ **Exclusive powers to decide upon all matters in its jurisdiction.**
- ▶ **Develop and enforce performance and service standards**
- ▶ **Determine in consultation with the Federal Government and the licensees, a reasonable rate of return to the natural gas licensees.**



- Prescribe procedures and standards for investment programmes of the gas utilities and oversee their capital expenditure to ensure prudence.
- Determine annually the revenue requirement of gas utilities covering the cost of gas, transmission and distribution cost and the prescribed rate of return.
- Resolution of complaints and disputes between a person and a licensee or between licensees.
- Enforce standards and specifications for refined oil products as notified by the Federal Government.
- Implement such policy guidelines of the Federal Government as are not inconsistent with the provisions of the OGRA Ordinance

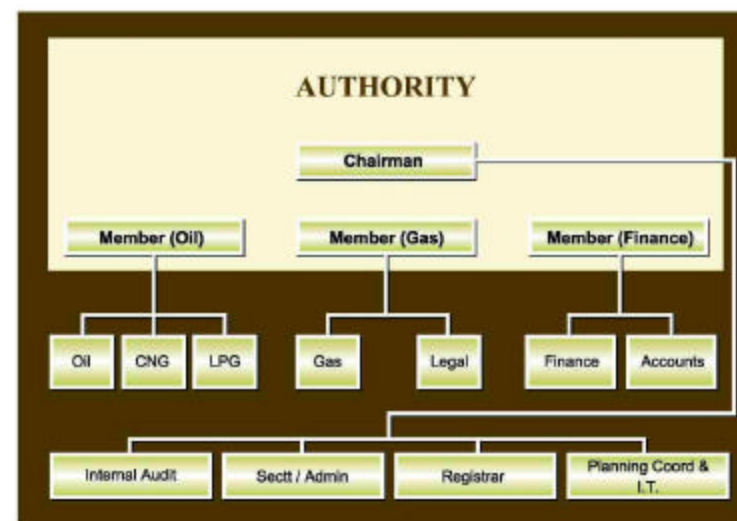


2.3 Organization Structure

2.3.1 Organogram

The Authority is organized as reflected by Exhibit 2.1

Exhibit 2.1



2.3.2 Human Resource

OGRA is a lean organization with a flat structure where emphasis is on quality, efficiency and goal-orientation. The departments are essentially small teams of highly motivated professionals with the bare minimum support staff. The working environment of OGRA provides optimal challenge to the employees whereas a sense of responsibility is induced in them which provides full freedom of action. OGRA provides a climate where people are encouraged to fully participate in decision making process. The employee status as on June 30, 2005 is at Exhibit 2.2.

**Exhibit 2.2: Employees status**

Engineers	20
Accountants / Financial Analysts	10
Lawyers	4
Administrative Executives	10
Executive Secretaries	10
Support Staff	80
Total	134



The officers and staff are recruited strictly on "as required" basis on the terms and conditions as stipulated in the OGRA Service Regulations notified under the OGRA Ordinance. The appointments are made on merit through a transparent and competitive process keeping in view the provincial quotas. Recruiting and selecting the right people is of paramount importance to the continued success of OGRA.

2.3.3 Capacity Building Project

OGRA fully realizes the very need of an ongoing training / skill development program for its officials in order to keep them abreast of leading regulatory best practices adopted in different parts of the World. OGRA's Capacity Building Project is duly funded by the World Bank in which US \$ 1.5 million have been allocated for institutional development studies and US \$ 0.5 million have been earmarked for various professional development training programs inside and outside Pakistan. OGRA also spends significant amount from its own sources on training of its officials. During the year under review, 30 officers have attended local/in-house training programs and 8 officers have participated in international training programs focusing on best regulatory practices.



OGRA has also initiated the following key studies:

- Open Access Common Carrier
- Development and Enforcement of Technical and Performance Standards relating to LPG.

2.3.4 I.T. Orientation

The Authority is aiming at minimizing the paper load and achieving efficiency through intensive use of Information Technology. OGRA has established two Local Area Computer Networks (LAN) at its two office buildings. The Computer resource sharing concept has improved efficiency and reduced cost of equipment.

OGRA maintains web portal 'www.ogra.org.pk' which has been designed using latest and secure web development tools. It is user friendly and is updated regularly. Anyone can access it and reach OGRA Ordinance, Rules and Regulations made thereunder and its decisions, notifications, tender notices, job announcements, press releases, list of licensees etc. Internal communication, normally, is done electronically reducing paper load and promoting speed. OGRA's website is among the most popular in the country as during the past one year over 100,000 visits were recorded.



Aftab Alam Khan, Asstt. Executive Director (IT) at work

3. Process

The Authority's decision-making process

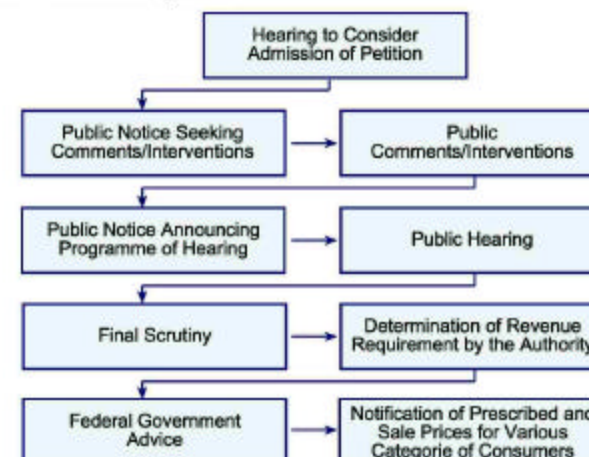
The Regulatory framework consists of a quasi-judicial Authority for the issuance of licences, tariff setting and maintaining standards of quality of services, therefore, the Authority is vested under the Ordinance and rules with the power of delivering decisions. The Authority exercises the power of original Jurisdiction in the petitions filed for grant of licences for various types of regulated activities, and setting of tariff which include determination of estimated and total revenue requirement of its licensees. In addition to natural gas the Authority has been empowered to grant licences for CNG, LPG and LNG related activities. The Authority is also vested with the appellate power and power to review its decisions under the ordinance and rules framed thereunder.



Chairman, Member(Gas), Member(Oil), Member(Finance) in a public hearing

All petitions are examined in the light of relevant rules, which inter-alia involved interactive process of consultation with all stakeholders including consumers through public hearings. This provide the general public an opportunity to vent their feelings on the quality of service provided to them and the utility company to put across its view point regarding its constraint to operate on the basis of commercial considerations. This enables the authority to have a wider range of information on the basis of which it can formulate its decision. A flow chart describing the functions of the Authority for determination of revenue requirements and notification of sale prices is given at Exhibit 3.1.

Exhibit 3.1: Decision Making Process



4. Performance

4.1 Development of Rules and Regulations

4.1.1 Formulation of Rules and Regulations

Section 41 and 42 of the OGRA Ordinance 2002 require the Authority to formulate Rules and Regulations respectively, to carry out its various functions as provided in the Ordinance. The rules are to be approved and notified by the Federal Government, whereas the regulations are to be approved and notified by the Authority itself. One of the fundamental instruments i.e. the Natural Gas Licensing Rules, were framed under the former NGRA Ordinance and notified in February 2002. These rules were later protected under the provision of OGRA Ordinance. Since its inception in March, 2002, the Authority has put in place a comprehensive regulatory framework as described below:

4.1.1.1 Rules

(i) Natural Gas (Licencing) Rules, 2002

Notified Natural Gas (Licencing) Rules, 2002, on February 26, 2002 to provide for the:

- terms and conditions for the grant, extension, modification, amendment, issuance, renewal, suspension, review, cancellation and reissue, revocation, termination or transfer of a licence including provision of information or records;
- imposition of fines for contravention of the Ordinance, the rules, the regulations and terms and conditions of licences;
- promotion of fair competition;
- inspection and audit of regulated activities;
- review of the decisions of the Authority;
- abandonment of a regulated activity;
- access and inspection by the Authority of the regulated activities and provision of penalties for preventing the Authority to carry out inspection;
- actions the Authority may take in respect of regulated activities in case of public emergency and escape of natural gas from a regulated activity;
- extension of facilities and services to supply natural gas to new areas and persons respectively;
- levy of fees;
- enforcement of the terms and conditions of licences and decisions of the Authority;
- prescribed application forms and procedure/timeframe including public hearings for grant of a licence for regulated activities.



Licence in favour of OGDCL being handed over by Chairman, OGRA to Mr. Najam K. Haider, MD, OGDCL on 10-12-2004

Performance



(ii) Natural Gas (Tariff) Rules, 2002

Notified Natural Gas (Tariff) Rules, 2002, on November 23, 2002 to provide for the:

- (a) determination of rates and tariffs for regulated activities;
- (b) determination of the revenue requirements of the gas utilities;
- (c) determination and notification of the prescribed prices for retail consumers of natural gas;
- (d) notification of the sale prices of natural gas for consumers as advised by the Federal Government under the Ordinance;
- (e) obligation of the licencees for charging the consumers only the tariffs as notified by the Authority;
- (f) imposition of fines for contravention of the Ordinance, rules, regulations and determinations of the Authority;
- (g) review of the decisions of the Authority in respect of determination of revenue requirements;
- (h) levy of fees;
- (i) prescribed application forms and procedure/timeframe including public hearings for determination of a tariff application.

(iii) Budget Committee Rules, 2004

Notified Budget Committee Rules, 2004 on December 30, 2004 to provide for the:

- a) procedure for appointment of the Budget Committee Members and its operation;
- b) procedure for review of the Budget of the Authority;
- c) review of the accounts of the Authority and appointment of firms of Chartered Accountants with the approval of the Auditor General of Pakistan for the audit of the accounts of the Authority.

(iv) Compressed Natural Gas (Production and Marketing) Rules, 1992

Compressed Natural Gas (CNG) (Production and Marketing) Rules, 1992 adopted by the Authority w.e.f. March 15, 2003 under the Ordinance. The rules provide for the:

- (a) terms and conditions for the grant, extension, modification, amendment, issuance, renewal, suspension, review, cancellation and reissue, revocation, termination or transfer of a licence including provision of information or records;
- (b) imposition of fines for contravention of the Ordinance, the rules, the regulations and terms and conditions of licencees;
- (c) promotion of fair competition;
- (d) inspection and audit of regulated activities;
- (e) review of the decisions of the Authority;
- (f) abandonment of a regulated activity;
- (g) access and inspection by the Authority of the regulated activities and provision of penalties for preventing the Authority to carry out inspection;
- (h) levy of fees;



- (i) enforcement of the terms and conditions of licences and decisions of the Authority.
- (j) prescribed application forms and procedures for grant of a licence for regulated activities. The revised CNG Rules have been drafted and are in the process of consultation with the stakeholders.

(v) Liquefied Petroleum Gas (Production and Distribution) Rules, 2001

Liquefied Petroleum Gas (Production and Distribution) Rules, 2001, adopted by the Authority w.e.f. March 15, 2003 under the Ordinance. The rules provide for the:

- (a) terms and conditions for the grant, extension, modification, amendment, issuance, renewal, suspension, review, cancellation and reissue, revocation, termination or transfer of a licence including provision of information or records;
- (b) imposition of fines for contravention of the Ordinance, the rules, the regulations and terms and conditions of licencees;
- (c) promotion of fair competition;
- (d) inspection and audit of regulated activities;
- (e) review of the decisions of the Authority;
- (f) abandonment of a regulated activity;
- (g) access and inspection by the Authority of the regulated activities and provision of penalties for preventing the Authority to carry out inspection;
- (h) levy of fees;
- (i) enforcement of the terms and conditions of licences and decisions of the Authority.
- (j) Prescribed application forms and procedures for grant of a licence for regulated activities.

4.1.1.2 Regulations

(i) Complaint Resolution Procedure [for Natural Gas, Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG)] Regulations, 2003

Complaint Resolution Procedure [for Natural Gas, LPG and CNG] Regulations, 2003, notified on September 3, 2003, provide for:

- (a) procedure and timeframe for resolving complaints against the licencees of natural gas, LPG and CNG; and
- (b) procedure for appeal to the Authority against the decision of a delegatee as provided in Section 10 of the OGRA Ordinance.

(ii) Natural Gas Transmission (Technical Standards) Regulations, 2004

Natural Gas Transmission (Technical Standards) Regulations, 2004, notified on August 5, 2004, provides for the design, construction, testing, operation, maintenance and abandonment of natural gas transmission pipelines.



(iii) Natural Gas Distribution (Technical Standards) Regulations, 2004

Natural Gas Distribution (Technical Standards) Regulations, 2004, notified on August 5, 2004, provides for the design, construction, testing, operation, maintenance and abandonment of natural gas distribution pipelines.

(iv) OGRA Service Regulations, 2005

OGRA Service Regulations, 2005, notified on January 31, 2005, provides for the terms and conditions of employment and remunerations policy for staff, consultants and advisors of the Authority.

(v) OGRA Financial Regulations, 2005

OGRA Financial Regulations, 2005, notified on January 11, 2005, provides for procedures, processes and delegation of financial powers in respect of financial management of the Authority.

(vi) Performance and Service Standards

Performance and Service Standards Regulations have been issued to the licensees. The service standards prescribe the licensees obligations in respect of maintaining quality of gas, reading meters, responding to consumer complaints, etc. The performance standards measure the licensees' efforts in the areas of consumer satisfaction, safety, billing, providing connections etc.

4.2 Natural Gas Sector

4.2.1 Licences

4.2.1.1 Fauji Fertilizer Company Limited (FFCL)

FFCL owns and operates 3 urea fertilizer plants (2 No. at Goth Machhi, district Rahim Yar Khan and 01 No. at Mirpur Mathelo, district Ghotki) with a total annual design capacity of 1.904 million tons of prilled urea. Natural gas source for all these plants is Mari gas field and same is transmitted through FFCL's three owned, maintained and operated independent pipelines:

- 16"dia, 48.6Km pipeline-1 from Mari gas field gate to Fauji Fertilizer plant-1, Goth Machhi, district Rahim Yar Khan.
- 14"dia, 48.1 Km pipeline-2 from Mari gas field gate to Fauji Fertilizer plant-2, Goth Machhi, district Rahim Yar Khan.
- 16"dia, 15 Km pipeline from Mari gas field gate to Fauji Fertilizer plant, Mirpur Mathelo, district Ghotki.



FFCL filed a petition under provisions of the Oil and Gas Regulatory Authority Ordinance, 2002 and Natural Gas Regulatory Authority (Licencing) Rules, 2002 for grant of transmission licence specifically for:

"Construction and operation of pipelines alongwith ancillary/ connected facilities for transmission of natural gas from Mari gas field to Fauji Fertilizer Company Limited's plant sites at Goth Machhi, District Rahim Yar Khan, Punjab and Mirpur Mathelo, district Ghotki, Sindh for self use on exclusive basis."

The Authority, after completing due process, in exercise of its powers under the provisions of OGRA Ordinance, 2002 granted a licence to FFCL on 7th April, 2005 to undertake the regulated activity of construction and operation of pipelines alongwith ancillary/connected facilities for the purpose of transmission of natural gas from Mari gas field gate to Fauji Fertilizer Company Limited's plant sites at Goth Machhi, district Rahim Yar Khan and Mirpur Mathelo, District Ghotki exclusively for self use for a period of thirty years effective from 28th March, 2002, the date of promulgation of OGRA Ordinance or till the expiry of the Gas Purchase and Sale Agreements between Mari Gas Company Limited and FFCL, whichever comes first.



License in favour of FFCL being handed over by Chairman, OGRA to Lt. Gen. (R) Mahmud Abbas, Chief Executive/MD, FFCL on 07-04-2005

4.2.1.2 Engro Chemical Pakistan Limited (ECPL)

ECPL operates a urea fertilizer manufacturing complex at Dharki, District Ghotki in the province of Sindh which has a rated capacity of 900 thousand tons per annum. Natural gas is transmitted from the Mari gas field gate to its Complex (Fertilizer plant) through petitioner's owned, maintained and operated 10"dia, 8.8Km and 12"dia, 8.8 Km two gas pipelines.

ECPL applied under the provisions of OGRA Ordinance, 2002 and Natural Gas Regulatory Authority (Licencing) Rules, 2002 for the grant of licence for construction and operation of pipelines along with ancillary/connected facilities for the purpose of transmission of natural gas from Mari gas field to ECPL's Complex (Fertilizer plant) at Dharki, district Ghotki exclusively for self use.

The Authority, after completing due process, in exercise of its powers under the provisions of the OGRA Ordinance granted a licence to ECPL on 7th April 2005 to undertake the regulated activity of construction and operation of pipelines alongwith ancillary/connected facilities for the purpose of transmission of natural gas from Mari gas field gate to ECPL Complex (Fertilizer plant) at Dharki, district Ghotki exclusively for self use for a period of thirty years effective from 28th March, 2002, the date of promulgation of OGRA Ordinance or till the expiry of the Gas Purchase and Sale Agreement between Mari Gas Company Limited and ECPL, whichever comes first.



4.2.1.3 Central Power Generation Company Limited (CPGCL)

CPGCL owns and operates Thermal Power Complex Guddu having total installed capacity 1655 MW, situated on the right bank of river Indus near Guddu barrage, 10 Kilometers from Kashmore district Jacobabad, Sindh. Natural gas is used for the power complex and transmitted from different gas fields through following three gas pipelines which are owned, maintained and operated by CPGCL:-

- 20"dia, 60Km pipeline from Mari gas field to Guddu Thermal Power Station (Sara/Suri gas is also injected into this pipeline at Mari gas field).
- 16"dia, 50 KM pipeline from Kandhkot gas field gate to Guddu Thermal Power Station.
- 16"dia, 56 Km pipeline from SNGPL's compression station at Sui gas field to Guddu Thermal Power Station for supply of Zamzama gas.

CPGCL filed a petition under the provisions of the Oil and Gas Regulatory Authority Ordinance, 2002 and Natural Gas Regulatory Authority (Licencing) Rules, 2002 for grant of a licence for transmission of natural gas from (i) Mari gas field (ii) SNGPL Compression Station at Sui gas field (iii) Kandhkot gas field to Central Power Generation Company Limited Thermal Power Complex Guddu for self use on an exclusive basis.

The Authority, after completing due process in exercise of its powers under the provisions of the Oil and Gas Regulatory Authority Ordinance, 2002, granted a licence on 14.04.2005 to CPGCL to undertake the regulated activity of construction and operation of pipelines alongwith ancillary/connected facilities for the purpose of transmission of natural gas from (a) Mari gas field (b) SNGPL's compression station at Sui field and (c) Kandhkot gas field gate to CPGCL's Thermal Power Station Guddu, district Jacobabad, Sindh exclusively for self use for a period of thirty years effective from 28th March, 2002, the date of promulgation of OGRA Ordinance or till the expiry of the Gas Purchase and Sale Agreements between CPGCL and (a) Mari Gas Company Limited (b) Pakistan Petroleum Limited (c) Tullow Pakistan (Developments) Limited and (d) SNGPL, whichever comes first.

4.2.2 Wellhead Gas Price Determination and Notification

Section 6(2)(w) of OGRA Ordinance, 2002 empowers the Authority to determine the well-head gas prices for the producers of natural gas in accordance with the relevant agreements or contracts, and to notify the same in the official gazette.

Determination and notification of wellhead prices basically pertain to upstream companies which have been requesting that this function should be performed by the Ministry of Petroleum & Natural Resources which is regulating the entire upstream sector. Consequently an amendment to delete this power from OGRA Ordinance is under process. In the meantime OGRA is notifying the wellhead gas prices for all the natural gas producers in the country. During the year under review, the Authority issued 32 notifications of wellhead gas prices.



4.2.3 Determination of Revenue Requirement (RR) of Gas Utilities.

Under Section 8 of the OGRA Ordinance, the Authority is empowered to determine the RR and the prescribed price for each category of retail consumers in respect of each licensee carrying out the activities of transmission, distribution or sale of natural gas.

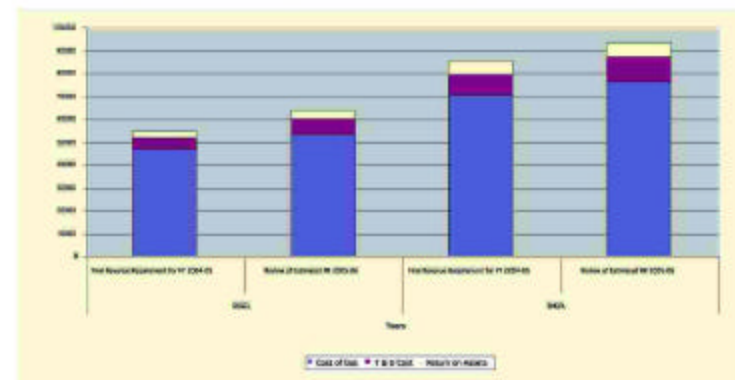
The RR is the sum of money which would enable a licensee to efficiently conduct its business and earn a reasonable return on its investment. The revenue requirement comprises of the following major components:

- Cost of gas (wellhead prices)
- Transmission and distribution cost including depreciation.
- Prescribed return which currently is 17.5% in case of SNGPL and 17% in case of SSGCL on the value of their net fixed assets in operation.

The cost of gas (at wellhead prices) which constitutes over 80% of the total RR of the gas utilities is determined in accordance with the parameters contained in the Gas Pricing Agreements between the Federal Government and the gas producers, therefore, any change in cost of gas is practically a pass through amount. Federal Government has also issued (on OGRA's suggestion) a policy guideline that the cost of gas of SSGCL and SNGPL should be worked out on overall average basis to keep this major input cost uniform. This adjustment ensures inter se equity between the two gas companies, because under the current policy of the Federal Government, uniform sale price is to be maintained for each category of consumers throughout the country.

The scrutiny by the Authority consequently is more focused on examining the operating revenues, operating cost and assets base. **Exhibit 4.1** below highlights this aspect of revenue requirement of the two gas utilities.

Exhibit 4.1: Major Cost Components of Revenue Requirement Determined by OGRA





Under the OGRA Ordinance and Natural Gas Tariff Rules, 2002, the gas utility companies are required to submit their Estimated Revenue Requirement (ERR) for each financial year by December 1 of the preceding year. These petitions are scrutinized, processed and decided in accordance with the Rules after due notice in the national press and giving full opportunity of being heard to all the stakeholders including the petitioner and general public. Later, during the financial year, the gas utility companies file review petitions for adjustment in revenue requirement to cater for changes in cost of gas, and other relevant factors viz. sales volume and sale mix. Determination of Total Revenue Requirement (TRR) is carried out at the end of the financial year on the basis of auditor's initialed accounts.

The companies may also file motion for review against any decision of the Authority under the relevant provisions of law which provide the grounds on which a review petition can be filed.

The Authority has decided the following eight petitions of SNGPL and SSGCL, the two integrated gas utilities operating in Pakistan, during the financial year 2004-05:

- Determination of Total Revenue Requirement for FY 2003-04*.
- Review of Total Revenue Requirement for FY 2003-04.
- Review of ERR for FY 2004-05.
- Determination of ERR for FY 2005-06.

Also, the Authority has decided the following four petitions of the two gas utilities during financial year 2005-06 which are also being included in this report due to time lag:

- Determination of Review of ERR for FY 2005-06.
- Determination of TRR for FY 2004-05.

** Details for TRR for FY 2003-04 have already been provided in the OGRA's Annual Report for FY 2003-04 due to time lag.*

An important element in these determinations is the inclusion of deferral account to capture variations in revenues and expenditures at the time of actualization. This mechanism enables correct charge of cost to the present consumer for the services received in the financial year; otherwise the future consumers would be additionally burdened with the cost chargeable to current consumers.

Another important element in these determinations is disallowance of insurance coverage on account of terrorism exceeding Rs. 230 million by OGRA on the grounds of being too high and unjustified keeping in view the minimal value of assessed losses to-date and increase of over Rs. 110 million on account of enhanced security measures. The policy guidelines have been sought from the Federal Government owing to the sensitivity of the issue.



Press conference by Mr. Manir Ahmad, Chairman



An Independent regulator is expected to balance the divergent interests of the consumers, investors and the Government. It is as difficult as a tight rope walk. Among these interested parties, consumers are the weakest and look towards the regulator for protection from monopolistic attitude, unreasonableness and cost of inefficiency of the utilities.

OGRA has taken a conscious decision to attach primary importance to protecting consumers' interest while remaining within the Government's policy framework and providing incentives to entities to perform optimally.

4.2.3.1 Unaccounted For Gas (UFG) Losses Benchmark

The importance of Unaccounted for Gas (UFG) or line losses cannot be over emphasized. The very fact that every percent of UFG means a loss or gain of over 1.00 billion rupees per year makes UFG as one of the most critical areas in the operation of a gas utility. Unfortunately, the control of UFG was not given its due importance and no serious effort was made by the utilities to arrest the rising trend of UFG.

Prior to establishment of OGRA in 2002, the level of UFG in SNGPL and SSGCL hovered in the range of 8-8.5% of the gas purchased from producers, net of internal consumption. UFG was not showing a declining trend in the real terms. Every time a major volumetric addition was inducted into the transmission system of any of the companies, the UFG registered some reduction only percentage-wise but not volumetrically, as volume of UFG continued to increase. The temporary decline recorded in percentage was due to the fact that bulk of additionally available gas supplied to the large consumers in the power or fertilizer sectors, where due to accurate measurement on the one hand and lack of other UFG inducing elements on the other hand at these locations, there was practically no increase in UFG. OGRA was aware of the fact that by vigorously regulating this relatively ignored activity; the losses could be reduced in a phased program resulting in savings of billions of rupees each year. In consultation with the utilities, OGRA devised a three year incentive based schedule from year 2003-04 to reduce the UFG from the prevailing level to that at 6.00 %. The targets set by OGRA were as follows:

Financial Year	Target
2002-03	7.00 %
2003-04	6.50%
2004-05	6.00%

The targets were fixed with the condition that if the companies failed to bring down UFG to the desired level then volumes over and above the targets will be disallowed and will not form part of operational expenses; hence the companies will have to bear these losses from their profits. If, however, a company in any financial year brought UFG lower than fixed target it can retain the savings over and above its guaranteed return. The performance of the two companies before and after the application of UFG targets is at Exhibit 4.2

**Exhibit 4.2:** Performance of SNGPL & SSGCL before & after the application of UFG targets

Financial Year	2000-01	2001-02	2002-03	2003-04	2004-05
SNGPL-Actual	8.87%	7.98%	8.19%	6.75%	6.86%
Allowed	8.87%	7.98%	8.19%	6.50%	6.00%
SSGCL-Actual	8.36%	7.60%	7.57%	7.09%	7.48%
Allowed	8.36%	7.60%	7.57%	6.50%	6.00%

It was observed that even though the two companies have yet to fully achieve the targets set by OGRA, however, significant reduction has resulted, besides the burden has not been passed over to the consumers where the companies have failed to meet the targets. The short fall in their revenue requirement was met from their profits. As a consequence of enforcement of the above mentioned targets, during the period 2003-2005, an additional burden of Rs.1.6 Billion on gas consumers was avoided as the companies absorbed it from their own profits.

To set targets for the years beyond 2004-05, OGRA conducted extensive research in the matter, which revealed that most of the companies in North America have UFG levels below 3%. The breakup of UFG levels being maintained by 32 gas distribution companies (where majority of line losses occur) operating in the United States of America and having a consumer base of 500,000 customers or more is given in the Exhibit 4.3.

Exhibit 4.3: UFG level being maintained by gas distribution companies in USA

Number of Companies (32 in total)	UFG Level (in percentage)
9	0 to 1
12	>1 to 2
6	>2 to 3
3	>3 to 4
2	>4 to 5

Source: US Department of Transportation, Office of Pipeline Safety.

Similarly, the research of gas industry in Australia revealed that the gas distribution companies operating in that country are maintaining the UFG at an average level of 2.8 %. A territory-wise statistics of UFG level (in percentage) is given in Exhibit 4.4.

**Exhibit 4.4:** Territory-wise statistics of UFG level in Australia

Territories	UFG Level (in Percentage)						
	2005	1994	1993	1992	1991	1990	1989
New South Wales	2.6	4.2	4.8	7.3	7.3	7.5	6.9
Queensland	2.7	6.8	6.0	4.3	5.2	4.4	4.6
Western Australia	2.4	-	0.7	0.4	0.6	0.6	0.7
South Australia	3.6	3.9	2.9	4.5	2.4	4.3	4.7
Victoria	2.8	2.2	1.9	2.4	2.5	2.4	2.5
Over-all Australia	2.8	1.9	2.2	2.7	2.7	3.0	2.9

Source: Victorian Energy Network Corporation (VenCorp), Australia.

Keeping in view of the local conditions and constraints, OGRA has set appropriate UFG benchmarks for gas utility companies operating in Pakistan with a view to further improve their efficiency. To encourage them for striving to meet the set target of UFG level incentives have been given to these companies in the shape of retaining the saving in case where the UFG achieved is lower than the benchmark set by OGRA. Consequently, SNGPL and SSGCL have been advised to reduce UFG levels to 4.00 % by financial year 2011-12. OGRA has advised the companies to gradually bring the UFG percentage down to a level in the period stated above in accordance with given in Exhibit 4.5.

Exhibit 4.5: UFG Percentage

Financial Year	Upper Target	Lower Target
2005-06	6.00%	5.70%
2006-07	6.00%	5.40%
2007-08	6.00%	5.10%
2008-09	5.50%	4.80%
2009-10	5.50%	4.50%
2010-2011	5.00%	4.25%
2011-2012	5.00%	4.00%

It would be observed that OGRA now has introduced a new concept of upper limit and a lower limit of UFG. If the Company's UFG performance is between these limits then 50% of the revenue loss has to be borne by the Company. In case, it is above the upper level then Company will have to bear the entire of the revenue loss. Finally, if Company's UFG target is below the lower limit then the Company can reap the benefit by retaining 100 % of the profit over and above its guaranteed return on assets.



4.2.3.2 UFG Audit

Unaccounted for gas (UFG) means, in respect of a financial year, the difference between the total volume of gas purchased by the licensee during the financial year and volume of gas metered as having been supplied by the licensee to its consumers excluding there from metered natural gas used for self consumption by the companies. Since the reduction of 1% UFG, in monetary terms roughly equals over Rs. 1.00 Billion of the two gas utility companies up to FY 2004-05 and this figure is likely to escalate in future due to high sales volume and tariff, OGRA in the first instance conducted a UFG Audit of the two companies through a consortium of two chartered accountant firms to assess the credibility and authenticity of UFG reported by the two and in case of variance, determine the actual UFG in accordance with the definition of UFG in the Natural Gas Tariff Rules, 2002. The objectives of the study were:

“Verification and reconciliation of gas (Volume/BBTUs) purchased from different sources and transferred from each delivery point with the gas (Volume/BBTUs) sold to consumers of that area on a monthly basis.”

The consultants submitted their final report on UFG Audit in March, 2005 which was circulated to both the gas companies for their comments. The companies represented against the conclusions and findings of the Audit Report which is under consideration of the Authority. A final decision on the adjustment requirements, if any, in respect of UFG for FY 2003-04 in subsequent financial years shall be taken by the Authority in due course, after detailed discussions with them.

4.2.3.3 Review of Total Revenue Requirement of SNGPL & SSGCL for FY 2003-04

During the year under review, the gas utility companies filed a motion for review on Determination of TRR for FY 2003-04. The Authority refused leave for review to the above referred petitions since no new argument or evidence against the Authority's earlier decision in respect of TRR for FY 2003-04 of both the utilities was brought to the attention of the Authority.



Hearing of the Authority

4.2.3.4 Review of Estimated Revenue Requirement of SNGPL for FY 2004-05

SNGPL filed a petition for review of Authority's determination of ERR for FY 2004-05. The petition was disposed initially through an interim order dated 23rd December, 2004 and finally on May 03, 2005.



The Exhibit 4.6 shows comparison of OGRA's determination (of May 03, 2005) with SNGPL's request in respect of various components of estimated revenue requirement for FY 2004-05

Exhibit- 4.6: SNGPL's Request vis-à-vis OGRA Determination of ERR for FY 2004-05

Rs. in million

Particulars	SNGPL's request	OGRA determination	Difference
Sales Volume (BBTU)	476,154	476,154	-
Cost of Gas	66,104	65,831	(273)
Transmission & Distribution Cost and Others	6,646	6,394	(252)
UFG disallowance	-	(326)	(326)
Depreciation	3,915	3,813	(102)
Return on net operating fixed assets	5,895	5,376	(519)
Total Revenue Requirement	82,560	81,088	(1,472)
Total Revenue Available	78,178	78,217	39
Shortfall	4,382	2,871	(1,511)

The Authority determined the shortfall in estimated revenue requirement of SNGPL at Rs. 2,871 million for entire FY 2004-05 as against shortfall of Rs. 4,382 million claimed by SNGPL. The Authority observed that the natural gas consumer prices for FY 2004-05 have to be revised if the shortfall in the revenue requirement is to be recovered. Since consumer prices cannot be revised retrospectively, the Authority decided to recover the shortfall in the remaining six months of FY 2004-05 resulting in an increase of Rs. 12.01 per MMBTU in average prescribed price w.e.f January 01, 2005 as against the demand for increase of Rs. 18.34 per MMBTU (worked out on six month's volume 238,991 BBTU), graphical representation of which is in Exhibit 4.7.

Exhibit 4.7: Increase in Average Prescribed Price of SNGPL for FY 2004-05**4.2.3.5 Review of Estimated Revenue Requirement of SSGCL for FY 2004-05**

SSGCL filed a petition for review of Authority's determination of ERR for FY 2004-05. The petition was disposed initially vide Authority's interim order dated 27th December, 2004 and finally on May 03, 2005.

The Exhibit 4.8 shows comparison of OGRA's determination (of May 03, 2005) with SSGCL's request in respect of various components of estimated revenue requirement of SSGCL for FY 2004-05.

Exhibit 4.8: SSGCL's Request vis-à-vis OGRA Determination of ERR for FY 2004-05

Rs. in Million

Particulars	SSGCL's request	OGRA determination	Difference
Sales Volume (BBTU)	323,037	323,037	-
Cost of Gas	44,324	44,567	243
Transmission & Distribution Cost and Others	4,227	4,331	104
UFG disallowance	-	(223)	(223)
Depreciation	2,326	2,295	(31)
Return on net operating fixed assets	2,956	2,707	(249)
Total Revenue Requirement	53,833	53,677	(156)
Total Revenue Available	51,718	51,691	(27)
Shortfall	2,115	1,986	(129)

The Authority determined the shortfall in estimated revenue requirement of SSGCL at Rs. 1,986 million for entire FY 2004-05 as against shortfall of Rs. 2,115 million claimed by SSGCL. The Authority observed that the natural gas consumer prices for FY 2004-05 have to be revised if the shortfall in the revenue requirement is to be recovered. Since consumer prices cannot be revised retrospectively, the Authority decided to recover the shortfall in the remaining six months of FY 2004-05 resulting in an increase of Rs. 12.55 per MMBTU in average prescribed price w.e.f January 01, 2005 as against the demand for increase of Rs. 13.37 per MMBTU (worked out on six month's volume 158,246 BBTU). Graphical representation of increase in average prescribed price is in Exhibit 4.9.

Exhibit 4.9: Increase in Average Prescribed Price of SSGCL for FY 2004-05**4.2.3.6 Determination of Estimated Revenue Requirement of SNGPL for FY 2005-06**

SNGPL's petition for determination of ERR for FY 2005-06 was decided by the Authority on May 20, 2005. Exhibit 4.10 shows comparison of OGRA's determination (of May 20, 2005) with SNGPL's request in respect of various components of estimated revenue requirement of SNGPL for FY 2005-06.

MD, SNGPL with his team
in the Public Hearing

**Exhibit 4.10: SNGPL's Request vis-à-vis OGRA Determination of ERR for FY 2005-06**

Rs. in Million

Particulars	SNGPL's request	OGRA determination	Difference
Sales Volume (BBTU)	499,479	499,479	-
Cost of Gas	77,036	77,036	-
Transmission & Distribution Cost and Others	6,911	6,823	(88)
UFG disallowance	(5.98%)	(177) (5.75%)	(177)
Depreciation	4,304	4,229	(75)
Return on net operating fixed assets	6,141	5,444	(697)
Total Revenue Requirement	94,392	93,355	(1,037)
Total Revenue Available	87,988	88,628	(640)
Shortfall	6,404	4,727	(1,677)

Since the determination had to be made on provisional basis as it was being made in advance and the licensee had submitted estimated revenues and expenditure, the Authority established a deferral account amounting to Rs. 380 Million in the revenue requirement of the licensee to capture variations to the justified extent while actualizing at the close of the year.

The Authority determined the increase in the average prescribed price of SNGPL at Rs. 9.46 per MMBTU as against increase of Rs. 12.82 per MMBTU requested by SNGPL to meet its revenue requirement for FY 2005-06, which shows decrease of Rs. 3.36 per MMBTU in average prescribed prices, graphical representation of which is given in Exhibit 4.11.

Exhibit 4.11: Increase in Average Prescribed Price of SNGPL for FY 2005-06**4.2.3.7 Determination of Estimated Revenue Requirement of SSGCL for FY 2005-06**

SSGCL's petition for determination of its ERR for FY 2005-06 was decided by the Authority on May 20, 2005. Exhibit 4.12 shows comparison of OGRA's determination (of May 20, 2005) with SSGCL's request in respect of various components of estimated revenue requirement of SSGCL for FY 2005-06.



MD, SSGCL with his team in the Public Hearing

Exhibit 4.12: SSGCL's Request vis-à-vis OGRA Determination of ERR for FY 2005-06

Rs. in Million

Particulars	SSGCL's request	OGRA determination	Difference
Sales Volume (BBTU)	338,945	338,945	-
Cost of Gas	53,438	53,438	-
Transmission & Distribution Cost and Others	4,416	4,556	140
UFG disallowance	(6.00%)	(130) (5.75%)	(130)
Depreciation	2,825	2,714	(111)
Return on net operating fixed assets	3,843	3,301	(542)
Total Revenue Requirement	64,522	63,879	(643)
Total Revenue Available	61,121	61,390	(269)
Shortfall	3,401	2,489	(912)

The Authority established a deferral account amounting to Rs. 350 Million in the revenue requirement of the licensee to capture variations to the justified extent while actualizing at the close of the year.

The Authority determined the increase in the average prescribed price of SSGCL at Rs. 7.34 per MMBTU as against increase of Rs. 10.04 per MMBTU requested by SSGCL to meet its revenue requirement for FY 2005-06, which shows decrease of Rs. 2.70 per MMBTU in average prescribed prices, graphical representation of which is given in Exhibit 4.13.

**Exhibit 4.13: Increase in Average Prescribed Price of SSGCL for FY 2005-06**

Authority meeting with SSGCL

4.2.3.8 Review of Estimated Revenue Requirement of SNGPL for FY 2005-06

SNGPL filed a petition for review of Authority's determination of ERR of the company for FY 2005-06. The review petition was disposed vide Authority's determination of October 12, 2005.

Exhibit 4.14 shows comparison of OGRA's determination (of October 12, 2005) with SNGPL's review petition in respect of various components of review of estimated revenue requirement of SNGPL for FY 2005-06.

**Exhibit 4.14: SNGPL's Request vis-à-vis OGRA Determination of ERR for FY 2005-06**

Rs. in Million

Particulars	SNGPL's request	OGRA determination	Difference
Sales Volume (BBTU)	499,479	499,479	-
Cost of Gas	77,036	77,036	-
Transmission & Distribution Cost and Others	7,005	6,754	(251)
UFG disallowance	(5.98%)	(108) (5.70%)	(108)
Depreciation	4,229	4,229	-
Return on net operating fixed assets	5,444	5,444	-
Total Revenue Requirement	93,714	93,355	(359)
Total Revenue Available	88,628	88,628	-
Shortfall	5,086	4,727	(359)

The Authority reviewed the unaccounted for gas (UFG) target of 5.75% and re-fixed the lower UFG target at 5.70% and upper UFG target at 6.00% for FY 2005-06. HR cost benchmark was also reviewed by indexing FY 2004-05 (base year). HR cost to increase in number of consumers (60% weightage), transmission and distribution network (20% weightage) and gas sales volume (20% weightage), as well as allowing 50% effect of inflation. These adjustments resulted in additional cost of Rs. 210 million which was set-off against the provision of deferral account without any revision in the prescribed prices already notified by the Authority for FY 2005-06, thereby maintaining the revenue requirement at Rs. 93,355 Million as determined under the Authority's earlier decision dated May 20, 2005.

4.2.3.9 Review of Estimated Revenue Requirement of SSGCL for FY 2005-06

SSGCL also filed a petition for review of Authority's determination of ERR for FY 2005-06. The petition was disposed vide Authority's determination of 19th October, 2005.

Exhibit 4.15 below shows comparison of OGRA's determination (of 19th October, 2005) with SSGCL's review petition in respect of various components of review of estimated revenue requirement of SSGCL for FY 2005-06.

**Exhibit 4.15: SSGCL's Request vis-à-vis OGRA Determination of ERR for FY 2005-06**

Rs. in million

Particulars	SSGCL's request	OGRA determination	Difference
Sales Volume (BBTU)	338,945	338,945	-
Cost of Gas	53,834	53,834	-
Transmission & Distribution Cost and Others	4,951	4,452	(499)
UFG disallowance	(6.00%)	(446)(5.70%)	(446)
Depreciation	2,714	2,714	-
Return on net operating fixed assets	3,303	3,301	(2)
Total Revenue Requirement	64,802	63,855	(947)
Total Revenue Available	63,610	63,855	(245)
Shortfall / (Excess)	1,192	-	(1,192)

The Authority reviewed the UFG target of 5.75% and re-fixed the lower UFG target at 5.70% and upper UFG target at 6.00% for FY 2005-06. HR cost benchmark was also reviewed by indexing FY 2004-05 (base year). HR cost to increase in number of consumers (60% weightage), transmission and distribution network (20% weightage) and gas sales volume (20% weightage), as well as allowing 50% effect of inflation. The Authority decided to set off the overall impact of adjustment on account of other income, cost of gas, revised H.R. cost and revised UFG benchmark, against the deferral account and determined the revised revenue requirement of SSGCL for FY 2005-06 at Rs. 63,855 million with no change in the already notified prescribed prices.

4.2.3.10 Determination of Final Revenue Requirement of SNGPL for FY 2004-05

SNGPL's petition for determination of its final RR for FY 2004-05 based on auditors' initialed accounts was decided by the Authority on 20th September, 2005.

Exhibit 4.16 shows comparison of OGRA's determination (of 22nd September, 2005) with SNGPL's request in respect of various components of final revenue requirement of SNGPL for FY 2004-05.

**Exhibit 4.16: SNGPL's Request vis-à-vis OGRA Determination FY 2004-05**

Rs. in million

Particulars	SNGPL's request	OGRA determination	Difference
Sales Volume (BBTU)	505,543	505,543	-
Cost of Gas	71,192	71,192	-
Transmission & Distribution Cost and Others	5,916	5,857	(59)
UFG disallowance	(6.86%)	(612)(6.00%)	(612)
Depreciation	3,647	3,645	(2)
Return on net operating fixed assets	5,337	5,407	70
Total Revenue Requirement	86,092	85,489	(603)
Total Revenue Available	86,512	86,670	(158)
Excess	(420)	(1,181)	(761)

The Authority disallowed the excess UFG above the 6% target and also made some adjustments in the operating revenues & operating expenses. As a result thereof the average prescribed price of SNGPL was reduced by Rs. 2.33 per MMBTU as against decrease of Rs. 0.83 per MMBTU requested by SNGPL to meet its revenue requirement for FY 2004-05. The saving resulted in a surplus amounting to Rs. 1,330 million which was mopped up as Gas Development Surcharge.

4.2.3.11 Determination of Final Revenue Requirement of SSGCL for FY 2004-05

SSGCL's petition for determination of its final RR for FY 2004-05 was decided by the Authority on 22nd September, 2005.

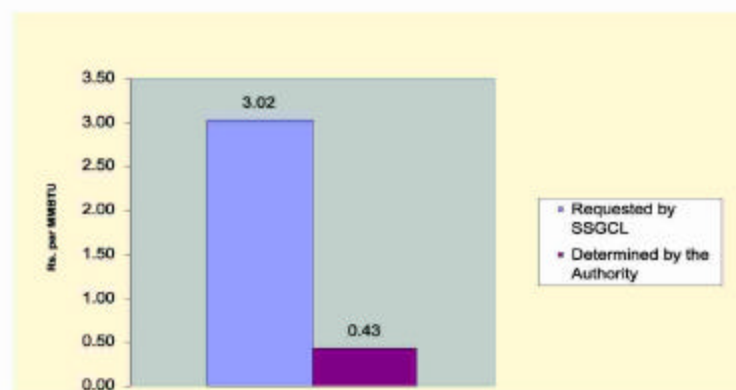
Exhibit 4.17 shows comparison of OGRA's determination (of 22nd September, 2005) with SSGCL's request in respect of various components of final revenue requirement of SSGCL for FY 2004-05.

Exhibit 4.17: SSGCL's Request vis-à-vis OGRA Determination of FRR for FY 2004-05

Rs. in million

Particulars	SSGCL's request	OGRA determination	Difference
Sales Volume (BBTU)	329,359	329,359	-
Cost of Gas	46,813	46,813	-
Transmission & Distribution Cost and Others	4,223	4,104	(119)
UFG disallowance	(7.48%)	(6.00%)	(694)
Depreciation	2,182	2,154	(28)
Return on net operating fixed assets	2,776	2,766	(10)
Total Revenue Requirement	55,994	55,143	(851)
Total Revenue Available	55,000	55,000	-
Shortfall	994	143	(851)

The Authority disallowed excess of UFG over the target of 6% and made other downward adjustments in the operating expenses. Consequently the increase in the average prescribed price of SSGCL was determined at Rs. 0.43 per MMBTU as against increase of Rs. 3.02 per MMBTU requested by SSGCL to meet its revenue requirement for FY 2004-05. It resulted in the decrease of Rs. 2.59 per MMBTU in average prescribed prices or in other words reduced the impact on Gas Development Surcharge by Rs. 1,745 million, graphical representation of which is given at Exhibit 4.18.

Exhibit 4.18: Increase in Average Prescribed Price of SSGCL for FY 2004-05

Meeting with SSGCL in respect of revenue requirement

4.2.4 HR Cost Benchmark

The Authority observed that the HR cost has increased sharply during the last ten years. The Authority had earlier directed the utilities to link the HR cost to the following principles:

- Increase in productivity
- Prevailing domestic inflation rate
- Control on overtime expenditure
- Control on abuse of medical facility
- Rightsizing of manpower

In order to arrest the abnormal increase in HR cost and with a view to minimize micromanagement of both the utility companies, the Authority has introduced on an experimental basis for a period of 3 years, i.e. 2005-06, 2006-07 and 2007-08 the benchmark HR cost in order to protect the interest of the consumers and incentivise the licensees to strive for optimization of its human resource. The licensees will be allowed to retain 50% of the saving if the actual HR cost at the time of TRR of a financial year is lower than the benchmark cost and, conversely, would bear 50% of the expenditure in excess of the benchmark. The operation of a benchmark will make regulatory intervention more predictable and obviate the need to scrutinize micro details, which should facilitate the petitioner to introduce prudent management policies making the utilities more efficient. The benchmark has been set by indexing the base year FY 2004-05 HR cost to increase in number of consumers (60% weightage), transmission and distribution network (20% weightage) and gas sales volume (20% weightage), as well as allowing 50% effect of respective years inflation.

4.2.5 Summary of Revenue Requirements

The determinations of Revenue Requirements of gas utilities by the Authority are based on the principle of allowing only prudent and justified operating & capital expenditure and with a view to increase operational efficiency combined with better quality service to consumers. These measures have resulted in a cost reduction of about Rs. 4.3 billion in four years, benefit of which has been passed on to the consumers and Government. Exhibits 4.19 and 4.20 show item-wise behavior of per MMBTU cost of major elements of the revenue requirements of SNGPL and SSGCL.

Exhibit 4.19: Summary of Revenue Requirement Historical Comparison Sui Northern Gas Pipelines Limited

Rs. per MMBTU

PARTICULARS	2002-03 ACTUAL	2003-04 ACTUAL	2004-05 ACTUAL	2005-06 ESTIMATE
Volume (BBTU)	324,187	426,636	505,543	499,479
Cost of gas	96.70	123.35	140.82	154.23*
T&D cost and depreciation	25.75	20.19	17.59	21.77
Return on assets	13.62	11.32	10.70	10.90
Other income	(4.74)	(4.37)	(4.18)	(3.83)
Average Prescribed Price	131.33	150.49	164.93	183.07
Average Sale Price	140.81	150.66	167.56	183.08
Gas Development Surcharge	9.48	0.17	2.63	0.01

*Cost of gas shall be adjusted on the basis of expected well head prices effective 1st January, 2006.



Laying of transmission gas pipeline

Exhibit 4.20: Summary of Revenue Requirement Historical Comparison Sui Southern Gas Company Limited

Rs. per MMBTU

PARTICULARS	2002-03 ACTUAL	2003-04 ACTUAL	2004-05 ACTUAL	2005-06 ESTIMATE
Volume (BBTU)	249,064	310,628	329,359	338,945
Cost of gas	112.66	124.63	142.13	158.83*
T&D cost and depreciation	20.84	16.40	16.89	19.83
Return on assets	10.26	8.23	8.40	9.74
Other income	(4.40)	(5.64)	(7.63)	(10.90)
Average Prescribed Price	139.36	143.62	159.79	177.50
Average Sale Price	145.20	152.45	165.10	183.47
Gas Development Surcharge	5.84	8.83	5.31	5.97

*Cost of gas shall be adjusted on the basis of expected well head prices effective 1st January, 2006

Exhibit 4.21 shows the total revenue requirement demanded by both the utilities and saving to consumers owing to OGRA's intervention.

Exhibit 4.21: Summary of Cost Reductions Benefiting the Consumers

(Rs in million)

	2003-04		2004-05		2005-06	
	SNGPL	SSGCL	SNGPL	SSGCL	SNGPL	SSGCL
Demanded	66,464	46,857	82,560	53,833	94,392	64,522
Allowed	66,069	46,365	81,088	53,677	93,355	63,855
Saving	395	492	1,472	156	1,037	667
Total Savings	887		1,628		1,704	
Savings (Rs./MMBTU)	1.20		2.04		2.03	

4.2.6 Cost of Gas

The cost of gas comprises over 80% of the total prescribed price of the two utilities. Since the cost of gas has been rapidly growing over these years it has therefore necessitated increase in the prescribed prices of the utilities. In FY 2005-06, increase on account of cost of gas alone is higher than the total average increase in prescribed prices.

The cost of gas which is linked to the international crude oil prices has been increasing for two main reasons:



Firstly, the average price of crude / fuel oil increased by almost 68% in the last three years i.e. from US \$ 24.1655 per barrel in 2002-03 to US \$ 40.6933 per barrel in 2005-06. Average price of crude oil during the period June 2004 to November 2004 was US \$ 38.0562 per barrel whereas it increased to US \$ 40.6933 per barrel during the period November, 2004 to April 2005 showing an increase of 7% within 6 months.

Secondly, the proportion of gas from new gas fields is increasing, cost of which is pegged to the price of oil in the international markets as compared to some of the major old fields like Sui whose production attracts a considerably lower price.

4.2.7 Notification of Prescribed and Sale Prices (Natural Gas Sector)

Under Section 8(3) of the OGRA Ordinance, the Authority is required to notify the Prescribed Prices for each category of consumers for natural gas of both the gas companies in order to enable each licensee to achieve the revenue requirement as determined by the Authority. During the year under review, the Authority issued four notifications of Prescribed Prices in respect of FY 2004-05 and FY 2005-06.

Pursuant to the provision of Section 8(3) of the OGRA Ordinance, the Federal Government advised the sale prices for various categories of consumers, after adjustment of Gas Development Surcharge in the Prescribed Prices determined by the Authority. The Authority notified these sale prices on June 30, 2004 which remained effective from July 01, 2004 till Feb 01, 2005. The sale prices were then revised effective from Feb 02, 2005. The Authority also notified the sale prices on 30th June 2005, effective July 1, 2005.

4.2.8 Uniform System of Accounts

OGRA had notified (Uniform Accounting) Regulations, 2003, on February 17, 2004, which have become effective July 1, 2005, pursuant to Section 6(2)(c) of the OGRA Ordinance, 2002.

The utilities are now obligated to file separate accounts on quarterly, semi annually and annual basis for transmission, distribution and sale activities thereby resulting in effective ring fencing of its operations. The separation of accounts will enable OGRA to compare performance of these utilities with gas utilities operating in different parts of the World. This will also ensure effective comparability of SSGCL and SNGPL owing to uniformity of accounting policies.

4.2.9 New Tariff Regime

Under the existing regime, SSGCL and SNGPL are entitled to a return of 17% and 17.5% respectively, on average net operating fixed assets before tax and financial charges. There were growing concerns from different stakeholders that the existing rate of return is too high keeping in view the low prevailing inflation rate. Also the existing regime does not incentivise the utilities to improve their efficiency / productivity, since it is based on a cost plus mechanism.



The existing regime was agreed upon by the Government of Pakistan as part of loan covenants with the Asian Development Bank (ADB) and the World Bank. ADB loan agreement has already expired in June, 2005, in case of SSGCL. World Bank loan agreement in case of SNGPL will be expiring on September 01, 2010.

The Authority instituted a study for determining reasonable rate of return in consultation with the Federal Government and the utilities pursuant to Section 6(2)(t) of the OGRA Ordinance, 2002. The study was awarded to Economic Consulting Associates (ECA), London after competitive/international bidding. ECA submitted its final report in May, 2005, in which it has made the following recommendations:

- Return on asset regime should be used initially with a gradual shift to revenue cap regime.
- Introduction of incentive oriented benchmarks on capital and operating expenditures.
- Clear bifurcation of allowable and non-allowable costs be adopted.
- Utilities should be rewarded/penalized for their efficiencies/ inefficiencies.
- Non-uniform gas sale pricing be introduced.
- Calculation of Weighted Average Cost of Capital (WACC) on Capital Asset Pricing Method (CAPM).
- Separate tariffs for transmission, distribution and supply.
- Yearly revaluation of operating assets in line with inflation.
- Sectoral cross subsidies to be eliminated over time.
- Advance determination of Gas Development Surcharge (GDS).
- Adjustment of the real rate of return with inflation.
- Adoption of US based risk factors.

The Authority has completed in-depth and exhaustive analysis of the ECA's recommendations and has formulated its own set of recommendations pertaining to proposed tariff regime which have duly been circulated to the stakeholders. Consultation sessions with the stakeholders are expected to be carried out in December, 2005, after which the Authority will finalize its recommendations and submit the same to the Government of Pakistan for its approval.

4.2.10 Approval of Agreements

Under the Natural Gas (Licencing) Rules, 2002 a licensee is obligated to:

- Refrain from entering into or amending any supply contract of a quantity greater than 5 MMscfd of natural gas unless it has been approved by the Authority.
- Refrain from entering into or amending any contract material to a regulated activity with a producer of natural gas unless it has been approved by the Authority.

The following agreements of two gas utilities were received and approved by the Authority after necessary process:-



i) Gas Sales Agreements between Producers and Licensees

- Side letter to Badin-I GSA and the Heads of Agreement between BP Pakistan and SSGCL
- Naimat Basal GSA for extended well test (EWT) period between Orient Petroleum Inc. (OPI) and SSGCL
- GSA for Sui gas field between PPL & SNGPL
- Zarghun South GSA between Mari Gas Company Limited and SSGCL
- Amendment to GSA for Sawan gas phase-II between OMV and SNGPL
- Extension of GSA between MGCL & SSGCL
- Amendment No.1 to Sawan GSA between OMV and SSGCL
- Amendment to Mazarani GSA between PPL and SSGCL
- Amendment No.3 to GSA for Miano field between OMV and SSGCL
- Amendment to Metering and Allocation Agreement between ENI and OMV and SSGCL
- Daru field GSA between OGDCL and SSGCL

ii) Gas sale/supply Agreements between Licensees and retail consumers:

- Amendment of GSA between SSGCL and Habibullah Coastal Power
- SNGPL and DG Khan Cement, district DG Khan
- Amendment in GSA between SNGPL and Liberty Power Limited
- SNGPL and Gharibwal Cement Limited (old)
- SNGPL and Gharibwal Cement Limited (new)
- SNGPL and Fecto Cement Limited
- SNGPL and Fauji Cement Company Limited
- SNGPL and Saadi Cement Limited
- SNGPL and Askari Cement Limited
- SNGPL and Pak Arab Fertilizer
- SNGPL and Bestway Cement, district Chakwal
- SNGPL and D.G. Khan Cement, district Chakwal
- SNGPL and Chakwal Cement
- MGCL and Fatima Fertilizer Company Limited
- Supplemental GSA between MGCL and Fauji Fertilizer Company Limited
- SSGCL and DHA Cogen Limited (DCL)
- SNGPL and Kohat Cement
- SNGPL and Dawood Hercules Chemicals Limited

4.2.11 Expansion in Transmission & Distribution Networks and Development Projects in Gas Sector

The financial year 2004-05 was a year full of activity for the two gas utility companies as far as expansion in the transmission and distribution network is concerned. OGRA granted formal approval of Project-VIII (P-VIII), C-Leg Augmentation Plan and Lachi-Shakardara Pipeline Project to SNGPL. Similarly, SSGCL was granted formal approval for undertaking its capital intensive Gas Infrastructure Rehabilitation and Expansion Project-II (GIREP-II), with some modifications/amendments.



Sand blasting of pipeline



SSGCL had submitted its Bhit/Bajura-Karachi Terminal Pipeline Project to OGRA under Natural Gas Licensing Rule, 2002 seeking approval of the Authority for embarking on this transmission project. In addition to this, SSGCL had submitted to OGRA its Quetta Pipeline Capacity Expansion Project- III and also 24 inches Diameter x 14 Km Loop line from Masu to HQ3(Hyderabad).

Brief details of these infrastructure projects of SNGPL and SSGCL are described below:

4.2.11.1 SNGPL's Gas Infrastructure Development Project-VIII

In February 2004, SNGPL submitted an application to OGRA for approval of its Project-VIII designed to absorb additional volumes of gas to the tune of 330 MMcf/d which became available from sources viz. Qadirpur, Sawan, Kandhkot, Rehmat, etc. The total estimated cost of the project was over Rs. 5,618 Million including Rs. 1,360 Million as Foreign Exchange Component. About 182 miles of transmission lines were to be constructed in the range of 16 inches to 36 inches diameter at the same time approximately 57 miles of transmission lines (16" to 24" inches diameter) were to be uplifted. The project components of Project-VIII are as follows;

- 16.48 Miles of 36" diameter Pipeline from Bhong (AC1X) to Rahim Yar Khan off take (AV7).
- 15.83 Miles of 36" diameter Pipeline from Uch Sharif (AC4) to Satluj Off takes (AV15).
- 14.90 Miles of 36" diameter Pipeline from Shujabad (A6) to Sikandarabad (AV22).
- 17.00 Miles of 36" diameter Pipeline from Sikandarabad (AV22) to Multan (AC6).
- 16.19 Miles of 36" diameter Pipeline from Qadirpur Rawan (AV29) to Kabirwala (A8).
- 5.50 Miles of 30" diameter Pipeline from Faisalabad (MP 160) to Galli Jagir (CC3).



Construction of transmission pipeline in progress



- g) 13.35 Miles of 24" diameter Pipeline from Faisalabad (A11) to Khurianwala (BV3).
- h) 11.47 Miles of 24" diameter Pipeline from Manawala (BC1) to Bhiki (B2).
- i) 22.00 Miles of 16" diameter Pipeline Mubarak Injection Point.
- j) 16.00 Miles of 16" diameter Pipeline from Burhan to Hattar (uplifted Pipe).
- k) 33.55 Miles of 16" diameter Pipeline Kandh Kot- Guddu Crossing.
- l) Compression
- m) SCADA (Transmission).

After detailed evaluation, the Authority formally granted approval of P-VIII to SNGPL in December 2004 at an estimated cost of Rs. 4,285.87 Million with some deletions and disallowances where prudence of investments was not established in the light of design parameters or the assumptions on which the project was based. SNGPL was initially not able to justify construction of 17.00 Miles of 36" diameter Pipeline from Sikandarabad (AV22) to Multan (AC6) as proposed in P-VIII, so this was pending by the Authority. Similarly, installation of a new compressor station at Sahiwal (NC-1) was disallowed being a premature investment keeping in view the current demand/supply scenario, need assessment and prudence. During FY 2004-05 the Company was able to complete major activities of this project at a cost of Rs. 3,408.00 Million. Prudence and need justification of incurred expense was examined by OGRA at the completion of the year. In view of the requirement for shifting of gas load/demand from power to domestic during peak winter months, the above pending pipeline (AV22-AC6) was considered prudent and accordingly, the cost of this line was finally approved by the Authority at the close of FY 2004-05.

4.2.11.2 SNGPL's C-Leg Augmentation Plan

SNGPL submitted on 21st July 2004 a request for approval of construction of transmission lines under C-Leg (Faisalabad-Islamabad) Augmentation Plan at an estimated cost of Rs. 1,150.00 Million to the Authority. The C-Leg Augmentation Plan comprised the following three pipeline components:-

- a) 19.50-Mile 16" diameter Phullarwan-CC1 Line (Uplifted).
- b) 22.00-Mile 30" diameter A11 (Faisalabad)-Chenab Crossing.
- c) 18.00-Mile 30" diameter CC1(Haranpur)-C4 (Choa Saiden Shah).

The conceptual design of the plan is to replace the existing 12" diameter pipeline with 30" diameter pipeline from Faisalabad (A11) to Chenab crossing and also from Haranpur (CC1) to Choa Saiden Shah (C4) covering a distance of about 40 miles. Moreover, 19.5 miles of 16" diameter to be laid from Phullarwan to Haranpur using uplifted pipeline from Multan-Faisalabad Section. The addition of 16" and 30" diameter pipelines in the proposed plan was to help meeting the average winter month load, besides improving the operational safety on account of replacement of 12" diameter old pipeline.

On the basis of the in-house evaluation, the Authority formally granted approval of C-Leg Augmentation Plan to SNGPL in October 2004 at a provisional cost of Rs. 1,150 Million. During FY 2004-05, the Company has been able to successfully complete the project in time at an incurred cost of Rs. 1,006 Million.



4.2.11.3 SSGCL's Gas Infrastructure Rehabilitation and Expansion Project II (GIREP-II)

In May 2004, Sui Southern Gas Company Limited (SSGCL) submitted an application to OGRA seeking approval of the Authority for undertaking Gas Infrastructure Rehabilitation and Expansion Project-II (GIREP-II). The project envisaged to cater for 175 MMcf/d of additional gas to be injected into the system from Khipro, Sanjhor, Miano and Sawan gas fields along with provision of gas from newly discovered Zarghoun gas fields to Quetta. This would enhance the system capacity up to 1,375 MMcf/d till the year 2007-08 with extension in distribution and transmission network by 183 miles. The cost of total GIREP-II is Rs. 15,510 Million. This project comprises nine components which have been divided into the following three broader categories:-

- Category – I: Projects in hand.
- Category – II: Projects being initiated.
- Category – III: Projects under planning/conceptual stage.

The category 'Projects in hand' contains those projects which are already initiated and the estimated cost thereof is Rs. 926.77 Million. This includes the following projects;

- (i) 30" diameter x 9 km bypass to 16" ILBP from HQ3 to SMS Sindh University.
- (ii) 18" diameter x 14 km bypass of Quetta pipelines laid in Dingra Nallahs.
- (iii) 16" diameter x 15 km 3rd Supply Main at Hyderabad.

The category 'Projects being initiated' includes those projects which are to be initiated to meet the increasing gas demand and the projected cost is 4,961.00 Million. This category comprises the following projects;

- a) 24" diameter x 116 km Sanghar – Hyderabad – Karachi pipeline Phase - I.
- b) 24" diameter x 83 km Sanghar – Hyderabad – Karachi pipeline Phase - II.
- c) 12" diameter x 68 km Zarghoun Quetta pipeline.
- d) SCADA/Telemetry.

Finally the category 'Projects under planning/conceptual stage' consists of those projects which are at the planning and conceptual stage and to be initiated on requirement basis and at an estimated cost of Rs. 9,622.00 Million. They are:

- 24" diameter x 86 km Sanghar – Hyderabad – Karachi pipeline Phase - III.
- 30" diameter x 200 km Downstream Bajara loop lines on IRBP.

On the basis of the in-house evaluation, the Authority granted approval of all the project components of Category-I and of serial no. (a) and (d) of Category-II at a total estimated cost of Rs. 3,309.00 Million. The approval of project components at serial no. (b) and (c) of Category-II was held in abeyance owing to requirement of the government policy guidelines. Therefore, the matter was referred to the Federal Government. At the end of FY 2004-05, the Company completed the following projects at an incurred cost of Rs. 1,964.09 million:-



- a) 30" diameter x 9 km bypass to 16" ILBP from HQ3 to SMS Sindh University.
- b) 18" diameter x 14 km bypass of Quetta pipelines laid in Dingra Nallahs.
- c) 24" diameter x 116 km Sanghar – Hyderabad – Karachi pipeline Phase - I.
- d) SCADA/Telemetry.

4.2.11.4 Bhit/Bajara – Karachi Terminal on IRBP

This project was reflected by SSGCL in its GIREP-II under Category-III, 'Projects under planning/conceptual stage'. The originally proposed pipeline diameter was 30", however, later on the diameter was revised as 24" upon deliberation by OGRA, keeping in view supply/demand scenario. The estimated cost of this project was downwardly revised to Rs. 4,724 Million.

SSGCL submitted this project in February 2005 for approval of the Authority. The loop line has been designed to absorb 240 MMCFD gas additionally available from Zamama (150 MMCFD) gas field of BHP and Bhit (90 MMCFD) gas field of ENI. The project entails laying of 200 Km of 24" dia pipeline from Bajara to Karachi Terminal, thereby strengthening IRBP System which presently has 18" dia and 20" dia pipelines running from north to the south. The project is proposed to be completed in two phases. In Phase-I, 95 km of pipeline will be commissioned in FY 2005-06 whereas in Phase-II remaining 105 km will be commissioned in FY 2007-08. The evaluation of the project is under process since some design parameters have been revised and remodeled by SSGCL.



Welding work at natural gas installation

4.2.11.5 Quetta Pipeline Capacity Expansion Project-III

The Authority in its determination for FY 2004-05 dated May 19, 2004 directed Sui Southern Gas Company Limited to undertake appropriate measures on priority basis to overcome the pressure drop problem during winter season in the Quetta region. In view of the Authority's directive, SSGCL conceived Quetta Pipeline Capacity Expansion Project (QPCEP) – III at an estimated cost of Rs. 1,325 Million. This project comprises the following project components;

- a) 18" Diameter x 18 Km Loop from Abe-gum to Much.
- b) 18" Diameter x 15 Km Loop from Much to Kolpur.
- c) 18" Diameter x 31 Km Loop from Dingara to Sibi and Sibi Compression Revamp.



4.2.11.6 Lachi-Shakardara Pipeline Project

The Lachi-Shakardara Pipeline Project was submitted by SNGPL for the approval of the Authority. The cost of proposed pipeline construction was at Rs. 139.00 Million. The objective of the project was to inject gas into the company's system from the newly discovered Gurguri gas field. After the completion of the project, 35 MMcf of gas would be transmitted to FCI (Dhullian) and the remaining 15 MMcf of gas would be transported to Daudkhel by laying 8" diameter, 17 miles long pipeline from Lachi to Shakardara for onward transmission to Daudkhel through Shakardara. OGRA granted approval of this project in June 2005 to SNGPL at an estimated cost of Rs. 139.00 Million.

4.2.11.7 Additions to Fixed Assets

The gas utility companies are entitled to a prescribed rate of return on their operating assets. They project their capital investments as Additions to Fixed Assets in their petitions for determination of their revenue requirements. OGRA ensures that these capital investments are made by the gas companies after meeting the criteria of efficiency, economy and prudence so as to avoid unnecessary financial burden on the consumers.



Valve assembly at gas transmission pipeline

During the FY 2004-05 SNGPL and SSGCL strengthened their transmission network to absorb additional gas available from new fields and similarly expanded their distribution systems to meet the increasing demand of gas, thereby increasing their consumer base. In the FY 2004-05, SNGPL laid 3,278 km of distribution mains ranging from 1" diameter to 16" diameter and provided 415 industrial, 3479 commercial and 175,554 domestic new connections. At the same time 45 new towns/villages in Punjab and 3 new towns/villages in NWFP were connected to the SNGPL network. The transmission network increased by 293 Km. Similarly, SSGCL laid 1,373 km of distribution mains in its three areas of activity viz. Karachi, Sindh and Balochistan and provided more than 78,000 new connections. SSGCL's transmission network increased by 157 km.

The financial impact of the above investments during the FY 2004-05 is that SNGPL projected Rs. 10, 679 Million in respect of Addition to Fixed Assets, whereas the Authority allowed Rs. 7, 092 Million to the Company. In its petition for determination of final revenue requirements SNGPL claimed Rs. 7,492 Million in respect of Addition to Fixed Assets, which was approved by OGRA. Similarly, in the FY 2004-05, SSGCL projected Rs. 6,784 Million in respect of Addition to Fixed Asset, whereas the Authority provisionally allowed Rs. 2,517 Million to the Company as estimated expense. In its petition for determination of final revenue requirements SSGCL claimed an amount of Rs. 4,755.89 Million in respect of Addition to Fixed Assets, whereas the Authority after detailed analysis allowed expense of Rs. 4,609.72 Million.



4.2.12 Procedure for Dealing with Gas Theft

It is more or less an established fact that theft of gas is one of the major factors in the rise of UFG. This undesirable act is not only unethical but also inflicts heavy financial losses to the companies. Keeping this in view, developing effective strategies to curb this menace has been made the responsibility of the companies in the first place. Accordingly, it has been clearly stipulated in Condition 20 of the licence that the utilities would submit to the Authority for approval, their policy and procedure regarding theft of gas.

In compliance of the above stated license condition, SNGPL and SSGCL submitted their Gas Theft Policies to the Authority for approval. The policies of both the Licensees contained substantial areas of variance and divergence between the policies submitted by the both the companies. After extensive consultation, the Authority has finalized a uniform policy for both the companies. The Authority is now in the process of developing rules on theft of gas.

4.2.13 Gas Supply Contract for Domestic Consumers

Both the utilities have their own terms and conditions in the form of contract documents to which the respective company and the consumer become party at the time of provision of natural gas to the consumers. In order to develop a comprehensive and equitable contract, it was made binding on the companies through Condition 39.3 of the Licence to submit their revised contracts to the Authority. The two companies submitted their drafts to the Authority; however, the non-uniformity and one sidedness of the proposed Gas Sale Contract existed as before. The Authority, therefore, revised the domestic gas supply contract to make it uniform and more equitable, safeguarding consumers' interest as well as protecting other stakeholders. The said uniform contract shall be enforced by the companies from FY 2005-06.

4.3. Liquefied Petroleum Gas (LPG)

4.3.1 Regulation

The regulation of LPG activities was transferred to OGRA from Ministry of Petroleum and Natural Resources on March 15, 2003, empowering OGRA to exercise regulatory functions under the LPG (Production and Distribution) Rules 2001. The regulatory functions of OGRA are as under:-

- Grant of licence for construction of LPG production, storage and filling plants.
- Grant of marketing licence for sale and distribution of LPG
- Appointment of third party inspectors to verify conformity of LPG works in accordance with the laid down standards
- Regular periodic inspection of LPG facilities to ensure their conformity with the laid down standards
- Redressal of consumer complaints and resolution of disputes between or among the licensees
- Monitor activities of supply to Northern Areas

- Monitor reasonability of prices.
- Action against unauthorized activities like decanting etc.

4.3.2 LPG Licences and Operating Rules

OGRA is responsible for issuing licences to establish LPG production, processing, storing, filling, or distribution facilities under the Liquefied Petroleum Gas (Production and Distribution) Rules 2001 (LPG Rules). These rules were notified by the GoP under Section 2 of the Regulation of Mines and Oilfields and Minerals Development (Government Control) Act, 1948 (XXIV of 1948). The licence is granted in two tiers for an overall period of 15 years. A provisional licence is granted for two years for the construction of the LPG facilities. Once the installation is complete, the license is extended for the remaining period.

In addition, an LPG licensee is required to locate, construct, maintain and operate his work connected with storage, filling and transportation of LPG in accordance with a license granted by the Chief Inspector of Explosive under the Petroleum Rules 1937, and is also required to comply with the Gas Cylinder Rules 1940 so as not to endanger the public health and safety.

So far, there are 9 LPG producers and 38 LPG marketing companies who have been issued licenses. In addition there are 78 companies who have been issued licenses for construction of LPG facilities.

4.3.3 Licence Procedure

Any person interested in LPG licence can apply for grant of a licence to the Authority on the prescribed form available free of cost from OGRA as well as available on OGRA website (www.ogra.org.pk) along with the requisite fee of Rs. 100,000/- and other related documents, as required under the Rules, Application is evaluated on the basis of the following:

- Complete application on the prescribed proforma in triplicate.
- Pay Order/Bank Draft of Rs. 100,000/- in favour of Oil & Gas Regulatory Authority, as Licence fee.
- Proof of registration of the company/firm (company incorporation certificate).
- Memorandum and Article of Association or Partnership deed/Sole proprietorship.
- Attested copies of ID cards of all Directors/Partners.
- Location of the tentative/proposed site.
- Financial Competence Certificate issued by a Bank (original and stamped), as per rule 2(j) of LPG (Production & Distribution) Rules, 2001.
- Last three years' Audited Reports.
- Minimum Work Program (Number of storage tanks and capacity of storage tanks, Bottling facility capacity, Quantity of LPG to be distributed per day or per month, Identification of areas where distribution/marketing of LPG is planned).

License for construction of LPG production, storage and filling plants is granted under Rule 8(1) of the LPG (Production and Distribution) Rules 2001. A licence is initially granted for a period of 2 years for construction of plants and during this period, the licensee has to acquire NOCs from the concerned departments like DCO, Environmental Protection Agency, Explosive Department, etc





before starting construction of LPG works. The licensee is required to meet the requisite standards, as prescribed in the LPG (Production & Distribution) Rules, 2001 for the construction of LPG works and installation of equipment. The licensee after completing construction of LPG works request to the Authority for appointment of third party inspectors to verify conformity of his works in light of standards listed in the LPG Rules, 2001. The Authority then appoints third party inspector for the purpose of inspection of works of a licensee. Marketing licence is issued for a period of 15 years based on satisfactory completion of LPG works under the Rules.

4.3.4 Investment in the LPG Sector

Oil and Gas Regulatory Authority played an effective role in attracting investment in the LPG supply and distribution infrastructure. During the year OGRA issued an LPG production licence to M/s Jamshoro Joint Venture for an LPG extraction plant of 500 metric ton/day capacity at Jamshoro which involves estimated capital outlay of more than Rs. 2 billion. The plant was completed in March 2005 and has enhanced local supply of LPG by more than 50%. Other licences for construction of LPG production plant were issued to M/s Orient Petroleum Inc. (Naimat Basal field), M/s OGDCL (Bobi field) and M/s OGDCL (Chanda field). In addition, eleven (11) licences were issued for marketing of LPG, while thirty one (31) licences have been issued for construction of LPG storage and filling facilities at various locations. This will further attract a cumulative investment of Rs. 2.16 billion.

4.3.5 Regulatory Enforcement

One of the objectives of OGRA is to ensure safe, reliable and efficient service to consumer for which the Authority has taken various steps to strengthen its regulatory mechanism to continuously monitor the activities of the LPG companies as per their licence conditions. In order to ensure compliance of LPG standards, continuous inspection of LPG supply infrastructure are being carried out through the third party inspectors and the licensees were advised for rectification of various deficiencies pointed out during the inspections. LPG companies were directed to strictly adhere to the LPG standards and maintain insurance coverage for proper safety arrangements. Issues like illegal decanting are promptly dealt by requesting the Provincial Government (DCOs) for taking immediate action against the person involved in decanting of LPG to ensure public safety. Actions have been taken by the concerned District Administration against the decanters as per sections 285 & 286 of PPC (Pakistan Penal Code). FIRs have been registered and persons involved in illegal decanting are also arrested. A continuous media campaign has also been launched to inform the public about hazards of decanting. The Marketing companies are also requested, from time to time, to check their distributors to ensure that they are not involved in illegal decanting.

4.4 Compressed Natural Gas (CNG)

4.4.1 Regulation

Government of Pakistan introduced CNG as an alternative automotive fuel in the country in 1992. CNG (Production & Marketing) Rules 1992 inter alia covering Safety Code of Practice, were notified for the construction and operation of CNG re-fuelling stations. The regulation of CNG Sector was



transferred to OGRA on March 15, 2003. OGRA has facilitated the process for grant of licence through simplification of procedure and provision of one window facility for the investors. The regulatory functions of OGRA are as under:

- Grant of licence for construction of CNG station which inter-alia requires the licensee to obtain various NOCs from District administration, Environment Protection Agency, Explosive Department etc., and construct/install CNG station in accordance with the laid down standards.
- Grant of Marketing licence after conducting third party inspection on adherence to safety code of practice.
- Regular periodic inspections to ensure conformity with the laid down standards.
- Redressal of consumer complaints

4.4.2 Licence Procedure

CNG Licence is granted in two phases:-

- a) Licence for construction of CNG station
- b) Licence for marketing of CNG

Following procedure is adopted for grant of these licences:

Any person can apply for grant of licence to the Authority on the prescribed form available free of cost from OGRA as well as on OGRA website alongwith the requisite fee of Rs.25,000 and other related documents as required under the Rules. The licence for construction of CNG station is granted under Rule 6 of the CNG (Production & Marketing) Rules, 1992 initially for a period of two years during which the licensee has to acquire NOCs from the concerned departments like District Coordination Officer, Environment Protection Agency, Explosive Department etc. before starting construction of the CNG station. The licensee is required to meet the requisite safety and technical standards as prescribed in the CNG Rules 1992 for construction of CNG station and installation of equipment.

The licensee, after completing construction of CNG station, requests the Authority for appointment of third party inspectors to verify conformity of the CNG works in the light of Standard Code of Practice of CNG (Production & Marketing) Rules, 1992. The Authority appoints third party inspector which is currently HDIP. Marketing licence is issued for a period of 15 years after satisfactory report of the third party inspectors.

OGRA has simplified the procedures for grant of CNG licence. The licence is granted even in a single working day if the requisite documents are complete. Maximum processing time is one week. Investors are further provided comfort through establishment of a one window facility where prompt guidance and information is provided to the applicant.

OGRA has given focused attention on conducting effective third party inspections and standardization of CNG equipments to provide comfort to the investors to adhere to the requirement of Safety Code of Practice. The new CNG Rules have also been drafted to effectively regulate the sector in the light of the latest technological developments to ensure safe, reliable and competitive service to consumers.



In order to ensure public safety, OGRA has put complete ban on grant of licence for setting up CNG stations in residential areas.

4.4.3 Investment in CNG Sector

The CNG sector has shown tremendous growth in the past 3 years resulting in addition of 383 operative CNG stations thus bringing cumulative investment of more than Rs. 23.0 billion since its inception. As of 30th June, 2005, 711 CNG stations were operating in the country while 600 were at various stages of completion which will further bring an investment of Rs. 7.5 billion. During the year, the Authority has issued 618 licences for construction of CNG stations while 183 stations were completed and granted marketing licence after receiving satisfactory inspection report from third party inspectors.

Pakistan has taken a lead role in developing the CNG infrastructure due to investor friendly policy and regulatory framework, and at present stands third in the international ranking after Argentina and Brazil in terms of vehicle conversion of CNG. As of 30th June 2005, about 750,000 CNG vehicles were operating in the country. Exhibits 4.22 and 4.23 reflect the rapid growth of the sector.

Exhibit 4.22: Growth of CNG vehicles

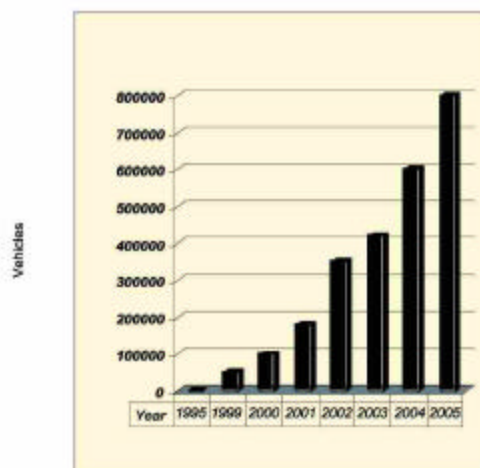
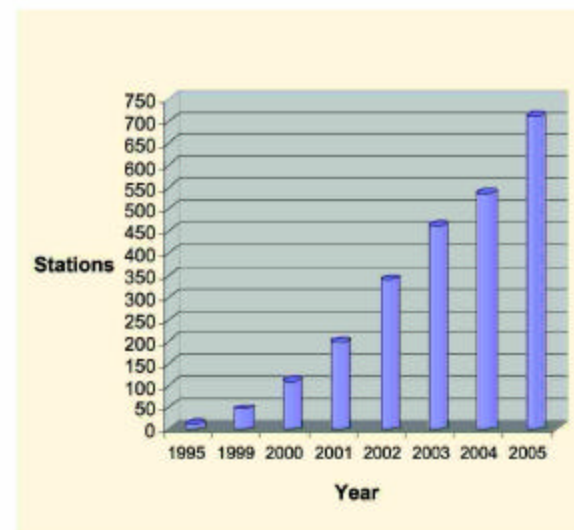


Exhibit 4.23: Growth of CNG Stations year wise



4.5. Mid & Downstream Oil Sector

The Authority, after creating necessary capacity to regulate the Midstream & Downstream Oil Sector has invoked provisions of section 23(3) and section 44 of the OGRA Ordinance for the transfer of regulatory work under the existing Pakistan Oil (Refining, Blending, Transportation, Storage and Marketing) Rules, 1971. The Authority has also circulated the draft Pakistan Oil (Refining, Blending, Transportation, Storage and Marketing) Rules 2005 for regulating the oil sector to all stakeholders for their views/comments. Necessary consultative process is ongoing with the Oil Industry and other stakeholders to finalize the said Rules. The Authority has also prepared the draft Technical Standards for Oil Refineries, Oil Pipelines, Oil Storages/Terminals & the same will be finalized in consultation with the licensees after transfer of the regulatory functions of the Oil Sector to the Authority.



Complaints Resolution

5.1 Complaints Resolution Procedure

The OGRA Ordinance and its subordinate legislation, entrust OGRA to safeguard the consumers' interest by resolving their complaints and disputes, and consumer care is the foremost in OGRA's perspective. Consequent upon issuance of a circular dated March 02, 2005 by Wafaqi Mohtasib all complaints relating to natural gas which were entertained by Wafaqi Mohtasib are now lodged with OGRA with effect from March 15, 2005. OGRA has notified the Complaint Resolution Procedure and has created a Complaint Resolution Cell within OGRA. The public is regularly kept informed of this service through media advertisements as well as placement on its website (.)

The complaint resolution procedure covers all matters relating to operations of all OGRA licensees. A complaint can be filed if a licensee (or his agent) violates any provision of the ordinance or rules and regulations made thereunder, or conditions of the license or a direction of the authority, particularly in the following areas:-

- (i) Billing
- (ii) Connection and disconnection of service
- (iii) Metering
- (iv) Undue delay in providing service
- (v) Safety practices
- (vi) Quantity and quality of natural gas, LPG or CNG being supplied.

However, mostly, the complaints being received by OGRA pertain to the following subjects/areas:

- Delay in provision of gas connection.
- Excessive billing.
- Low pressure of gas.
- Removal of gas meter.

The Authority has designated a number of officers to deal with complaints from different parts of the country. On receipt, complaints are immediately referred to the concerned agency for redressal and report within 15 days. The report of the agency is then forwarded to the complainant for his information and comments if any. The complainant is given the choice as under:

- Furnish his comments within 30 days. If no comments are received it is assumed that the complainant is satisfied and the complaint is treated as disposed.
- In case the complainant is not satisfied with the agency's report and furnishes his comments, a meeting of the complainant and agency's representative is arranged by the designated officer before arriving at the final decision.



Complaints Resolution



The complainant and the agency have the right to appeal to the Authority against the decision of the designated officer and the Authority has to decide the matter within 90 days after hearing the parties.

During the financial year 2004-05, 484 complaints were received all over the country. Registrar is the focal point to receive all complaints under the Complaint Resolution Procedure Regulation. He refers such complaints to the concerned departments/designated officers and pursues them until the issues are resolved. Details of complaints received in the FY 2004-05 are given in Exhibit 5.1.

Exhibit 5.1: Details of complaints received in the FY 2004-05

Nature Of Complaints	Complaints Received	Resolved	Pending *
Excessive gas billing	101	65	36
Theft / leakage of gas	09	09	00
Delay / non-provision of gas connections	141	110	31
Disconnection of gas supply	39	25	14
Low CNG / LPG pressure	09	06	03
Unlawful arrears / connection / installments of bills	07	05	02
De-listment of gas pipelines contractors	01	01	00
CNG / LPG prices	18	14	04
Problems to commercial consumers	12	08	04
Low pressure of gas	57	18	39
Decanting of LPG	12	06	06
Misc. matters e.g. (embezzlement, policy making, transfer of employees, pension matters etc.)	78	44	34
Total	484	311	173

* The applications were pending due to non receipt of report/information from the agency and counter comments of consumers.



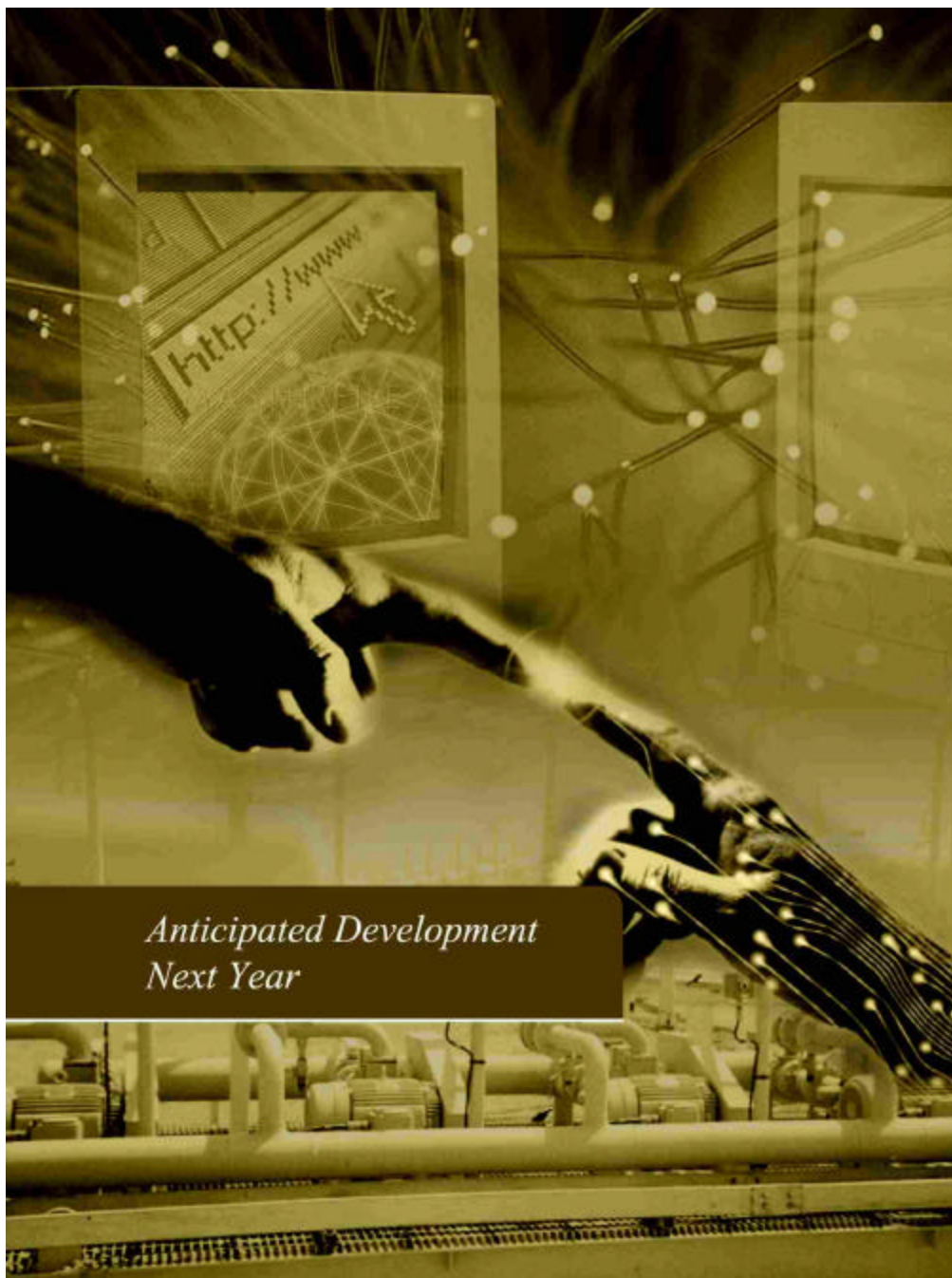
5.2 Appeals

Two appeals were filed by SNGPL and one appeal was filed by SSGCL against the decisions of the designated officers and the same were decided by the Authority after providing opportunity of being heard to both the parties.

OGRA has provided a trouble-free, cost-free and expeditious complaint redressal system facilitating the public to avail opportunity of getting their grievances redressed after going through a simplified process as compared to the prevailing judicial system which is not only expensive but also time consuming. Hundreds of people have got their grievances redressed sitting at their home through adopting this simplified procedure.



Hearing by the Authority in the matter of appeal filed by a consumer Mr. Miraj Maseh against the decision of designated officer.



6. Anticipated Development Next Year

6.1 Licences

It is expected that consumption of CNG as an alternate fuel in the automotive sector shall reflect higher growth rate during the year 2005-06 due to persistent high price of motor gasoline. Whereas the use of LPG in the vehicles although remained restricted due to ban imposed by the Government, however, the recent policy decision to allow LPG in the automotive sector is going to have major impact on its demand. The Authority is alive to the issue and, therefore, making all out efforts to facilitate investment in the CNG & LPG sectors. The Authority expects to grant about 600 new provisional licences for construction of CNG stations, while 200 CNG stations already in the pipeline are expected to be fully operational during the next year.

The Government has allowed, in principle, the use of LPG in automobiles subject to OGRA providing regulatory framework ensuring comprehensive safety standards. The Authority has already furnished the draft regulatory framework to the Federal Government for approval. This policy decision of the Government shall likely to attract substantial investment in setting up of these LPG refueling/filling stations. OGRA expects to grant about 100 provisional licences for construction of LPG facilities including automotive fueling stations all over the country during the year 2005-06.

6.2 Revenue Requirement

Determination of revenue requirement of natural gas utilities is one of the fundamental functions of the Authority. The Authority has recently completed the review of estimated revenue requirement of SNGPL and SSGCL for the FY 2005-06. The Authority has also completed the determination of final revenue requirement of both the gas companies for the FY 2004-05. The Authority expects to undertake the following determinations of revenue requirements by June 30, 2006:

- (i) Review of estimated revenue requirements of SNGPL for FY 2005-06 under Section 8 (2) of the Ordinance after incorporating the changes in the well-head prices of natural gas and other relevant factors after conducting public hearing at Islamabad.
- (ii) Review of estimated revenue requirements of SSGCL for FY 2005-06 under Section 8 (2) of the Ordinance after incorporating the changes in the well-head prices of natural gas and other relevant factors after conducting public hearing at Karachi.
- (iii) Determination of estimated revenue requirement of SNGPL for FY 2006-07 after due process and conducting public hearing at Islamabad.
- (iv) Determination of estimated revenue requirement of SSGCL for FY 2006-07 after due process and conducting public hearings at Quetta and Karachi.

6.3 Rules/Regulations

As reported earlier under Chapter 4 of this report, the Authority has laid a comprehensive regulatory framework which covers regulatory activities in respect of natural gas, CNG and LPG sectors. The Authority expects to continue work on the revision of some of the old rules as well as formulation of regulations as required under the law. Work on the following rules/regulations is expected to be undertaken during FY 2005-06:



6.3.1 Rules

- (i) Revised CNG (Production & Marketing) Rules after consultation with the stakeholders;
- (ii) Revised LPG (Production & Distribution) Rules after consultation with the stakeholders;
- (iii) New Pakistan Oil (Refining, Blending, Marketing and Transportation) Rules, 2005, which are in the process of consultation with the stakeholders;
- (iv) OGRA Fines, Penalty and Recovery of Dues Rules, which are in the process of consultation with the stakeholders;
- (v) Theft of Gas Rules, which are in the process of drafting; and
- (vi) Liquefied Natural Gas (LNG) Licencing Rules.

6.3.2 Regulations

- (i) Technical Standards in respect of CNG Operations Regulations;
- (ii) Technical Standards in respect of LPG Operations Regulations;
- (iii) Technical Standards in respect of LNG Operations Regulations;
- (iv) Technical Standards in respect of LPG automotive filling station (Regulations); and
- (v) Resolution of Disputes between Licensees and between any person and a Licensee.

6.4 Rate of Return for Gas Utilities

Section 6 (2) (i) of OGRA Ordinance empowers the Authority to determine, in consultation with the Federal Government and licensees for natural gas, a reasonable rate of return which a licensee may earn in the undertaking of its regulated activities pertaining to natural gas. In compliance of this Section, the Authority had earlier instituted a study through an international consultant namely Economic Consulting Associates (ECA) of UK. The said study has been completed and OGRA has formulated comprehensive recommendations for determination of a reasonable rate of return for natural gas licensees. The new scheme of rate of return has been circulated to the licensees as well as Federal Government and after due consultation new scheme will be announced.

6.5 Institutional Development Studies/Capacity Building

OGRA believes in acquiring the latest technology from the developing countries in the formulation of its rules and regulations and technical standards for various regulated activities. In this regard, two studies have been identified which are likely to be awarded to international consultants during 2005-06 as under:

- (i) development of open access and common carrier regime
- (ii) technical standards related to LPG operations; and
- (iii) technical standards for setting up automotive LPG fuelling stations.

In addition, OGRA also believes in capacity building of its officers through imparting training in all relevant disciplines at home and abroad. In this regard, about 76 officers are expected to be attending various technical, management, legal and financial courses in foreign countries as well as within Pakistan in the leading institutions like LUMS, Pakistan Institute of Management Sciences etc.



LPG storage tank

6.6 Redressal of Public Complaints

One of the fundamental responsibilities of a public utility regulator is provision of cost free and expeditious method of redressing public complaints against the service providers. With the increase in the number of consumers and increase in the demand of public for provision of natural gas, CNG or LPG services for their use, the Authority expects that the public complaints would continue to



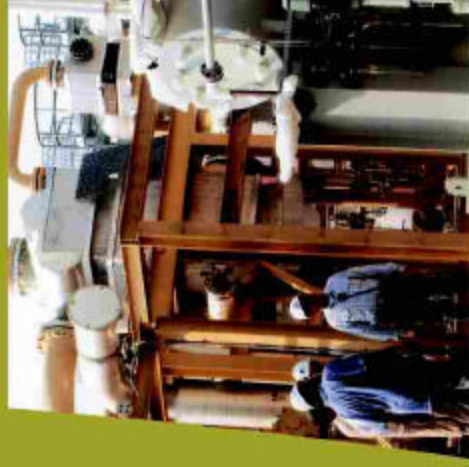
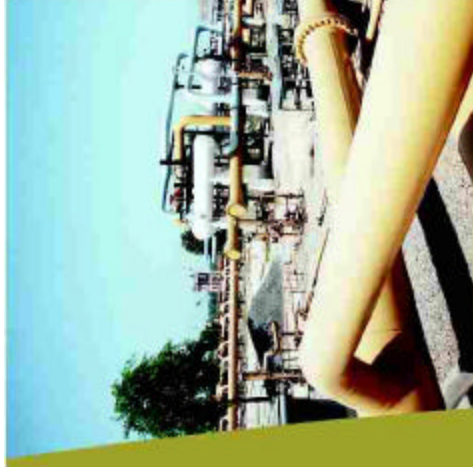
be received by the Authority. In this regard, it is expected that about 800-1000 complaints will be received and processed during the FY 2005-06. All these complaints will be processed in accordance with OGRA's Complaint Resolution Procedure Regulations, 2003.

6.7 Notification of Well-Head Gas Prices

The process of determination and notification of well-head prices of gas under Section 6 (2) (w) of OGRA Ordinance will continue. The well-head prices are notified twice a year effective from 1st of July and 1st of January each year. 31 notifications effective from 1st of July, 2005 have been issued and 37 notifications effective from 1st of January, 2006, are expected to be issued.

Part - II

*State of the Regulated
Segments of Pakistan's
Petroleum Industry*



7. Introduction

Pakistan is gas prone country. Vast potential existed for exploration in the oil and gas field for local and foreign investment in the country. The Government's policies, broad based economic reforms of privatization, deregulation and liberalization and lucrative incentives, in past several years, attracted heavy investment in exploration and development of oil and gas from local and foreign investors. The reforms programme enabled the Government to achieve high growth rate. The Government provided a level playing field to all local as well as foreign investors. High activities were seen in exploration and development of oil and gas from the local as well as foreign producers.

Pakistan is emerging as a preferred transit route for energy in the region, due to its ideal geographical location at the crossroads of Central Asia and the Arabian Sea. The commercial energy needs of the country doubles every ten years due to its fast-paced industrial development. The Government, therefore, attaches high priority to the energy sector and is planning for the up-gradation and construction of multi-billion dollar projects over the next decade to meet the long-term requirements of the country.

Natural gas plays an important role in Pakistan's economy, meets about 51% of country's total energy needs. Natural gas is a gift of nature, a vital fuel source and a catalyst of growth for the country. Supply of natural gas to the consumers protects the natural environment and health and safety of the community. During 2004-05, primary commercial energy supplies reached to 54.46 MTOE, compared to 50.8 MTOE in FY 2003-04. Natural gas supply increased to Power sector, resultantly import oil bill of the country reduced considerably. Pakistan is also trying to promote the use of natural gas and coal in local industry to cut its import bill further. The largest use of gas was in power generation, followed by Industrial, fertilizer, domestic, commercial, transport and cement sectors. The energy supply mix of the country in FY2004 and FY2005 is illustrated in Exhibit 7.1 and Exhibit 7.2.

Several new gas fields are found in the country. The new gas fields Ghurguri (Tal Block), Mirpurkhas Block, Mubarak Block and Chanda were connected with the gas network and gas supply also increased from several other existing fields. Gas supply from Kandhkot field to Guddu Power Station commenced by SNGPL through a dedicated pipeline. For additional gas supply the GSAs and Term Sheets were agreed/initialed among the producers and gas utilities:



Natural Gas manifold

Introduction



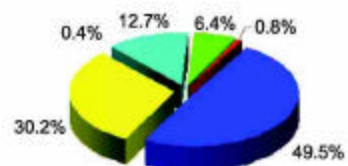
- a) Term Sheet was signed between BHP (Producer) and SSGCL for supply of 150 MMcf/d good quality gas (950 BTU/SCF) from Zamzama field in Sindh. In this respect, a Gas Sales & Purchase Agreement was also initiated between BHP and SSGCL.
- b) A Term Sheet was initiated between ENI Pakistan Limited and SSGCL for supply of additional gas from Bhit field located in Sindh.
- c) A GSA was initiated between Mari Gas Company Limited and SSGCL for supply of gas from Zarghun field located in Balochistan.
- d) A GSA was initiated between Tullow Pakistan (Developments) Limited and SNGPL for supply of gas from Chachar field located in Sindh.



Compressor station control room

Exhibit 7.1

Pakistan Energy Supply Mix for FY2004



■ Natural Gas
■ Oil
■ Coal
■ LPG
■ Nuclear Generation

Exhibit 7.2

Pakistan Energy Supply Mix for FY2005



■ Natural Gas
■ Oil
■ Coal
■ LPG
■ Nuclear Generation

Natural Gas Sector



8. Natural Gas Sector

Pakistan is a significant producer of natural gas with potential for further growth in output, as there is a high likelihood of more reserves being discovered. The country has a long history of oil and gas exploration the first gas field at Sui was discovered in 1952 and provided the basis on which Pakistan's extensive gas transmission and distribution network was subsequently built. Natural gas plays an important role in Pakistan's economy, meeting about 51% of the country's demand for commercial energy. However, despite the healthy share of gas in the energy mix, piped gas is available to only about 18% of the population of the country. Pakistan is a net importer of crude oil and refined petroleum products, but is currently self-sufficient in terms of natural gas. As of July 1, 2005, Pakistan's total recoverable gas reserves were estimated at 32.82 Tcf. During FY 2005 natural gas production reached to 3,400 MMcf.



Main valve assembly on transmission line

Almost all the identified oil and gas reserves are onshore, however, exploration for off-shore oil reserves has been initiated in the Pakistani seas. New gas fields Gurguri (Tal Block), Chanda in NWFP, Mirpurkhas Block and Mubarak Block in Sindh were connected with the gas network. Gas supply from Kandhkot (Sindh) to Guddu power station was connected by SNGPL. The bulk of natural gas production in the province of Sindh is concentrated in and around the Indus River Basin.

8.1 Regulatory Regime Overview

Oil and Gas Regulatory Authority (OGRA) was established on March 28, 2002 under the OGRA Ordinance 2002 to regulate midstream and downstream oil and gas sector.

OGRA was also entrusted with the powers/functions of licensing; formulation of rules, regulations and procedures; tariff determination and revision; dispute/complaints resolution; monitoring and enforcement of compliance with the rules; prescription of fines, increase private investment and ownership in the midstream and down stream petroleum industry, promote competition and protect public interest.

Both the companies, Sui Northern Gas Pipelines Limited (SNGPL) and Sui Southern Gas Company Limited (SSGCL), were earlier granted licences to carry out the regulated activities in respect of transmission of natural gas as follows:

- Construction and operation of pipeline for the purpose of transmission of natural gas; and
- Transmission of natural gas through the transmission system of the licensee.

In addition, the companies were granted licences to carry out the regulated activities in respect of distribution and sale of natural gas.

As a further step towards reforms in the gas sector and in order to make the gas market more competitive, the GoP has also decided to initially allow large consumers and producers to have non-discriminatory open access to the transmission and distribution network for a fee. The principle of third-party access to the transmission and distribution network was introduced for the first time in the Petroleum Policy, 2001. The OGRA Ordinance, 2002, empowered OGRA to determine the third-party access rules on the basis of guidelines provided by the GoP. While issuing transmission and distribution licences to SNGPL and SSGCL, OGRA had opened the gas markets to competition by diluting exclusivity in distribution and sale of gas by these utilities to new customers after June 30, 2005. The exclusive rights currently enjoyed by SNGPL and SSGC to distribute and sell gas will be phased out by 2010. These licences also require the utilities to provide third-party access to their transmission and distribution capacity to other buyers and sellers of natural gas, subject to the approval of OGRA.

To date, these companies remain the sole buyers and sellers of gas to consumers, except for a few large fertilizer and power consumers situated in proximity to specific fields, where gas is being sold independently by the Mari Gas Company Limited (MGCL), the Oil and Gas Development Company Limited (OGDCL), Pakistan Petroleum Limited (PPL) and Tullow Pakistan. Although the T&D companies have non-exclusive licences to supply gas to consumers in their respective operational areas, they are nevertheless all set to enhance their transmission and distribution capacities further. Three consumers namely Fauji Fertilizer Company Limited (FFCL), Engro Chemicals Pakistan Limited (ECPL) and Central Power Generation Company Limited (CPGCL) [WAPDA] are also transmitting natural gas through their owned transmission pipeline for self use. OGRA granted licences to FFCL, ECPL and CPGCL for construction and operation of pipelines for the purpose of transmission of natural gas from the field gates to respective plants for self use for 30 years. Exhibit 8.1 shows the status of licences issued by OGRA prior to FY 2005 and those issued during FY 2005.



**Exhibit 8.1:** Status of Licences issued by OGRA

Company	Type of Licence	Date of Issue
SNGPL	Transmission, distribution, and sale of natural gas in the Punjab, NWFP, AJK, FATA and small part of Sindh	September 3, 2003
SSGCL	Transmission, distribution, and sale of natural gas in Sindh and Balochistan	September 3, 2003
MGCL	Sale of natural gas to Fauji Fertilizer Company Limited (FFCL), Engro Chemical Pakistan Limited (ECPL) and Central Power Generation Company Limited (CPGCL)	August 11, 2004
OGDCL	Sale of natural gas to Fauji Kabirwal Power Company Limited, Uch Power and Altern Energy	December 30, 2004
PPL	Sale of natural gas to CPGCL(WAPDA)	November 23, 2004
FFCL ^a	Transmission of Natural Gas	April 7, 2005
ECPL	Transmission of Natural Gas	April 7, 2005
CPGCL ^b	Transmission of Natural Gas	April 14, 2005

a Includes FFC-I, FFC-II, and unit acquired from Pak-Saudi Fertilizer.

b GENCO-II, WAPDA, Guddu Thermal Power Station, Kashmir.

8.1.1 Profile and Stakeholding Status of the Licensees

The SSGCL and SNGPL are the main utility companies operating the gas transmission and distribution system in Pakistan. In addition to the high-BTU main transmission network, there exists an independent medium-BTU gas networks such as the pipelines connected to the Mari, Sara, Suri, Uch, Nandpur, Panjpir and Kandhkot fields supplying gas directly to fertilizer and power plants.

Sui Northern Gas Pipelines Limited

The SNGPL is the largest integrated gas company in the country and is engaged in the transmission and distribution of natural gas as well as the construction of high-pressure transmission and low-pressure distribution systems.

The SNGPL was incorporated as a private company in June 1963 and was converted into a public limited company in January 1964 under the Companies Act, 1913 (now Companies Ordinance, 1984), with the object of transmitting and distributing natural gas in the Punjab and NWFP, AJK, and a small part of Sindh.



Policy guidelines and overall management control of the company is vested in the elected Board of Directors, which includes representatives of shareholders as well as of creditors, as required under the Companies Ordinance, 1984. Presently, the SNGPL's Board comprises 14 members, ten of whom are nominees of the government and government-controlled institutions, with the remainder from the private sector. The GoP is the company's majority shareholder and the managing director/chief executive is therefore a nominee of the government who is delegated such powers and authorities as are necessary to effectively conduct the business of the organization. The details pertaining to the shareholders of the company and their respective shares in the ownership of the company are given in **Exhibit 8.2**.

Exhibit 8.2: Pattern of Shareholding in the SNGPL FY 2005

Categories of Shareholders	Number of Shareholders	Number of Shares Held	Percent Shareholding
Muslim Commercial Bank Limited	1	33,561,707	6.72
National Investment Trust	1	129,030	0.03
Investment Corporation of Pakistan	1	258,568	0.05
Executives	13	11,686	0.00
Banks, Development Finance			
Institutions, etc.	87	50,171,291	10.05
Insurance Companies	16	38,886,242	7.79
Modarabas and Mutual Funds	27	14,460,109	2.90
GoP	1	179,717,373	36.00
Dawood Hercules			
Chemicals Limited	1	58,593,500	11.74
Local Individuals	15,646	43,588,752	8.73
Foreign Individuals	664	873,527	0.17
Others	119	78,934,887	15.82
Total	16,577	4999,186,672	100.00

Source: SNGPL

The SNGPL transmission system extends from Sui in Balochistan to Peshawar in the NWFP. The distribution activities, covering 190 main towns along with adjoining villages in the Punjab, NWFP and some areas of Sindh and AJK are organized through eight regional offices. As of June 2005, the SNGPL distribution system comprised 42,192 km of network length, whereas transmission network length was 6,121 km.



The SNGPL has 2.48 million consumers comprising of residential, commercial, general industry, fertilizer, power and cement sectors. Total gas sales to these consumers were 1,472 million standard cubic feet per day (MMscfd) during FY2005. OGRA has granted a 30-year licence to the SNGPL with effect from March 25, 2002 for construction and operation of pipeline for the purpose of distribution and sale of natural gas throughout the territories of the provinces of Punjab and NWFP, AJK, the Federal Capital, FATA and those areas where the licensee operated natural gas distribution system prior to the issuance of licence.

Keeping in view the importance of continuing training and development of its professional and technical staff, SNGPL has established a training institute in Lahore. Different courses covering technical, financial and management aspects of gas industry were conducted in the institute which were attended by managers, engineers and technical staff. The technical courses also included Health, Safety and Environment related lessons.

Sui Southern Gas Company Limited

SSGCL is Pakistan's other leading integrated gas company and serves the provinces of Sindh and Balochistan. The company is also engaged in the business of transmission and distribution of natural gas besides construction of high-pressure transmission and low-pressure distribution systems.

Similar to the SNGPL, the SSGCL is managed by an autonomous Board of Directors with 14 members. The GoP is the company's majority shareholder, hence the managing director/chief executive is a GoP nominee and has been delegated with the necessary management powers to effectively conduct the company's business. **Exhibit 8.3** details the current pattern of shareholding in the SSGCL.

SSGCL transmission system extends from Sui in Balochistan to Quetta and to Karachi in Sindh, comprising over 2,943 km of high-pressure pipelines, ranging from 12 to 24 inches in diameter. The distribution activities, covering over 788 cities, towns and villages in Sindh and Balochistan, are organized through its regional offices. An average of about 925 MMscfd gas was sold in FY2005 to about 1.8 million residential, commercial, general industry, fertilizer, power and cement industry consumers in these regions through a distribution network of over 25,752 km total length.

With the SSGCL's vast gas transmission and distribution network across Sindh and Balochistan, telecommunications plays a vital role in maintaining smooth operations. The SSGCL has developed a highly advanced, state-of-the-art microwave telecommunication system, which provides both voice and data communications over the entire system. To ensure



Laying of gas pipeline



optimum gas flows, a modern SCADA system monitors transmission pipeline operations. The SSGCL has installed block valves at key pipeline locations to provide for remote actuation through the SCADA system, managed from the Gas Control Center at Karachi. In the event of an accident, the affected line can be isolated and shut off within two minutes to provide maximum operational security.

Exhibit 8.3: Pattern of Shareholding in the SSGCL FY 2005

Categories of Shareholders	Number of Shareholders	Number of Shares Held	Percent Shareholding
National Investment Trust (NIT) and Investment Corporation of Pakistan (ICP)	2	30,021,105	4.47
Directors, MD, and their spouses and minor children	2	79,120	0.01
Executives	26	84,309	0.01
Banks, development finance institutions, etc.	227	84,060,251	12.52
GoP	1	405,600,190	60.43
Individuals	30,378	150,608,118	22.44
Others	29	721,238	0.11
Total	30,665	671,174,331	100.00

Source: SSGCL

Mari Gas Company Limited (MGCL)

The MGCL is the sole owner and operator of the Mari gas field located at Dharki in the Ghotki district of Sindh. The MGCL sells medium-BTU gas to power and fertilizer plants in the region.

Esso Eastern Incorporated discovered the field in 1957 and the field was first developed in 1965. Esso Eastern operated the Mari Gas Field as a joint venture, consisting of the Pak Stanvac Petroleum Project and the Government of Pakistan, until 1982 when it sold its interest in the venture to the Fauji Foundation. Fauji Foundation managed the field in a joint venture with the GoP till December 22, 1985. Under an agreement signed by Fauji Foundation, the GoP and the OGDCL, the Mari Gas Company was incorporated on December 4, 1984 as an unlisted public limited company. The shares of the company were held by Fauji Foundation, the GoP and the OGDCL in the ratio of 40:40:20, respectively. The company took over the assets and liabilities of the joint venture and commenced business under its own name on December 23, 1985. The GoP divested 50% of its shareholding in favor of the general public in 1994. Since then, Mari Gas has been listed on all the three stock exchanges of Pakistan. The category-wise current shareholding pattern is given in **Exhibit 8.4**. The concession area, under the mining lease in favour of the company, is 968 km². The present mining lease covers the period up to 2014, which is extendable by another five years.



The company holds the licence for sale of gas to Engro Chemical Pakistan Limited, Fauji Fertilizer Company Limited, and the Central Power Generation Company Limited (CPC) and provided uninterrupted gas supply to all of its customers during the last year. The cumulative gas sales to these customers during FY2005 were 442 MMscfd, compared to 435 MMscfd during FY2004. Exhibit 8.5 indicates the sales volume during FY 2005 comparing with FY 2004.

Exhibit 8.4: Pattern of Shareholding in the MGCL

Categories of Shareholders	Number of Shareholders	Number of Shares Held	Percent Shareholding
National Investment Trust (NIT) and Investment Corporation of Pakistan (ICP)	3	3,021,350	8.22
Directors, MD, and their spouses and minor children	1	500	0.0
Executives	17	43,500	0.12
Banks, development finance institutions, etc.	14	901,050	2.45
Joint stock companies	46	103,250	0.28
Individuals	1,828	3,167,975	8.62
Shareholders with ten percent or more voting interest in the company	3	29,400,000	80.0
Others	4	112,375	0.31
Total	1,896	36,750,000	100.0

Source: MGCL



Exhibit 8.5: Data on Company's Activities/Performance for FY 2005

Name of Customers	2004-05		2003-04	
	Volume (MMscf)	Gross Sales (Rs.)	Volume (MMscf)	Gross Sales (Rs.)
ECPL	34,091,476	2,752,577,781	33,453,254	2,352,969,828
FFC	87,774,116	7,244,698,057	85,523,286	6,474,554,669
WAPDA	39,985,515	5,928,716,496	39,615,845	5,418,956,054
SSGCL	270,231	7150,453	262,763	6,714,292
OWN	142,094	3,923,032	156,276	4,144,052
TOTAL	162,263,432	15,937,065,819	159,011,424	14,257,338,895

Source: MGCL

Pakistan Petroleum Limited (PPL)

PPL was incorporated on June 5, 1950, whereby the company inherited the assets and liabilities of the Burmah Oil Company (BOC), and commenced operations on July 1, 1952. At the time of incorporation, BOC held a majority stake of 70%, with the GoP accounting for 29.4% and the balance held by private Pakistani shareholders. The BOC divested 6.09% of its shares to the International Finance Corporation (IFC) in 1982 and sold the remaining shareholding to the GoP in 1997. In July 2004, the GoP successfully concluded a 15% offer for the sale and initial public offering (IPO) of the company on the domestic stock exchanges. The details of the shareholding are given in Exhibit 8.6.

PPL operates a number of major oil and gas fields, including Sui, Kandhkot and Adhi, while its non-operated portfolio includes interests in the Qadirpur, Miano and Sawan fields. The company's exploration portfolio includes operated and non-operated joint ventures in ten onshore and two offshore blocks.

As part of the privatization program, the GoP has replaced PPL's 1982 Gas Price Agreement (GPA) with the 2002 GPA, pursuant to which the wellhead price of the Sui and Kandhkot fields is determined by formulae based on the Petroleum Policy, 2001. The 2002 GPA allows for Sui and Kandhkot gas prices to be raised to 50% of the discount level of the price offered by the 2001 Petroleum Policy under a phased program over a period of five years, beginning July 1, 2002.

The company holds a licence for the sale of natural gas at the field gate of Kandhkot gas field to WAPDA. The company sold 103 MMscfd gas to WAPDA (CPGCL) during FY2005.

**Exhibit 8.6:** Pattern of Shareholding in PPL

Categories of Shareholders	Number of Shareholders	Number of Shares Held	Percent Shareholding
Joint Stock Companies	232	54,104,263	7.89
International Finance Corporation	1	41,758,167	6.09
GoP	1	537,672,985	78.40
Administration of Abandoned Properties	1	83,725	0.01
Individuals	33,144	48,136,823	7.01
Others	27	4,065,830	0.60
Total	33,406	685,821,793	100.00

Source: PPL

Oil and Gas Development Company Limited (OGDCL)

OGDCL was created under an ordinance in 1961 to undertake a comprehensive exploratory program and promote Pakistan's oil and gas prospects. In 1997, it was converted into a public limited company under the Companies Ordinance 1984. The OGDCL's shareholding pattern is shown in Exhibit 8.7.

The company also operates a number of oil and gas processing plants, including a mini-refinery, sulfur recovery plant and LPG plants. In addition, the company has also established the Oil and Gas Training Institute, the first of its kind in Pakistan.

The company holds the licences for the sale of gas from the Nandpur and Panjpir gas fields to the FKPCL, from the Uch gas field to Uch Power and from the Bhal Syedan gas field to Altern Energy power plant. The company sold 229 MMscfd gas to these consumers during FY2005 comprising 183 MMscfd from Uch gas field, 45.5 MMscfd from Nandpur and Panjpir gas fields and 0.45 MMscfd from Bhal Syedan gas field.

Exhibit 8.7: Pattern of Shareholding in the OGDCL*Categories of Shareholders*

Categories of Shareholders	Number of Shareholders	Number of Shares Held	Percent Shareholding
Investment companies	24	9,432,409	0.22
Modarabas and mutual funds	38	27,859,691	0.65
Joint stock companies	229	35,638,666	0.83

Continued...



Foreign investors	36	4,170,380	0.1
Government of Pakistan	1	4,086,839,261	95.02
Cooperative societies	2	5,203	0.0
Charitable trusts	20	450,995	0.01
Insurance Companies	25	12,105,485	0.28
Banks, DFIs, NBFIs, Leasing Cos.	44	28,920,058	0.67
Individuals	25,412	91,977,940	2.14
Others	137	3,528,312	0.08
Total	25,968	4,300,928,400	100.0

Source: OGDCL

Engro Chemical Pakistan Limited

Engro Chemical Pakistan Limited (Engro) is a listed company incorporated in Pakistan. The principal activities of Engro are the manufacturing, purchasing, and marketing of fertilizers and other agricultural products. In order to promote balanced fertilization in the country, the Company manufactures 8 different crop specific grades of compound fertilizers and imports Phosphatic fertilizers. Engro also market high quality seeds.

The Company has three successful joint ventures - an infrastructure project of a modern liquid chemical terminal at Port Qasim; a petrochemical project involving Poly Vinyl Chloride (PVC) resin manufacture at Port Qasim; and a services company that provides industrial solutions in the knowledge based service sector at Lahore.

The total quantity of gas purchased and transmitted during 2005 was 34,091 Million Standard Cubic Feet of Mari Gas. Engro's shareholding is shown in Exhibit 8.8.

Exhibit 8.8: Shareholding Pattern as on December 31, 2004

Category of Shareholders	Shareholding %
Individuals	32.73
Investment Companies	5.44
Insurance Companies	8.59
Joint Stock Companies	24.31
Financial Institutions	19.60
Modaraba Companies	0.04
Co-operative Societies	1.02
Others	8.27
Total	100.00



Fauji Fertilizer Company Limited (FFCL)

FFCL was incorporated on May 8, 1978, by Fauji Foundation in collaboration with Haldor Topsoe A/S of Denmark and has completed 27 years of existence.

The first urea plant was commissioned in 1982 with design capacity of 570 thousand tonnes, subsequently upgraded to produce 695 thousand tonnes annually. In 1993 the second urea plant was commissioned with a production capacity of 635 thousand tonnes annually. FFCL acquired PakSaudi Fertilizers in 2002 with annual production capacity of 574 thousand tonnes urea. Today the aggregate production capacity stands at almost two million tonnes annually, close to 50% of industry urea production. The quality of product is being maintained at the highest level in accordance with the international standard specifications. Further capacity enhancement by 330 thousand tonnes is under consideration.

FFCL enjoys majority shareholding in Fauji Fertilizer Bin Qasim Limited (FFBL) with almost Rs. 5 billion investment. The Company has expanded its capital base and is constantly exploring new avenues for investment. Its latest enterprise is 12.5% participation in equity of Pakistan Maroc Phosphore S.A., Morocco (Joint venture between FFBL and Office Cherifien Des Phosphates, Morocco to produce and market phosphoric acid).

The Company operates in all the four provinces of Pakistan as well as Northern Areas and Azad Jammu and Kashmir through an extensive dealers' network with a market participation of around 63%. As of December 31, 2004, FFCL has produced and marketed 25 million tonnes of 'Sona' urea.

FFCL was the first company in fertilizer sector to attain ISO 9002 certification in respect of quality management in 1997. FFCL has the distinction of being placed amongst the Top 25 Companies by the Karachi Stock Exchange consecutively for the past 10 years since 1994.

During the year 2004, the Company earned net profit after tax of Rs. 4,004 billion. The cumulative cash dividend distribution at 150% (Rs. 4.1 billion) represented a payout of over 100% of the net profit after tax for the year, in addition to issue of 30% bonus shares. The Company's contribution to the National Exchequer at Rs. 9,446 billion by way of taxes, levies, excise duty, sales tax and surcharge on gas, was more than double the net of tax earning for the year. Since inception, the Company has contributed over Rs. 61 billion to the National Exchequer. By way of import substitution, the Company's production has resulted in foreign exchange savings of around US \$ 4 billion since inception.

As of December 31, 2004, the total assets of the Company stood at Rs. 26 billion. The net worth of the Company was Rs. 12.29 billion with market capitalization of Rs. 41.13 billion. A total of 87,774.116 MMSCF regulated gas was transmitted during FY 2005. FFCL's shareholding pattern is given in Exhibit 8.9.

Exhibit 8.9: Pattern of Shareholding as on June 30, 2005

Category of Shareholders	Shareholding %
Individuals	14.77
Investment Companies	12.25
Insurance Companies	10.6
Joint Stock Companies	1.68

Continued...



Financial Institutions	6.72
Modaraba Companies	0.11
Charitable Trusts	43.88
Foreign Investors	5.50
Leasing Companies	0.08
Mutual Funds	4.41
Total	100

Central Power Generation Company Limited (WAPDA)

Consequent to the restructuring of WAPDA, its thermal generation activity has been split up into three independent generation companies. Central Power Generation Company Limited (CPGCL) being one of the three companies was registered under the Companies Ordinance 1984 and commenced its commercial operation on March 01 1999. CPGCL has been organized to take over all the properties, rights, assets obligations and liabilities of Guddu, Sukkur and Quetta power stations. The operation of Sukkur and Quetta power stations was discontinued in June 2000 and therefore, CPGCL was granted the Generation Licence on 01 July 2002 by NEPRA against Guddu thermal power station only having total gross capacity of 1,655 MW.

Shareholding pattern

The authorized capital of the company is Rs.50,000,000,000/- divided into 5,000,000,000 ordinary shares of Rs.10 each. In total 50,000 shares have been issued and out of which one share of Rs.10 each has been issued to seven directors of the Company and 49,993 shares issued to WAPDA and subsequently transferred in the name of President of Pakistan.

Quantity of Regulated Gas Transmitted During FY 2004-05

Total gas transmitted was 108,591.440 MMSCF during the FY 2005.

8.1.2 Customer Addition to the Gas Network in Various Categories

The total number of new gas connections provided to the residential, commercial and industrial sectors, and the cumulative number of consumers on the gas network in the SNGPL and SSGCL systems during FY2005, are shown in Exhibit 8.10 and Exhibit 8.11 respectively.

Exhibit 8.10: Summary of New Gas Connections Provided During FY 2005

Sector	SNGPL		SSGCL		Total Country
	Punjab	NWFP	Sindh	Balochistan	
Industrial	375	47	223	1	646
Commercial	3,073	401	1,378	111	4,963
Domestic	152,765	21,541	67,213	9,652	251,171
Total	156,213	21,989	68,814	9,764	256,780

Source: SNGPL & SSGCL

**Exhibit 8.11:** Summary of Total Consumers as of FY 2005.

Sector	SNGPL		SSGCL		Total Country
	Punjab	NWFP	Sindh	Balochistan	
Industrial	2,931	340	2,753	42	6,066
Commercial	34,172	7,186	17,503	1,552	60,413
Domestic	2,180,406	291,760	1,621,588	145,251	4,239,005
Total	2,217,509	299,286	1,641,844	146,845	4,305,484

Source: SNGPL & SSGCL

8.2 Consumption of Natural Gas

The contribution of each sector to total gas consumption in the country from FY 1999 to FY2005 is shown in **Exhibit 8.12**. Historically the power and general industry sectors have been receiving gas on a low priority basis. However, ever since the induction of gas fields such as Qadirpur, Sawan, Miano, Bhit, Zamzama, Chanda, Ghurguri, Mubarak Block, Mirpurkhas Block and Kandahkot into the national gas grid, gas supply to these sectors has been improved significantly. The power sector's share in total gas consumption in the country has increased substantially from 33% in FY1995 to 44% in FY2005, mainly because of the substitution of fuel oil with natural gas in the major power plants of Bin Qasim, Muzaffargarh, Roush, Jamsboro, Kot Addu power stations and KESC.

The transport sector, although showing a very high growth rate, has a small share of 2% in the country's total gas consumption. The fertilizer sector's share in gas consumption also decreased during the FY2000 to FY2005 period.

Gas consumption in the residential sector increases considerably during the winter months of December, January and February but the unconstrained requirements of other sectors remain stable over the year. To meet the increased demand from the residential sector, the utilities have had to cut gas supplies to power, industrial and fertilizer plants during the winter months.

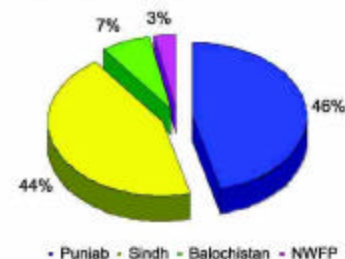
Exhibit 8.12: Percentage Share of Sectors in Overall Gas Consumption (Total Country)

Sector	Percentage Share			
	FY1998-99 %	FY1999-2000 %	FY2003-04 %	FY2004-05 %
Residential	21	20	15	15
Commercial	3	3	2	2
General industry	21	21	18	20
Fertilizer	24	23	18	16
Cement	1	1	1	1
Power	29	31	44	44
Transport	0	0	2	2
Total Country	100	100	100	100

Source: SNGPL, SSGCL and E&P companies.



The share of each province in the total gas consumed in the country during FY2005 is shown graphically in **Exhibit 8.13** and is tabulated in **Exhibit 8.14**. The Punjab is the largest consumer of gas, followed by Sindh, with shares of 46% and 44%, respectively.

Exhibit 8.13: Province-wise Gas Consumption, FY2005**Exhibit 8.14:** Province-wise Gas Consumption, FY2004-05

Province	Average Daily Consumption MMscfd	Annual Average Consumption MMscfd	Percentage share
Punjab	1,478	540,948	46%
Sindh	1,383	506,178	44%
Balochistan	232	84,912	7%
NWFP	86	31,476	3%
Total	3,179	116,3514	100%

Source: SNGPL, SSGCL and E&P companies.

Sector-wise gas consumption for the FY 2005 in the country, broken down into the SNGPL, SSGCL and independent systems, is tabulated in **Exhibit 8.15**. The share of each sector in the total gas consumption in the country is in **Exhibit 8.16** and the share of each sector in SNGPL and SSGCL is shown graphically in **Exhibit 8.17** and **Exhibit 8.18** respectively.

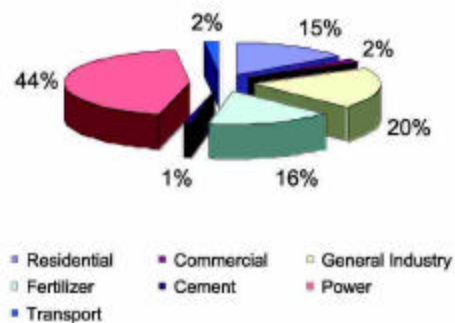
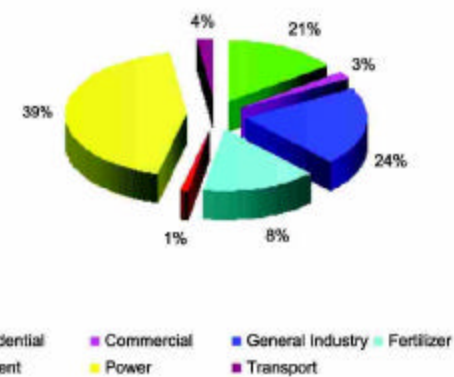
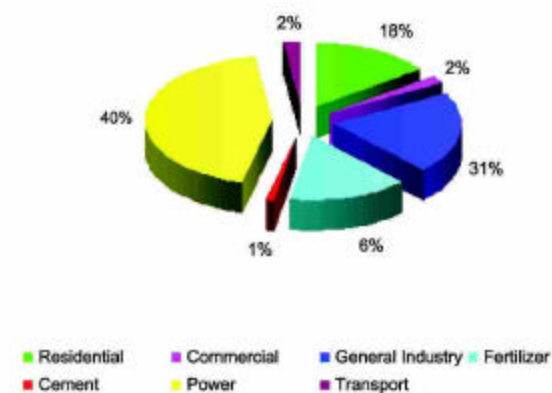
Consistent with the trends observed in total countrywide gas consumption, the power sector contributed the most to the gas consumption in both the systems, followed by the general industry and residential sectors.

**Exhibit 8.15:** Sectoral Gas Consumption for FY 2005

Sector	SNGPL System MMscfd	SSGCL System MMscfd	Independent System MMscfd	Total Country MMscfd
Residential	310	161	-	471
Commercial	53	21	-	74
General industry	346	286	-	632
Fertilizer	117	58	333	508
Cement	23	14	-	37
Power	569	371	450	1,390
Transport	53	14	-	67
Subtotal	1,471	925	783	3,179
Own use and T&D losses	135	82	-	217
Total Gas Consumption	1,606	1,007	783	3,396

Supply figures at field quality.

Source: SNGPL, SSGCL and E&P companies.

Exhibit 8.16: Total Sectoral Gas Consumption, FY2005**Exhibit 8.17:** SNGPL Sectoral Gas Consumption, FY2005**Exhibit 8.18:** SSGCL Sectoral Gas Consumption, FY2005



8.3 Gas Production

In recent years, the production of natural gas in Pakistan has been increasing rapidly and a significant amount of gas reserves, totaling about 10 Tcf, have been added to the system during the last decade.

During the past years, Sui, Qadirpur, Badin, Mari, Dhodak, Kandhkot, Pirkoh and Loti, and the northern fields have contributed the most to gas production. Historically the Sui gas field has been one of the country's major fields and had remained central to gas supplies and infrastructure developments. However, sizeable gas discoveries like Miano, Sawan, Bhit, Zamzama, Khipro and Mirpurkhas blocks, Mubarak block, Ghurguri (Tal block), Chanda and Mazarani with total production in the range of about 1.2 billion cubic feet per day (Bcf/d), have changed the overall gas supply scenario in the country and have shifted the attention of gas utilities from the Sui field to the newly discovered gas fields in the south.

Gas production from Bhit, Sawan Phase I and Zamzama Phase I commenced in FY2003, while production from Sawan Phase II and the Khipro Block started in the second quarter of FY2004. Similarly gas production from Mirpurkhas block, Mubarak block, Ghurguri (Tal block) and Chanda field started in FY 2004-05. Additional gas supply also commenced from Kandhkot field in the same financial year. Zamzama phase-II production will also be commenced in couple of years. In addition, a number of newly discovered gas fields are expected to be integrated into the SNGPL and SSGCL systems during the period FY2005 to FY2008.

Province-wise gas production in the country during FY2005 is shown graphically in Exhibit 8.19 and is tabulated in Exhibit 8.20. In contrast to the provincial shares in total gas consumption, most of the gas production in the country came from Sindh, followed by Balochistan. The Punjab, which is the country's

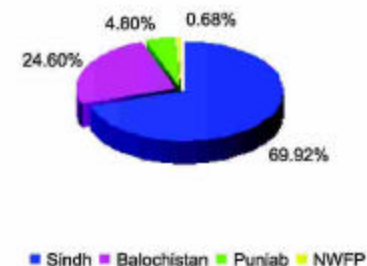


Pipeline coating plant

biggest consumer of gas, has only a 4.8% share in the total gas production in the country. New fields were discovered at Chanda and Gurguri in NWFP, production of gas from these fields since started. NWFP has 0.68% share in total gas production in the country and it is expected that it would increase in the coming years. Actual gas supplied by different fields supplying gas to the SNGPL, the SSGCL and independent gas networks during FY2005 is given in Exhibit 8.21.



Exhibit 8.19: Province-wise Gas Production, FY2005



Sources: SNGPL, SSGCL, and E&P companies

Exhibit 8.20: Province-wise Gas Production, FY2004-05 (Field Quality)

Gas Field	Calorific Value Btu/scf	Daily Supply MMscfd	Annual Supply MMscf
Balochistan			
Sui	985	576	210,276
Pirkoh and Loti	865	76	27,717
Uch	425	183	66,978
Subtotal, Balochistan		835	304,971
Sindh			
Qadirpur	885	469	171,424
Zamzama	804	258	94,040
Sawan	989	339	123,280
Badin	1,037	209	75,860
Kadanwari/Miano	992	180	65,658
Daru	1,100	6	2,214
Bhit	958	268	97,834
Mazarani	1,014	11	4,128
Hassan (Block 22)	699	17	6,204
Mari	740	442	161,772

Continued...



Gas Field	Calorific Value Btu/scf	Daily Supply MMscfd	Annual Supply MMscf
Kandhkot	835	103	37,698
Sari	915	2	732
Rehmat (Mubarak Block)	950	10	3,521
Sara/Suri	810	9	3,294
Khipro Block-Naimat Basal	1,082	19	7,070
Mirpur Khas Block-Kausar	1,014	34	12,374
Subtotal, Sindh		2,375	867,103
Punjab			
Dhdhak	1,016	39	14,256
Northern Fields	1,111	78	28,518
Nandpur/Panjpir	227	46	16,836
Subtotal, Punjab	-	163	59,610
NWFP			
Ghuguri and Chanda	1,030/1,150	23	8,418
Subtotal, NWFP		23	8,418
Total Country		3,396	124,0115

Source: SNGPL, SSGCL, and E&P companies.

Exhibit 8.21: Gas Supplies to SNGPL, SSGCL and Independent Systems, FY2005 (Field Quality)

Gas Field	Calorific Value Btu/scf	Daily Supply MMscfd	Annual Supply MMscf
SNGPL			
Sui	985	472	172,378
Pirkoh and Loti	865	76	27,717
Dhodak	1,016	39	14,256
Qadirpur	885	468	171,424
Northern Fields	1111	78	28,518
Ghuguri and Chanda	1030/1115	23	8,418
Hasan (Block 22)	69	17	6,204
Zamzama	803	164	59,703
Sawan	988	259	94,586
KANDHKOT	846	0.04	13

Continued...



Gas Field	Calorific Value Btu/scf	Daily Supply MMscfd	Annual Supply MMscf
REHMAT (Mubarak Block)	950	10	3,521
Subtotal, SNGPL		1,606	586,738
SSGCL			
Sui	985	104	37,898
Badin	1,037	209	75,860
Sawan	989	80	28,694
Kadanwari/Mirno	992	180	65,658
Daru	1,100	6	2,214
Bhit	958	268	97,834
Zamzama	804	94	34,337
Mazrani	1,014	11	4,128
Khipro block-Naimat Basal	1,082	19	7,070
Mirpur Khas Block - Kausar	1,014	34	12,374
Sari	915	2	732
Subtotal, SSGCL		1,007	366,799
Independent System			
Mari	740	442	161,772
Uch	425	183	66,978
Kandhkot	835	103	37,698
Sara/Suri	810	9	3,294
Nandpur/Panjpir	227	46	16,836
Subtotal, Independent		783	286,578
Total Country		3,396	1,240,115

Source: SNGPL, SSGCL, and E&P companies.

8.4 Gas Infrastructure

This section briefly discusses the main features of the transmission networks, the total capacities and current utilization of the critical segments of the network, and major network augmentations undertaken by the SNGPL & SSGCL. This section also discusses the independent pipeline transmission system.

8.4.1 SNGPL Infrastructure

The bulk of the supply to the SNGPL system comes from the fields in Sindh and Balochistan. This is introduced into the network at its southern end and then transmitted to the northern markets. In addition, there are many small gas fields in the Potwar region of the Punjab and NWFP that feed into the SNGPL network. The SNGPL transmission network extends from the Pirkoh gas field to Peshawar and can be divided into the following main legs:



- Leg A (Sui-Faisalabad)
- Leg B (Faisalabad-Jhelum)
- Leg C (Faisalabad-Nowshera)
- Leg V (Nowshera-Peshawar)
- Leg K (Nowshera-Saidu Sharif)
- Leg N (Multan-Sahiwal-Lahore)
- Leg E (Adhi-Galli Jagir)
- Leg J (Galli Jagir-Dhulian)
- Leg F (Dhulian-Daudkhel)

A schematic map of the SNGPL transmission system is shown in Exhibit 8.22. Since the incorporation of the SNGPL in 1963, the transmission network of the company has grown to a total length of 6,121 km as of June 2005. During FY2005, the SNGPL laid down 420.47 km of new transmission pipelines under their expansion plan (Project VIII). In addition, a number of compressors were also relocated amongst the compressor stations in FY2005 for optimal operation of the system following pipeline augmentations. Details of pipeline augmentations undertaken in FY2005 are shown in Exhibit 8.23. Project VIII is near completion. A total of 304 km of additional pipeline will be laid down and 94 km of decommissioned segments will be uplifted under this project, as per projections of the SNGPL.

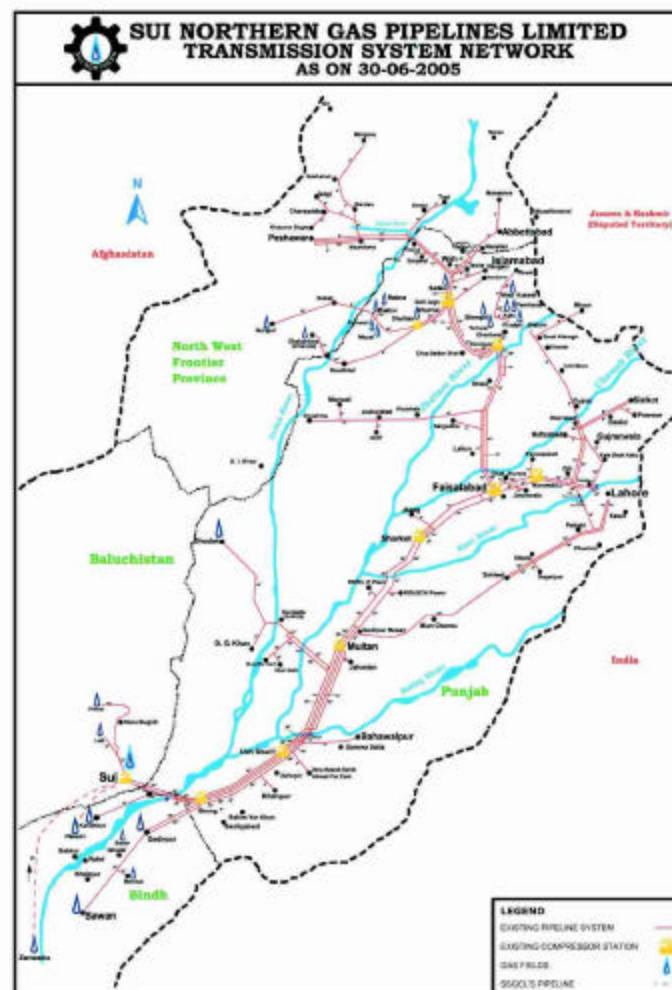
The major segments of the SNGPL transmission network are listed in Exhibit 8.24, along with their current capacity utilization. The current configuration of the SNGPL's compressor stations, as of June 30, 2005 is indicated in Exhibit 8.25.



Transmission line control valves



Exhibit 8.22: Oil and Gas Transmission System in Northern Pakistan



**Exhibit 8.23:** SNGPL Transmission System Augmentation in FY2004-05

Activity	Location	Description
Pipeline Laid	AV29-A8	26.05 KM x 36" dia
Pipeline Laid	AC4-AV15	25.35 KM x 36" dia
Pipeline Laid	AV22-AC6	32.18 KM x 36" dia
Pipeline Laid	Mubarak Line	35.56 KM x 16" dia
Pipeline Laid	Kandhkot Line	51.75 KM x 16" dia
Pipeline Laid	A11-AC4	35.33 KM x 30" dia
Pipeline Laid	CV11-CV12	22.80 KM x 16" dia
Pipeline Laid	Phool Nagar D/H line	53.75 KM x 16" dia
Pipeline Laid	BC1-B2	18.46 KM x 24" dia
Pipeline Laid	A11-BV3	20.48 KM x 24" dia
Pipeline Laid	Chanda-Daudkhel	43.11 KM x 10" dia
Pipeline Laid	Wah-Hattar	19.79 KM x 16" dia
Pipeline Laid	CC1-C4	29.09 KM x 30" dia
Pipeline Laid	MP161.19-CC3	06.77 KM x 30" dia

Total Length of Transmission System as on June 30, 2005 = 6,120.64 KM
Source: SNGPL Project VIII Plan.

Exhibit 8.24: Capacity Utilization of Major Segments of SNGPL Transmission System (FY 2004-05)

Transmission Network Segment	Segment Length km	Pipeline Diameter Inch	Flow Capacity MMscfd	Capacity Utilization
Leg A (Sui-Faisalabad)				
Sui-Bhong	84	18,24,30	790	96%
Bhong-Multan	267	18,30,36	1630	94%
Multan-Faisalabad	233	16,18,24,30,36	1222	104%
Leg B (Faisalabad-Jhelum)				
Faisalabad-Lahore	119	16	400	106%
Lahore-Jhelum	166	8,10,18	150	95%
Legs C & V (Faisalabad-Peshawar)				
Faisalabad-Gali Jagir	266	10,12,16,30	350	94%
Gali Jagir-Peshawar	169	8,10,16	200/110	100%
Leg N (Multan-Lahore)				
Multan-Sahiwal-Lahore	290	16,18,24	280	88%

Source: SNGPL.

**Exhibit 8.25:** Compressor Stations in the SNGPL Transmission System as of June 30, 2005

Compressor Station	Location	Installed Units Number	Total Installed Power bhp ^a
AC0	Sui Field	3	13,500
AC1XS	Bhong	5	26,340
AC1XQ	Bhong	6	29,620
AC4	Uch Sharif	8	34,620
AC6	Multan	5	22,120
AC7	Shorkot	4	16,000
AC8	Faisalabad	8	18,700
BC1	Mananwala	6	6,000
CC1	Haranpur	7	7,000
CC3	Galli Jagir	7	7,000
CC4	Kamra	0	0
FC1	Dhullian	3	3,000
Total		62	183,900

^a bhp: Brake horsepower.
Source: SNGPL.

During FY 2005, major portion of P-VIII was completed and commissioned including various segments of 36-inch, 30-inch, 24-inch and 16-inch diameter pipelines. The details of these pipelines are shown in Exhibit 8.23.

Relocation of compressors along with installation of allied equipment as envisaged under P-VIII was not completed during the year. Proposed compressor station NC-1 at Shaiwal was earlier disallowed by OGRA on account of being imprudent.

C-leg augmentation plan, which included addition/replacement of pipelines between Faisalabad and Choa Saiden Shah was completed. The company was also able to commission 10-inch diameter Shakardara-Daudkhel line during the year.

8.4.2 SSGCL Infrastructure

A schematic map of the SSGCL transmission system is shown Exhibit 8.26. The SSGCL transmission network consists of the following three main legs:

- A 16-inch diameter pipeline from Sui to Karachi along the left bank of the Indus River, hence called the Indus Left Bank Pipeline (ILBP)
- An 18-inch and a 20-inch diameter pipeline from Sui to Karachi along the right bank of the Indus River, hence called the Indus Right Bank Pipeline (IRBP)



- A 24-inch diameter pipeline from Kadanwari to Nawabshah and a 20-inch diameter pipeline from Hyderabad to Karachi, collectively called the Kadanwari Pipeline.

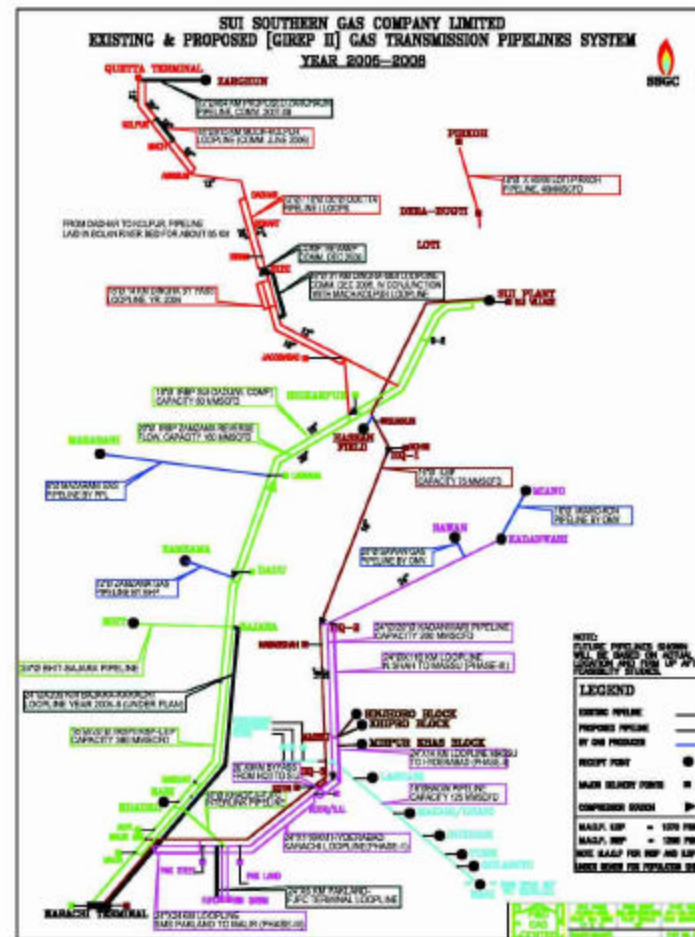
The total length of the SSGCL transmission network currently stands at 2,943 km. The company embarked on its Gas Infrastructure Rehabilitation and Expansion Project (GIREP)-II. The major component of GIREP-II was construction of a 24-inch diameter Sanghar-Hyderabad-Karachi Pipeline to absorb gas from Khipro and Sanjhoru Blocks. Phase-I of this line has been commissioned by SSGCL. The Company has also initiated its Quetta Pipeline Capacity Expansion Project (QPCEP)-III under which it would lay 18-inch pipeline segments. A part of this project from Abbe-gum to Much has been commissioned.

The main segments of the SSGCL transmission network alongwith their current capacity utilization are shown in **Exhibit 8.27**, and the compressor stations are listed in **Exhibit 8.28**. The SSGCL transmission system augmentation during FY 2005 has been indicated in **Exhibit 8.29**

With the recent finalization of the Zamzama Phase-II gas sales agreement with the SSGCL, a 24-inch diameter pipeline from Bajara to Karachi in the IRBP is being planned that will transmit the full potential supply from the Zamzama Phase-I, Zamzama Phase-II and Bhit gas fields to Karachi. The length of the company's distribution network is 25,752 Km and that of transmission network is 2,943 Km.



Exhibit 8.26: A schematic map of the SSGCL transmission system.



**Exhibit 8.27:** Capacity utilization of SSGCL Transmission System during Year 2005

Transmission Network/ Pipeline	Available Capacity (MMSCFD)	Contracted (MMSCFD)	Uncontracted Capacity (MMSCFD)
16" Dia. Indus Left Bank Pipeline (ILBP) Nawabshah-Karachi Terminal	80	80	-
24"/20" Dia. Kadanwari Pipeline (Kadanwari-Malir-Karachi)	220	220	-
20"/18" Dia. Indus Right Bank Pipeline (IRBP) (Dadu-Karachi Terminal)	400	400	-
12"/18" /20" Dia. Quetta Pipeline (Jacobabad-Quetta)	80	80	-
18" dia 18 Km Abighum to Mach Loopline	10	10	-
18" Dia. Badin Pipeline (Badin- Hyderabad)	200	200	-
24" Dia 116KM long Hyd-Sangher Loop line Phase I & 30" Dia 9KM Bypass	60	-	60*
Total Capacities for SSGC (A)	1,050	990	60
Transmission Network Contracted			
18" Dia. Pirkoh Pipeline (OGDC) Pesh Bogi-Pirkoh	35	35	-
16" Dia. ILBP(SNGPL) Hasan-Sui	30	30	-
20" Dia. IRBP(Reverse flow to SNGPL) (Dadu-Sui)	170	170	-
Total contracted network - (B)	235	235	-
Total Transmission Network Capacity (A+B)	1,285	1,225	60

* Un-contracted capacity under negotiation.

Source: SSGCL.

Exhibit 8.28: Compressor Stations in the SSGCL Transmission System

Compressor Station Location	Installed Units Number	Total Installed Power bhp*
Active		
Sibi	2	9,400
Hyderabad	3	27,700
Shikarpur	2	9,800
Dadu	2	9,800
Pirkoh	2	9,800
Inactive		
Rohri	4	4,400
Nawabshah	4	4,400
Total		75,300

* bhp: Brake horsepower.

Source: SSGCL.

**Exhibit 8.29:** SSGCL Transmission System Augmentation in FY2004-05

Activity	Length(Km)	Location	Description
18" Diameter By-Pass at Dingra Nallah on QPL	14	Balochistan	Commission date 16-6-05
18" Diameter Loop line between Abbe-gum & Mach	18	Balochistan	Commission date 25-6-05
30" Diameter By-Pass to 16" ILBP from HQ-3 to SMS Sindh University	9	Sindh	Commission date 28-6-05
24" Diameter Loop Line Sanghar-Hyderabad- Karachi Pipeline (Phase-I).	116	Sindh	Commission date 30-6-05

Note: Total transmission length as on June 30, 2005 is 2,943 kilometers.

8.4.3 Independent Pipeline Transmission Systems

As mentioned earlier, a number of natural gas customers in the country are supplied with gas through independent and dedicated pipelines. These customers include fertilizer plants as well as power plants and, in general, are connected to fields with low gas quality, i.e., of high nitrogen content and low calorific value. Details of such pipelines connecting the gas fields to their respective consumers are given in Exhibit 8.30.

Exhibit 8.30: Independent Transmission Pipelines

Pipeline Operator	Source and Destination	Pipeline Diameter Inch	Length km
FFCL	Mari-Fauji Fertilizer 1	16	48
FFCL	Mari-Fauji Fertilizer 2	14	48
FFCL	Mari-Fauji Fertilizer Mirpur Mathelo	16	15
ECPL	Mari-Engro Chemical	10, 12	9, 9
CPGCL (WAPDA)	Mari-Gudda Thermal Power Station	20	60
CPGCL (WAPDA)	Kandhkot-Gudda Thermal Power Station	16	50
CPGCL (WAPDA)	SNGPL's compression station at Sui field-Gudda Thermal Power station	16	56
OGDCL	Uch field-Uch Power Plant	26	47
OGDCL	Nandpur Panjpir-FKPCL	12	16
Tullow	Sars/Suri Field to CPGCL (WAPDA) Pipeline near Mari Well No.6	8	33

Source: Gas producers and consumers.



8.4.4 SNGPL and SSGCL Distribution Mains and Service Lines

The two main utility companies provide gas to their residential, commercial and industrial customers through their distribution networks. The distribution network of each area or city takes gas at high pressure from the transmission network and disburse it to all the customers in the area through its distribution mains and service lines. Every year, the utilities extend their network to new locations to service a growing customer base. In the last year, the SNGPL extended its distribution network by 10% to a cumulative total length of 42,192 km. Similarly, in the last year, the SSGCL extended its distribution network by 6% to a cumulative total length of 25,752 km. Exhibit 8.31 shows the region-wise breakdown of the SNGPL and SSGCL distribution networks as of June 2005.



Domestic meter installation at consumer premises

Exhibit 8.31: Lengths of Distribution networks (SNGPL/SSGCL) FY 2005.

SNGPL		SSGCL	
Region	Length km	Region	Length km
Punjab		Sindh	
Multan	4,677	Karachi	11,785
Bahawalpur	1,278	Hyderabad	4,269
Faisalabad	5,722	Nawabshah	1,424
Lahore	11,128	Sukkur	1,804
Gujranwala	5,186	Larkana	1,864
Islamabad	8,010		

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Subtotal, Punjab	36,001	Subtotal, Sindh	21,146
NWFP		Balochistan	
Peshawar	4,949	Quetta	4,606
Abbottabad	1,242		
Subtotal, NWFP	6,191	Subtotal, Balochistan	4606
Total SNGPL		Total SSGCL	
Distribution Network	42,192	Distribution Network	25,752

Source: SNGPL and SSGCL.

8.5 Consumer Gas Pricing

The government fixes consumer gas prices and maintains them at a uniform level throughout the country. The two utilities, SNGPL and SSGCL, supplying gas to consumers in their operational areas are not required to maintain or provide a breakdown of costs of service delivery for different segments of the transmission and distribution system or for supplying gas to different consumer categories. The cost of supplying gas to customers at various locations is not accounted for and, regardless of the difference in cost due to location, all consumers within the same category pay a uniform price. Gas tariffs and the prescribed prices determined by the OGRA for the SNGPL and SSGCL for various consumer segments for FY2005 are given in Exhibit 8.32.

The consumer price of natural gas in Pakistan comprises (a) prescribed price for the gas companies and (b) Gas Development Surcharge (GDS). OGRA fixes the 'prescribed price' for the gas utilities through public hearings where relevant stakeholders are consulted. The prescribed price includes the following elements:

- Producer gas prices, which are linked with international prices of crude oil and HSFO
- Excise duty
- Transmission and distribution costs
- Depreciation
- Minimum return to the gas companies as stipulated in the World Bank/ADB loan covenants

The prescribed price is designed to enable the two T&D companies to achieve fixed returns on assets; the difference between consumer tariffs and prescribed prices is the GDS. Since the revenue entitlements of the T&D companies are determined retrospectively through an adjustment of GDS, the utilities have little incentive to improve their efficiency; similarly, the level of Government fiscal revenue from this sector cannot be predicted with accuracy.

The Federal Government determines the consumer prices after adding or subtracting GDS to the prescribed prices, and advises OGRA for notification in the Official Gazette of Pakistan.



Exhibit 8.32: Consumer Gas Tariff Breakup, FY 2005

(Rs. Per MMBTU)

Consumer Category	Prescribed Prices				Consumer Prices	
	SNGPL		SSOCL			
	w.e.f. 01.07.2004	w.e.f. 02.02.2005	w.e.f. 01.07.2004	w.e.f. 02.02.2005	w.e.f. 01.07.2004	w.e.f. 02.02.2005
A. Residential (cubic meters per month)						
First Slab	73.95	73.95	73.95	73.95	73.95	73.95
Second Slab	111.42	120.61	111.42	120.61	111.42	120.61
Third Slab	178.25	193.88	178.25	193.88	178.25	193.88
Fourth Slab	231.68	251.01	231.68	251.01	231.68	251.01
Bulk Meters						
Sale Price	111.42	120.61	111.42	120.61	111.42	120.61
Minimum Monthly Charges (Rs)					375.70	406.69
B. Commercial/Industrial						
Price	200.31	218.05	194.38	213.35	204.88	221.79
Minimum Monthly Charges (Rs)					567.18	1,040.96
C. Industrial						
General Industry/Pak Steel						
Price	178.25	193.88	174.28	193.25	182.09	197.11
Minimum Monthly Charges (Rs)					5,139.07	6,846.43
Cement						
Price	206.55	223.86	174.28	193.25	206.78	227.09
Minimum Monthly Charges (Rs)					7,073.66	7,857.34
CHQ Stations						
Price	178.25	193.88	174.28	193.25	182.09	197.11
Minimum Monthly Charges (Rs)					5,139.07	6,846.43
E. Fertilizer						
Pak-American Fertilizer Ltd.						
Feed Stock	36.77	36.77			36.77	36.77
Fuel	178.25	193.88			182.09	197.11
Pak-Arab Fertilizer Ltd.						
Feed Stock	73.99	73.99			73.99	73.99
Fuel	178.25	193.88			182.09	197.11
Dawood Hercules Chemicals Ltd.						
Feed Stock	73.99	73.99			73.99	73.99
Fuel	178.25	193.88			182.09	197.11

Continued...



(Rs. Per MMBTU)

Consumer Category	Prescribed Prices				Consumer Prices	
	SNGPL		SSOCL			
	w.e.f. 01.07.2004	w.e.f. 02.02.2005	w.e.f. 01.07.2004	w.e.f. 02.02.2005	w.e.f. 01.07.2004	w.e.f. 02.02.2005
Pak-China Fertilizer Ltd./ Hazara Phosphate Plant						
Feed Stock	78.52	78.52			78.52	78.52
Fuel	178.25	193.88			182.09	197.11
Minimum Monthly Charges (Rs)					5,139.07	6,846.43
PFC Jordan Fertilizer						
Feed Stock			36.77	36.77	36.77	36.77
Fuel			174.28	193.25	182.09	197.11
Engro Chemical						
Feed Stock					72.94	72.94
Fuel					182.09	197.11
Fauji Fertilizer Company						
Feed Stock					72.94	72.94
Fuel					182.09	197.11
F. POWER						
WAPDA/ KESC						
Price	178.25	193.88	174.28	193.25	182.09	197.11
Minimum Monthly Charges (Rs)					5,139.07	6,846.43
WAPDA Nishatabad Faislabad						
Price	178.25	193.88			182.09	197.11
Fixed Monthly Charges (Rs)	390,000	390,000			375,000	375,000
Liberty Power Limited						
Price	219.53	258.80			234.33	* 202.03
Minimum Monthly Charges (Rs)					6,944.86	** 7,766.00
G. Direct Sale To Wapda's Guddu Power Station						
Kandiot					178.95	190.41
Marl					171.05	185.19
Sara Surl						185.19

* Sale price was revised to Rs 262.03 per MMBtu on 1st January 2005** Fixed monthly charges were revised to Rs. 7,766 per month on 1st January 2005

Source: OGRA



8.6 Future Outlook for the Gas Sector

The demand for gas has been growing at a rapid rate of nearly 10% during the FY2000 to FY2005 period to reach 3.4 Bcfd in FY2005. The largest use of gas is 44% in power generation, followed by 20% in the general industry, 16% in fertilizer and 15% in the residential sectors. The cement, transport and commercial sectors account for the remaining 5% of the gas consumption in the country.



Night view of a fertilizer plant

8.6.1 Natural Gas Demand

FY2005 being the 'base year' for this report. The base year figures represent the actual consumption and not the demand in the system. Figures for FY2006 and beyond show unconstrained gas demand projections.

The following assumptions were used in preparing the forecasts for gas demand:

- GDP was assumed to grow annually at 6.5%.
- Capacity additions for power generation in hydel, coal, nuclear and natural gas were assumed according to the long-term plans of the utilities.
- Gas demand in the residential and commercial sectors was calculated on the basis of the number of new connections that will be added to the SNGPL and SSGCL systems and consumption per customer.
- Gas demand for general industry fertilizer and cement sectors was based on their sectoral contributions to the GDP.
- All the existing cement plants connected to the gas network were assumed to continue receiving gas during the study period.
- Gas demand in the transport sector was based on the vehicle conversion rates to CNG and number of vehicles on the road.

Exhibit 8.33 summarizes gas demand projections in the country. A calorific value of 950 Btu/scf was assumed for accounting purposes. The total gas demand was projected to increase from 3100 MMscfd in FY2006 to 5,300 MMscfd in FY2015 and 9,000 MMscfd in FY2025, an almost threefold increase over 20 years.

Exhibit 8.33: Summary of Net Gas Demand^{1b}
MMscfd (950 Btu/scf)

Region	FY06 ^b	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
SNGPL																				
Residential	310	332	356	379	403	428	454	481	509	537	567	597	629	661	694	728	762	798	835	872
Commercial	53	55	58	62	66	70	74	79	83	88	93	98	103	108	113	119	125	131	137	143
Industrial	346	359	369	380	390	400	409	418	427	436	445	454	463	472	481	490	499	508	517	526
Fertilizer	117	135	135	135	135	143	143	240	240	240	242	253	253	253	253	253	253	253	253	253
Cement	23	30	33	36	39	44	47	52	56	61	66	70	77	82	90	95	102	111	120	130
Power	669	595	591	588	565	529	576	613	661	706	685	689	682	683	1,029	1,161	1,291	1,479	1,454	1,587
Transport	53	54	54	61	69	78	88	98	110	124	139	156	175	197	221	248	278	312	350	392
Subtotal, SNGPL	1,471	1,647	1,696	1,661	1,713	1,808	1,897	2,119	2,342	2,468	2,622	2,737	2,865	3,347	3,621	3,905	4,256	4,466	4,726	5,089
SSGCL																				
Residential	161	165	168	174	180	187	193	200	207	215	223	231	239	247	256	265	275	284	294	304
Commercial	21	21	22	23	23	24	25	26	27	28	29	30	31	32	33	35	36	37	38	40
Industrial	286	290	311	337	367	401	434	470	509	550	593	640	689	742	798	857	921	988	1,050	1,137
Fertilizer	58	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Cement	14	14	14	14	14	14	14	15	16	17	18	21	21	25	28	30	33	36	38	42
Power	371	481	490	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508
Transport	14	14	14	15	18	20	22	25	28	32	35	40	45	50	56	63	71	79	89	100
Subtotal, SSGCL	625	1,063	1,081	1,134	1,254	1,372	1,460	1,579	1,680	1,805	2,210	2,354	2,504	2,654	2,804	2,954	3,104	3,254	3,404	3,554





Independent System		FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Region		259	259	259	300	315	333	333	333	333	333	333	430	430	430	430	430	430	526	526	526	526
Fertilizer		277	277	277	277	277	277	376	352	345	261	280	280	232	224	200	193	199	104	104	104	104
Power		277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277	277
Subtotal, Independent		813	813	813	876	892	986	986	986	986	986	986	986	986	986	986	986	986	986	986	986	986
Total Country		2,832	3,136	3,213	3,381	3,469	3,949	4,012	4,377	4,584	4,891	5,175	5,510	5,763	6,043	6,262	6,747	7,295	7,796	8,020	8,468	8,907

a. Net Demand is the end-consumer demand, exclusive of transmission and distribution losses.

b. Figures for FY 2005 represent actual supplies.



8.6.2 Natural Gas Supply

Forecasts for the supply of gas from the existing fields were developed on the basis of current information and forecasts obtained from industry and government sources. The supply from existing fields includes all the producing fields, those already contracted with the utilities and those for which reserve certification has been completed. The new discoveries include fields already discovered that are not yet contracted and are passing through the phase of reserve certification and investigative studies. In line with the trends observed in the past, the estimates of anticipated supplies from future discoveries were developed assuming a reserve addition of 9.77 Tcf per decade in the future, or a constant rate of 0.97 Tcf per year in the forecast period. A calorific value of 950 Btu/scf was assumed for accounting purposes, and gas supply was projected to increase from 3,600 MMscfd in FY2006 to a maximum of 4,100 MMscfd in FY2009, and then expected to decline gradually to 2,500 MMscfd by FY2025. The gas production profiles of existing and anticipated gas discoveries are presented in Exhibit 8.34.



Pipeline river crossing at Bahawalpur



Exhibit 8.34: Gas Supply Forecast

MMscfd (950 Btu/cf)

	Calcutta Voice, (Btu/cf)	FY03	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	
Main Transmission System																							
Existing Gas Supplies																							
Sil	985	568	524	494	468	444	415	390	365	348	330	312	291	266									
Pirch	865	54	52	47	42	33	24	19	14														
Lut	842	16	24	18	15	13	11	7	4	3													
Dhodak	1,018	42	88	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	
Qadirpur	885	438	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	
Badin (BP)	1,037	228	214	198	180	130	102	78	60	44	31	26	17	8	6	2							
Daru	1,100	7	5	4	2																		
Northern Fields	1111	118	216	210	203	193	184	171	160	151	141	133	124	119	111	104	88	48	43	38	32	25	
Hiran (Block 22)	668	12	22	22	16	12	10	8	7	6	5	4											
Kadimian/Mano	962	168	257	247	239	213	187	164	146	6	4												
Bait/Thadra	958	270	301	301	293	270	199	139	94	63	42	27	18	14	6	5	5	5	5	5	5	5	
Sawan	986	353	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	
Zanzama	504	218	280	280	270	270	280	287	288	270	270	270	270	270	270	270	270	270	270	270	270	270	
Mazirani	1,014	12	12	12	13	12	10	8	5	4	3												
Kilip/Mirpurkhas																							
Bodas	1,014/1082	56	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	
Manzall/Gargaji	950	37	59	100	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
Mubarak	960	10	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	
Sari	915	2	2	2	2	1	1																
Subtotal, Existing		2,681	3,025	3,002	3,019	2,902	2,791	2,434	2,368	2,032	1,874	1,720	1,543	1,378	1,014	938	844	734	515	450	419	387	

a. Figures for FY 2003 represent actual deliveries.

b. Supply from 'Anticipated Discoveries' includes estimated production from additional reserves associated with ongoing and expected exploration activities.



New Discoveries		10	8	6	4																	
Basir	600																					
Southern Fields		19	75	81	52	44	38	34	27	2	14	9	6	4	1							
(OGCL)																						
Zarghun South	930	22	22	22	22	22	22	22	22	16	14	12	10	8	7	6	5	4				
Mahr	1,025		76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	
Subtotal, New Discoveries		23	165	89	164	142	136	132	116	113	104	97	92	89	84	80	76	72	68	64	60	
Total Main Transmission System		26,51	3,053	3,137	3,107	2,856	2,732	2,679	2,581	2,151	1,985	1,822	1,638	1,468	1,095	1,014	788	540	439	405	423	
Independent Supplies																						
Mari	740	344	344	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	
Mari Deep	740			47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
Uch	425	82	82	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	
Kandhot	835	91	91	91	91	163	152	138	120	101	89	80	68	59	47	36	31	27	24			
Sara/Sari	810	8	8	8	8	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	
Chachar plus		25	25	25	25	22	27	31	22	22	22	22	22	22	22	22	22	22	22	22	22	
Chachar upgrade	780																					
Nandpur Panipir	227	11	14	14	14	14	14	14	14	14	13	13	12	11	10	9	8	7	5	4	3	
Subtotal, Independent Supplies		536	564	571	603	716	745	719	710	687	670	642	623	597	577	552	532	507	480	450	419	
Subtotal, Anticipated Discoveries ^a		87	193	280	387	483	608	677	774	870	987	1,054	1,100	1,137	1,164	1,186	1,204	1,218	1,234	1,244	1,264	
Total Supplies		3,197	3,817	3,775	3,863	4,104	4,076	3,799	3,600	3,282	2,860	2,646	2,382	2,180	1,985	1,651	1,581	1,282	980	778	634	



8.6.3 Supply-Demand Gap

To work out the supply-demand gap, gross demand was calculated by adding transmission and distribution losses and compression fuel usage to the net demand. These losses and compression fuel usage were assumed to be at 8.0% during the study period. Both supply and demand forecasts were normalized to a gas calorific value of 950 Btu/scf for accounting purposes.

The forecasted gross demand for gas, the supply, and the projected gap or surplus in the market are tabulated in **Exhibit 8.35**. The supply forecast is based only on onshore gas discoveries and does not take into account any import of gas or offshore potential.

The gap in the market is expected to be about 180 MMscfd and 7,000 MMscfd during FY2010 and FY2025, respectively. The graphical representation of supply-demand gap has been shown in **Exhibit 8.36**.

Indigenous gas supplies are expected to fall short of the demand after FY2009 and the alternatives available for filling this shortfall, as well as issues associated with each, are summarized below:

- Imports of crude-oil refined products, particularly furnace oil, could be increased to meet the shortfall. This would not be advisable as the country is already heavily dependent on imported oil.
- The country has a well-developed infrastructure for the transmission and distribution of gas, which is a more efficient fuel better suited for use in the power and industrial sectors than oil. In order for the continued and full utilization of the infrastructure available in the country, the government should encourage and induce local as well as foreign oil and gas companies to increase their investment in the exploration activities in the country so that the decline in local production can be met through new discoveries.
- In addition to encouraging oil and gas exploration efforts in the country, and given Pakistan's proximity to major gas reserves in the Middle East and Central Asia, the import of gas through transnational pipelines from these gas-rich regions should also be considered.
- Liquefied Natural Gas (LNG) is another alternative to meet the shortfall in gas supplies. The import of LNG will involve establishing facilities for the de-liquefaction of gas, and developing cost-efficient, specialized transport systems for use over long distances where pipeline routes are not feasible.

The GoP will have to seek alternative sources of gas and energy to meet the expected shortfall in gas supply from FY2009 onwards. With the exception of a significant discovery in the offshore prospects, the country will continue to depend on imported energy to meet shortfalls in gas and energy.

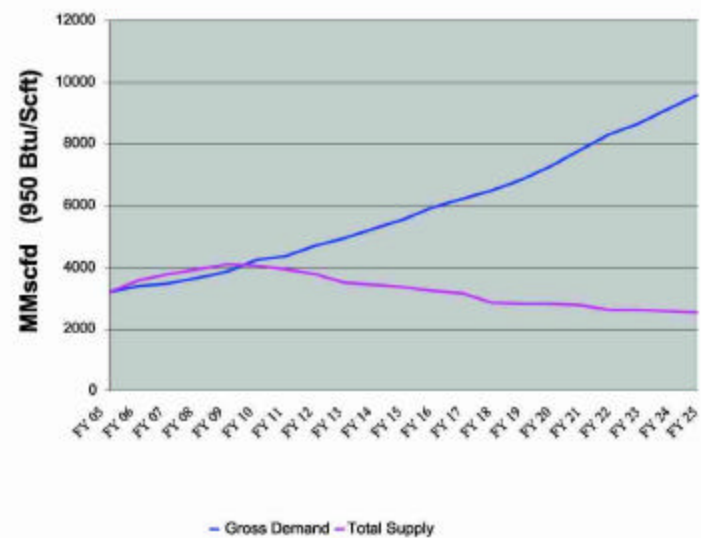
Exhibit 8.35: Gas Supply-Demand Gap for the Country
MMscfd (950 Btu/cf)

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Gas Demand																				
Net Demand	2,932	3,130	3,213	3,381	3,569	3,849	4,082	4,377	4,596	4,891	5,176	5,510	5,763	6,043	6,362	6,747	7,206	8,020	8,468	8,887
UFG and T&D Losses	285	270	275	270	285	307	310	342	358	383	405	432	453	475	500	531	572	608	633	659
Gross Demand	3,197	3,400	3,488	3,651	3,854	4,226	4,378	4,719	4,954	5,274	5,581	5,942	6,216	6,518	6,862	7,278	7,828	8,653	9,127	9,546
Gas Supply																				
Main Transmission System	2,951	3,053	3,107	3,107	3,051	2,852	2,570	2,501	2,151	1,845	1,622	1,536	1,486	1,093	1,006	924	788	560	480	455
Independent System	535	564	571	603	763	756	748	719	700	687	670	642	623	587	577	552	532	527	502	480
Anticipated Discoveries	97	193	280	387	483	580	677	774	870	967	1,064	1,160	1,257	1,354	1,450	1,547	1,644	1,644	1,644	1,644
Total Supply	3,197	3,617	3,775	3,903	4,104	4,076	3,790	3,860	3,528	3,446	3,362	3,246	3,165	2,851	2,840	2,810	2,770	2,634	2,636	2,570
Gap/Surplus																				
Annual Average Demand	211	287	302	250	191	(379)	(919)	(1,416)	(1,828)	(2,216)	(2,696)	(3,061)	(3,567)	(4,022)	(4,466)	(5,055)	(5,680)	(6,017)	(6,098)	(7,065)

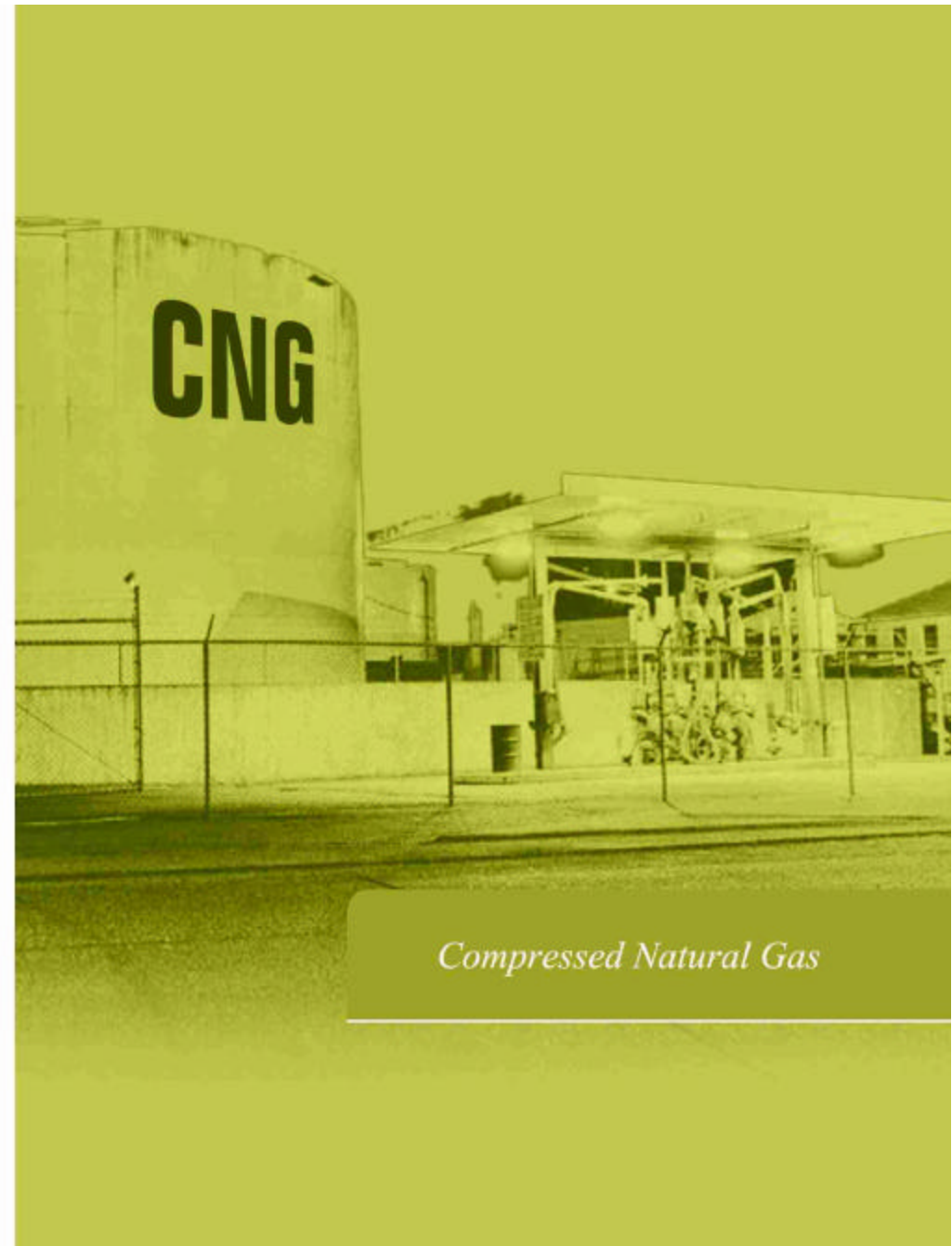




Exhibit 8.36: Graphical representation of Gas Supply-Demand Gap



— Gross Demand — Total Supply



Compressed Natural Gas



9 Compressed Natural Gas

The CNG market, currently at 67 MMscfd, accounts for about 2% of the total natural gas market. However, consumption of CNG has increased tremendously over the past three years, and this trend is expected to continue at least into the near future.

Historically, the GoP has encouraged the use of CNG in automotive vehicles as an alternative to liquid petroleum fuels. In 1997, the Government introduced a number of measures to shift consumer preferences towards the use of CNG as an automotive fuel. OGRA's role in the CNG industry has helped the increased use of natural gas in the transport sector. Procedures for the application and grant of licenses, approval of CNG equipment, imports and safety compliance by the CNG stations have been greatly streamlined to facilitate private sector investment. Investment promotion incentives have included duties and sales tax exemption on imported machinery, equipment, conversion kits, cylinders, etc. for a period of five years since 1997 and the same has recently been extended by CBR till June 2006.

9.1 Vehicles Converted to CNG

The policies mentioned above have had substantial success, with an almost fivefold increase in the number of vehicles operating on CNG between FY 2000 and FY 2005. According to the Economic Survey of Pakistan, there were about 750,000 vehicles operating on CNG till 30th June 2005 making up about 35% of the motorcars, vans and taxi-cabs on the roads as compared to 85,050 vehicles on CNG in FY 2000.

In recent years, the introduction of new vehicles factory-fitted with CNG kits has increased, which has improved the safety standards of CNG use.

9.2. CNG Stations in Operation

A breakdown of CNG stations in operation in each province as of June 2005 is shown graphically in **Exhibit 9.1**. A comparison with the previous year, as given in **Exhibit 9.2** indicates that there has been substantial growth in the number of CNG stations set up in the current fiscal year 2004-05 especially in the Punjab. Province-wise growth in CNG stations, as given in **Exhibit 9.3**. About 59% of the total installed CNG stations are located on independent premises and the remaining are co-located within petroleum filling stations owned by oil marketing companies (OMCs).



Exhibit 9.1 Province-wise distribution of CNG stations

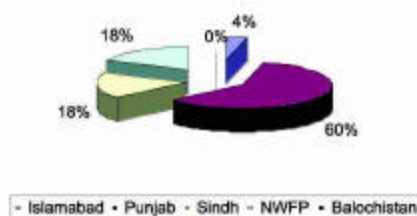
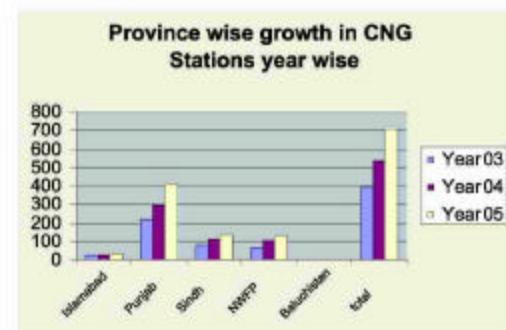


Exhibit 9.2: Operational CNG stations

Province	CNG stations in operation in FY 2004	CNG stations in operation in FY 2005	Percent increase between FY 2004 and FY 2005
Islamabad	25	29	16%
Punjab	293	415	42%
Sindh	111	133	20%
NWFP	105	133	27%
Balochistan	1	1	0%
Total	535	711	33%

Exhibit 9.3: Province-wise Growth in Number of CNG stations





9.3 CNG Stations in Pipeline

In addition to the stations already in operation, OGRA had also issued about 618 provisional licenses for CNG in different parts of the country by June 30, 2005.



9.4 CNG Prices

There exists a policy of maintaining a substantial disparity between the prices of gasoline and CNG to benefit CNG consumers. Consumer prices are deregulated and are determined by market forces. It is important to note that both the input gas price and the final consumer price are fixed for the individual operator, and the profit or 'Operator's Margin' is based on a 'netback' principle calculated by subtracting the input gas price, taxes and other expenses from the fixed consumer price.



9.5 CNG Demand Projections

The demand for CNG has been projected as part of the overall demand for gas as shown in Section 8. The projections for CNG requirements in the country are shown in Exhibit 9.4. It was assumed that 60% of cars and taxicabs and 20% of buses on the road would be converted to CNG by the end of FY 2025. According to these projections, CNG demand is expected to increase more than twofold by FY 2010. By FY 2025, the demand for CNG is expected to rise by more than ten times the current level.

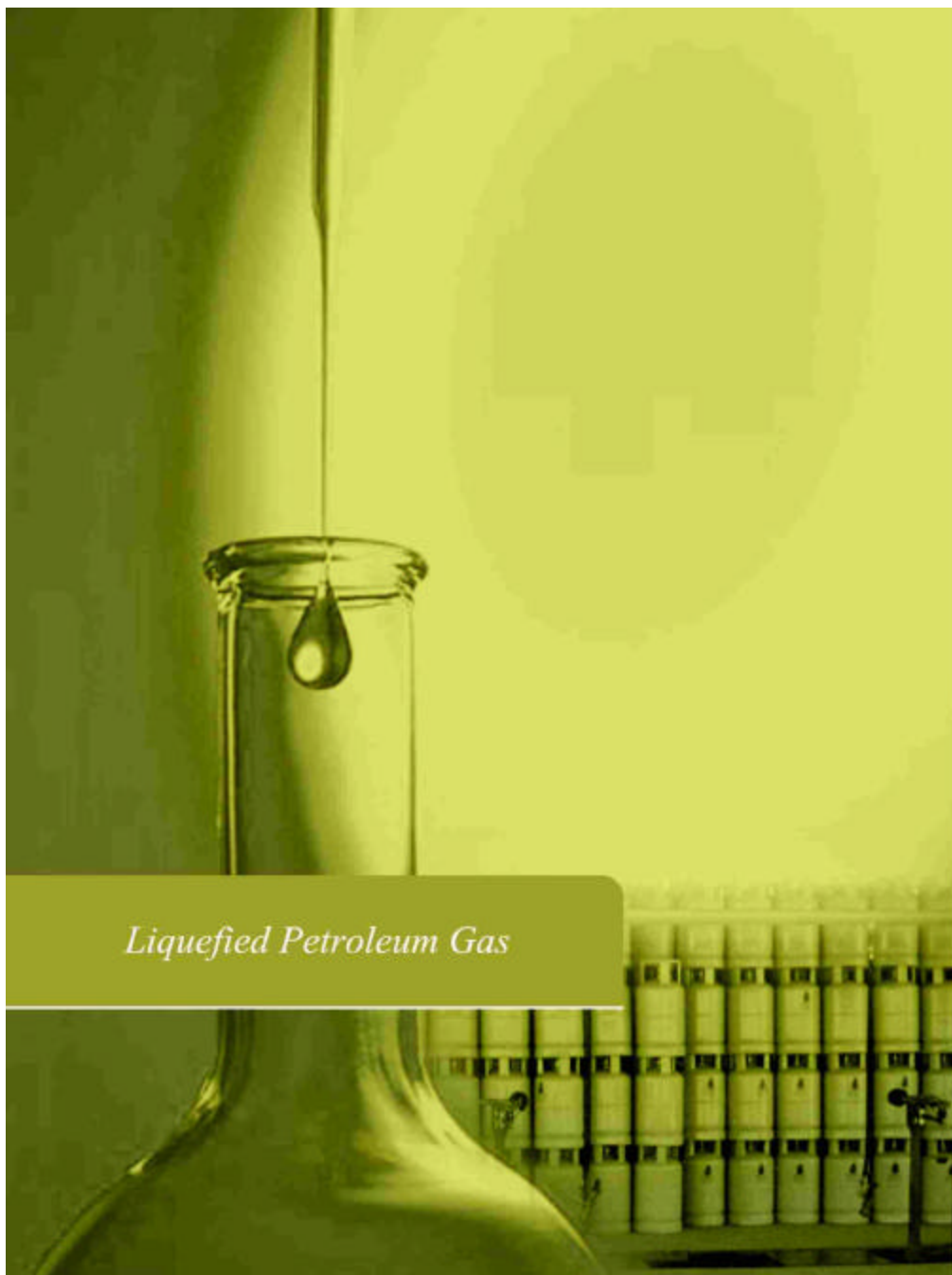


Views of CNG filling stations

Exhibit 9.4: Demand Projections for CNG
MMscfd (950 Btu/scf)

Region	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
SHCPPL	63	54	54	60	68	77	87	97	108	121	136	152	170	190	212	237	260	305	346	302	443
SSGCL	14	14	14	15	17	20	22	25	28	31	35	39	43	48	54	60	69	78	88	100	113
Total	67	68	68	75	85	97	109	122	136	152	171	191	213	238	266	297	338	383	434	492	556





Liquefied Petroleum Gas

10 Liquefied Petroleum Gas

LPG is important in the energy mix of developing countries like Pakistan as it provides a cleaner alternative to biomass, especially in locations where natural gas is not available. LPG currently accounts for about 0.4% of the total primary energy supply in the country. This low penetration in the total energy market is mainly due to local supply constraints, the higher price of LPG in relation to competing fuels such as kerosene and fuel wood.

Given the de-regulated environment in the LPG sector, OGRA has simplified LPG licensing procedures, thereby strengthening the supply infrastructure and promoting an environment conducive to competition. OGRA's regulatory structure requires monitoring of the activities of the LPG marketing companies to ensure sufficient supplies all over the country, especially in remote locales, and maintain uninterrupted supplies to domestic customers. As of June 30, 2005, there were 9 LPG producers, 32 LPG marketing companies operating in the country with more than 20,000 Metric Tons storage capacity and having almost 4000 authorized distributors and around 2.0 million consumers. The LPG consumption and production are given in **Exhibits 10.1 & 10.2** respectively. It is expected that more than 50% of the total domestic LPG is used in automotive sector. Other than the marketing companies, 77 licenses were issued for the construction of LPG storage and filling facilities.

10.1 LPG Consumption

Exhibit 10.1 gives a sectoral consumption summary of LPG for FY 2005 in the country. LPG consumption grew by about 18% compared to last fiscal year.

Exhibit 10.1: LPG Sectoral Consumption, FY 2005

Sector	Daily (Tonnes)	Annual (Tonnes)
Domestic	858	313054
Commercial	270	98493
Others	13	4737
Total	1141	416284

The issue confronting the authority is the handling of LPG by dealers & other persons who carry out illegal decanting and shifting of LPG from one vessel to another without any safety considerations. OGRA has time and again advised the LPG marketing companies to check and ensure that their authorized dealers are not involved in illegal decanting practices. Action has been taken against such dealers by the companies on advice of OGRA. In addition, Provincial Government has also been requested to take necessary action as per section 285 & 286 of PPC (Pakistan Penal Code). In this regard, District Administrations have registered FIRs and persons involved in decanting are arrested. An aggressive media campaign has also been launched informing the public about hazards of decanting and requesting them to inform OGRA or nearby Police Station.



10.2 LPG Production

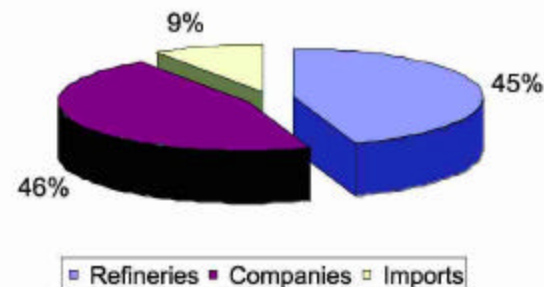
Currently, LPG supplies are being met through three sources: refineries, gas producing fields and imports. The actual supply from refineries/producing fields is presented in **Exhibit 10.2** and the respective share of each supply source in the total countrywide supply is shown in **Exhibit 10.3**

Exhibit 10.2: LPG Supply during FY 2005

Sector	Annual (Tonnes)	Daily (Tonnes)
Attock Refinery	8,239	22.57
Pakistan Refinery	15,232	41.73
National Refinery	18,822	51.57
Pak-Arab Refinery	150,543	412.45
Subtotal, Refineries	192,836	528.32
Field		
OGDC (Bobl)	11,466	31.41
OGDC (Dakhni)	5,132	14.06
OGDC (Dhodak)	67,345	184.51
OGDC (Kunnar)	10,277	28.16
OPI	2,348	6.43
POL	48,372	132.53
PPL	23,303	63.84
JJVL	28,327	77.61
Subtotal, Fields	196,570	538.55
Imports	40,492	110.94
Total Supply	429,898	1,177.80



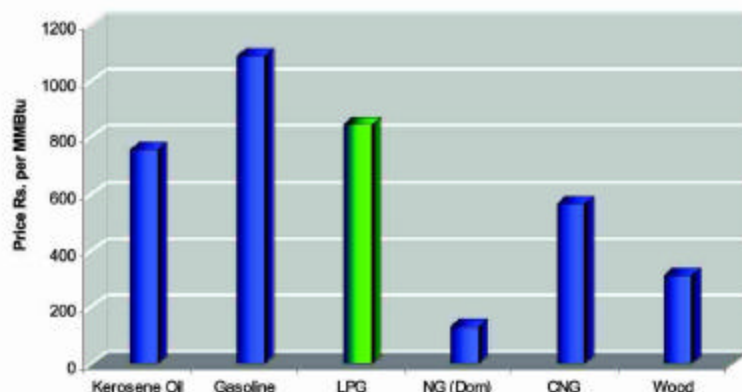
Exhibit 10.3: Share of Each LPG Supply Source during FY 2005



10.3 LPG Consumer Prices

The GoP deregulated LPG prices in August 2000, freeing companies to fix their own prices. Further, LPG producers agreed upon and adopted long-term arrangements on LPG pricing terms. As a result, the oil refineries contracted a 15-year sale-purchase agreement with public sector LPG marketing companies, while other LPG producers signed the agreements for 10 years on the basis of an international pricing formula. Under this pricing criterion, the LPG price was linked with the monthly contract price for propane and butane published in the *International Propane-Butane Newsletter* (announced by Saudi Aramco), Middle East Economic Survey, in the ratio of 60:40. This was then averaged for the first six months of the seven-month period immediately preceding the relevant Price Notification Period (PNP) and a freight element not exceeding US\$ 12.5/tonnes was added. OGRA, under Rule 18(2) of the LPG Rules, has the right to intervene in the public interest and determine LPG prices in accordance with the prevailing policy of the Federal Government.

Exhibit 10.4 compares LPG price with the prices of competing fuels.

**Exhibit 10.4: Comparison of Fuel Prices**

10.4 LPG Projections

Sectoral projections for the LPG demand and supply in the country were developed using a moderate demand scenario for the period FY2006 to FY2025. The following analysis presents the projected demand and supply scenario and the overall country balance.

10.5 Demand Projections

Using the GDP growth rates, population projections and variables such as percentage of middle and high income households using purchased (as opposed to self collected) wood and the percentage of households not connected to the natural gas network in urban areas, an estimate of potential demand for LPG was calculated for the country. In the urban areas, only consumers of purchased wood as a cooking fuel who were not connected to the natural gas network were included in



Horizontal LPG storage vessel



the potential consumer base. In the rural areas, all middle- and high-income users of commercial wood as a cooking fuel were considered a potential base by FY 2025. The potential demand was calculated by assuming complete displacement of purchased wood as cooking fuel in the urban areas and a maximum of 50% displacement of purchased wood used for cooking in the rural areas. The potential demand indicates the level of demand that could be achieved if the price of LPG was reduced so that all middle- and high-income users of purchased wood would switch to LPG.

The demand for LPG based on current consumption patterns for the existing market base for the FY2006-FY2025 period was estimated using a growth-based econometric model. The input variables in this model included projected income growth rates, projected growth rates for the price of LPG, projected growth rates for the prices of competing fuels and income and price elasticities.

Exhibit 10.5 provides a summary of the LPG demand in the country. For FY2005, potential demand for LPG was estimated at about 744,000 tonnes in the country and is expected to increase to 2.7 million tonnes by FY2025. However the market-based demand is projected to increase from about 489,000 tonnes in FY2006 to 2.4 million tonnes in FY2025.

10.6 Supply Projections

Projections of indigenous LPG supplies from field plants, refineries and imports for FY2006 to FY2025 are given in **Exhibit 10.6** and **Exhibit 10.7**. Projections of supply of LPG from field plants were based on the existing and projected reserve sizes and expected decline in production from the fields. New oil and gas discoveries expected to take place in the forecast period were also taken into account. Projections of refineries were based on the estimated current and future production capacities of existing and new refineries based on historical trends reflecting the amount of LPG that each refinery is capable of producing.



JIVL LPG Extraction Plant

10.7 Supply and Demand Balance

The overall country demand and supply balance for LPG is given in **Exhibit 10.8** and **Exhibit 10.9**. A supply surplus can be expected to a level of 134,000 tonnes as a result of the projected increase in LPG supply, provided the current consumption and pricing trend continue in the near term. However, if the market expands to the households using commercial fuel wood for cooking purposes in the urban or rural areas, it is expected that the indigenous LPG supply will experience a shortfall that may prevail throughout the study period.



Exhibit 10.5: Demand for LPG

Year	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Demand																					
Thousand Tonnes																					
Potential Demand	744	872	998	1,087	1,181	1,275	1,332	1,369	1,403	1,538	1,615	1,707	1,801	1,898	1,989	2,127	2,260	2,333	2,415	2,541	2,669
Market Based consumption	428	489	552	620	666	760	871	971	1,080	1,199	1,300	1,408	1,520	1,639	1,762	1,890	2,011	2,122	2,220	2,302	2,388
Demand																					
Tonnes Per Day																					
Potential Demand	2,039	2,388	2,734	2,977	3,236	3,493	3,648	3,806	4,008	4,214	4,423	4,676	4,936	5,201	5,476	5,828	6,164	6,361	6,625	6,962	7,311
Market Based consumption	1,178	1,340	1,511	1,700	1,908	2,156	2,387	2,660	2,959	3,284	3,563	3,857	4,166	4,468	4,827	5,179	5,511	5,814	6,082	6,307	6,542

Figures for FY2005 represent actual LPG demand/consumption.

Exhibit 10.6: Indigenous Supply of LPG and imports

Thousand Tonnes

Year	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Refineries																					
Attock Refinery	15	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Pakistan Refinery	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
National Refinery	151	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148
Pak-Arco Refinery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Refinery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	153	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228
Field Plants																					
Muzaffarpur	49	60	53	49	45	41	36	33	31	28	26	24	22	21	20	18	16	14	13	12	12
Adhi	23	14	13	12	11	11	10	10	9	9	9	8	8	7	7	7	6	6	6	6	6
Deshi	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Dhokai	67	59	58	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	40
Kannar	10	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2
Bangali and Razana	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Babi	11	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Chandla	0	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Khoro	0	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Others	0	8	47	91	143	179	180	257	304	340	308	428	464	508	540	583	612	645	666	694	719
Subtotal	167	217	247	264	331	361	365	437	470	501	556	582	577	623	684	724	760	789	824	848	848
Imports																					
Imports	388	607	637	674	721	751	755	827	860	891	991	1,017	1,012	1,048	1,119	1,203	1,229	1,269	1,277	1,303	1,327
Total	428	667	667	744	861	841	866	937	980	1,021	1,131	1,167	1,172	1,258	1,299	1,393	1,428	1,468	1,497	1,533	1,567

Figures for FY2005 represent actual LPG produced.



**Exhibit 10.7: Indigenous Supply of LPG**

Tonnes per Day

Year	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Refineries																					
Attock Refinery	23	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Pakistan Refinery	42	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
National Refinery	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Pak-Arab Refinery	412	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405	405
New Refinery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	528	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667	667
Field Plants																					
Mirpur Matheli	133	154	145	134	123	112	99	85	77	71	66	60	55	55	49	44	36	36	33	33	33
Archi	64	37	35	34	32	31	29	28	27	26	24	23	22	21	20	19	18	17	16	16	16
Dadhni	14	7	6	6	5	5	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2
Chodak	165	162	158	154	150	147	144	142	139	136	133	131	128	126	123	121	118	116	114	111	109
Kumhar	26	11	11	11	11	10	10	9	9	8	7	7	6	6	5	5	4	4	4	4	3
Bhugal and Ratana	6	6	6	6	5	5	5	4	4	4	4	4	4	4	3	3	3	3	3	3	2
Bosi	31	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Chandla	0	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Mirpur	0	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Others	0	22	129	248	391	481	517	731	834	931	1,056	1,172	1,271	1,387	1,479	1,569	1,677	1,768	1,824	1,902	1,969
Subtotal	461	697	678	781	903	988	988	1,190	1,240	1,376	1,520	1,584	1,683	1,709	1,818	1,866	1,966	2,137	2,188	2,288	2,372
JVPL	78	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
Total, Country	1,068	1,704	1,785	1,858	2,012	2,087	2,103	2,305	2,387	2,482	2,750	2,814	2,913	3,019	3,106	3,336	3,407	3,488	3,638	3,610	3,673
Imports	111	137	184	192	219	247	274	301	329	356	384	411	438	466	493	521	548	575	603	630	658
Total	1,179	1,841	1,969	2,050	2,231	2,344	2,377	2,606	2,726	2,838	3,134	3,225	3,351	3,485	3,599	3,857	3,955	4,063	4,242	4,240	4,331

Figures for FY2005 represent actual LPG produced.

Exhibit 10.8: LPG Demand and Supply Balance

Thousand Tonnes

Year	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Gross Demand LPG																					
Existing Market Based	428	489	552	620	696	780	871	971	1,080	1,199	1,300	1,408	1,520	1,638	1,762	1,890	2,011	2,122	2,220	2,302	2,368
Potential Demand	744	872	966	1,087	1,181	1,276	1,332	1,395	1,463	1,538	1,616	1,707	1,801	1,898	1,999	2,127	2,250	2,333	2,418	2,541	2,669
Indigenous LPG Supply	428	657	687	744	801	841	855	937	980	1,021	1,131	1,167	1,172	1,208	1,296	1,353	1,429	1,488	1,487	1,533	1,567
Deficit(Surplus)																					
Existing Market Based	-	(188)	(145)	(124)	(105)	(81)	16	34	100	178	169	241	348	381	463	497	582	653	723	769	821
Potential Demand	316	215	301	343	380	434	477	452	483	517	464	540	629	640	700	734	821	864	921	1,008	1,102

Figures for FY2005 represent actual LPG demand and supply.

Exhibit 10.9: LPG Demand and Supply Balance

Tonnes per Day

Year	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Gross Demand LPG																					
Existing Market Based	1,179	1,340	1,511	1,700	1,908	2,136	2,387	2,660	2,969	3,264	3,563	3,867	4,166	4,488	4,827	5,179	5,511	5,814	6,082	6,307	6,542
Potential Demand	2,059	2,388	2,794	3,267	3,826	4,493	5,069	5,654	6,250	6,856	7,472	8,098	8,734	9,380	10,036	10,702	11,378	12,064	12,760	13,466	14,182
Indigenous LPG Supply and Imports	1,179	1,841	1,969	2,050	2,231	2,344	2,377	2,606	2,726	2,838	3,134	3,225	3,351	3,485	3,599	3,857	3,955	4,063	4,142	4,240	4,331
Deficit(Surplus)																					
Existing Market Based	-	(501)	(438)	(380)	(328)	(258)	10	54	233	446	429	622	815	1,004	1,228	1,322	1,596	1,791	1,940	2,067	2,211
Potential Demand	860	547	785	897	1,005	1,149	1,272	1,198	1,282	1,376	1,289	1,441	1,504	1,576	1,677	1,771	2,209	2,328	2,483	2,722	2,980

Figures for FY2005 represent actual LPG demand and supply.

