آئل اینڈ گیس
ریگولیٹری اتھارٹی

Oil & Gas
Regulatory Authority

Proposed Tariff Regime for Natural Gas Sector in Pakistan

November 13, 2017

Executive Summary

Under Section 7 of OGRA Ordinance 2002, Authority has to determine or approve tariff for regulated activities whose licenses provide for such determination or such approval or where authorized by the Ordinance. The criteria for determination, approval, modification, evaluation of applications and revision of tariffs have been prescribed in the Rules and in the terms and conditions of the respective licenses.

2. The tariff scope has been further highlighted in terms of Section 6(2)(t) of OGRA Ordinance which provides that the Authority in consultation with the Federal Government and licensees for natural gas shall determine for each such licensee a reasonable rate which may be earned by such licensees in the undertaking of its regulated activity pertaining to natural gas keeping in view all the circumstances. Section 21 of OGRA Ordinance empowers the Federal Government to issue policy guidelines to the Authority on matters of policy, not inconsistent with the provisions of the Ordinance or the rules.

3. The above said provisions in the law provide a complete legal framework to deal the tariff of the licensee for the regulated activity. In pursuance thereof, OGRA, keeping in view, the gas sector reforms envisaged by the Federal Government, continuous evolution in regulatory practices undertaken world over and changes in business dynamics etc, decided to revise the existing tariff regime implemented since long. The existing tariff regime operates on the cost transfer pricing mechanism and provides a fixed rate of return on operating fixed assets at 17.5% in case of SNGPL and 17% in case of SSGCL.

4. In view of above, a working group comprising the representatives from the licensees, Federal Government and OGRA was constituted to deliberate on the matter of new tariff regime for natural gas sector and accordingly submits its proposals for the consideration of the Authority and consultation of all stakeholders. OGRA, in this perspective, developed a detailed tariff study report encompassing the tariff proposals for natural gas sector in Pakistan and submitted the same before the group. The group extensively deliberated and discussed the proposals with the technical assistance of the World Bank. The same, after review and data update, has been provided below for the comments and input of all stakeholders. Chapter 9 & 10 of said study report specifically contains “Tariff Proposals for natural gas sector in Pakistan”, the summary of the same is described as under;

- ***Applicability:*** *the proposed tariff regime can operate in respect of bundled as well as unbundled entity entities and network structure in Pakistan.*

- ***Tariff Design:*** *t*he proposed regime operates on Cost Transfer Pricing Mechanism wherein aggregate of expenses incurred in connection with the regulated activity/activities shall form the revenue requirement in respect of licensee. Market based rate of return shall be part of it.
- **Tariff Type;** OGRA shall determine integrated or separate tariff for licensed activity/activities in accordance with the network structure or as the case may be.
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- ***T*ransportation Tariff*:*** There shall be a postal stamp rate for gas Transportation activity in respect of Transmission company at national/regional level for tier 1 & tier 2 consumers. *Tier 1: indigenous natural gas consumers, Tier 2: RLNG consumer.*
  The transportation tariff at distribution network or existing T&D network shall be aggregate of relevant expenses and return. In respect of Tier 2 consumers of the company or under Third Party Access regime, this tariff shall be based on the incremental cost, in accordance with the decision of the Federal Government.
- ***Prescribed Prices for natural gas retail consumers*** shall be based on the revenue requirement of the licensee in accordance with the network structure and shall inter-alia be aggregate of all or some relevant cost out of the of the following;

  (i) Cost of gas
  (ii) Operating expenses (OPEX)
  (iii) Return on Regulated Fixed Assets (CAPEX)
  (iv) Transportation charges and any other

- **Other operating revenues** from all sources, directly or indirectly connected with the regulated activity shall reduce overall Revenue Requirement of the licensee.
- **Rate of Return;** the licensees shall receive market based rate of return i.e; a Vanilla Weighted Average Cost of Capital (WACC) on the value of their net regulated fixed assets in operation. The WACC shall be computed based on the formula;

  WACC = cost of equity *30% + cost of debt *70%

  i. *Cost of equity* = Risk free rate of return +*B** Market Risk Premium which comes to 16. 88 % for Transmission activity and 18.72% for Distribution
  ii. *Cost of debt* is based on 6 monthly averages of last twelve months which comes to 6.14%. Kibor + spread that has been taken at 2%.
  In view of above, WACC for Transmission network works to 10.76% and for distribution 11.31%. Complete working has been shown in chapter 10 of the report.

- **Corporate Tax** shall be treated as Pass Through Item.
- **Efficiency Benchmarks** shall be applicable.
- **Assets Built through Government grants /Aid etc;** shall be entitled for 3% return.
- ***Expenses incurred owing to statutory obligations*** including WPPF, 10 C bonuses etc; shall not form part of revenue requirement of licensee.
- **Sales Revenue** shall include directly generated income on account of sale of gas.

- **Fixed Assets in Operation** in operation at historical value shall be calculated as one half of the sum of the value of fixed assets in operation at the beginning and at the end of the fiscal year, less the amount of accumulated depreciation and the same shall be used for the computation of rate base. The assets built through grants and contributions shall not be included therein.
- **Assets Revaluation** shall be carried out at the time of unbundling, the treatment of the same in the Regulatory Assets Base/Revenue Requirement, shall be subject to approval of the Authority
- **Depreciation** shall be calculated on the basis of rate and method approved by the licensee BoD in accordance with SECP regulations.
- ***Cost of Gas*** shall include the gas purchased from indigenous sources across the country and form WACOG to charge a uniform rate between the licensees, as per Federal Government Policy guideline.

CONTENTS OF THE TARIF STUDY REPORT

ANNEXURES

TABLES

1. The Scope of Task

1.1 The scope of work involves preparation of report along with recommendations regarding the tariff methodology under the bundled as well as unbundled scenario i.e; the Split of two integrated Transmission &Distribution (T&D) companies into four Distributions and one Transmission company. The tariff methodology is associated to take into consideration the following factors;

(i) The companies will remain sustainable entities

(ii) There will be no adverse impact on the consumer prices

(iii) The existing rate of return model will continue for the time being for one/two years and gradually phasing towards an efficiency based structure with flexible parameters.

(iv) Any other related to the above.

2. Preliminary Understanding Before Getting Start

2.1 Pakistan, officially the Islamic Republic of Pakistan, is a Federal Parliamentary Republic in South Asia. It is the sixth-most populous country with a population exceeding 200 million people. Geographically it is located almost in the mid of south Asia, Arabian sea in the south, China in the north, India in the east and Afghanistan in the West.

2.2 Four provinces and Federally administered territories form the “Federation” set up under the Constitution of 1973. There is a Federal Government and four provincial Governments namely Punjab, Sindh, Khyber Pakhtunkhwa, Baluchistan and Fata, Gilgat Baltistan, Azad Jammu & Kashmir (AJ&K), forming a body politic. The Constitution provides a scheme whereby the economic resources of the country are almost pooled and distributed among provinces under the formula namely National Finance Commission (NFC) award. The provinces have also been conferred the autonomy to generate revenue and spend as per their own socio economic agenda. With respect to natural resources particularly the natural gas, the Federation and Provinces are currently co-shareholder while the right of first use rests with the province in which gas is produced.

2.3 Natural gas T&D network is available in all the provinces and Federal Capital. The natural gas reservoirs also exist in all the provinces. Major share of production is from Sindh with the contribution from 70-80 percent of total production. Big market for natural gas consumption is however in Punjab. The categories of gas consumers

have been defined by the Federal Government as Domestic (household), Power, Fertilizer, Industrial, Commercial, CNG, Captive power, Cement etc; In the recent competed financial year, sale mix on gas companies network was highest for Domestic and Power Sector in the ratio of 34% & 30% respectively.

3. The Existing Gas Market Structure & Analysis

3.1 *Gas Market Infrastructure*

3.1.1 Pakistan has a huge and well developed integrated infrastructure of Transmission and Distribution network to provide gas for various sectors. There are two main gas utilities (Sui Companies) with major GoP shareholding operating across the country namely; Sui Northern Gas Pipeline Limited (SNGPL) and Sui Southern Gas Company Limited (SSGCL). Both the companies operate about 160,000 Km T&D network and serve approximately eight million gas consumers of various categories. SNGPL operates in the province of Punjab, Khyber Pakhtunkhwa and the Federal Capital. SSGCL operates in the province of Sindh and Baluchistan. Both the companies hold integrated license to undertake the regulated activities pertaining to Transmission, Distribution and sale of natural gas.

3.1.2 Recently two companies have obtained license for the sale of RLNG to CNG sector through the access of gas companies' network under Transportation agreement. This is a first stone to create an independent and free market in the private sector.

3.1.3 Pakistan is energy starved country with the current potential deficit of approximately 3 BCFD. The Federal Government has therefore developed multipronged strategy for energy supplies and has prioritized the LNG import, which in the current year shall be mounted up to 1200 MMCFD. In order to transport this RLNG from the port in the south of the Country to the consumption centers in the north of the Country, the Government has also envisaged massive extension in transmission network worth Rs. 143 billion, spreading to over 1200 KM in two phases. As per latest information, this project is near to completion while Government is also mulling to further extend the transmission network to transmit the bulk of RLNG. In this regard two other giga projects of 42'' Transmission pipeline denoted as RLNG Pipeline Infrastructure Phase III by SNGPL and Transmission network from Gawadar to Nawab shah by ISGSL has also been submitted for necessary regulatory approvals.

3.1.4 At present three terminal of 600 MMCFD have been envisaged. One Engro Elengy Terminal Limited (EETL) has commenced operation since March 2015. Gas Port

Terminal has confirmed to start operation from December 1, 2017 while Global Energy Terminal in 2018. Besides this, two applications for construction of Terminal in private sector are also under consideration.

3.2 *Regulatory Framework*

3.2.1 The Gas sector activities since inception at all levels remained under the ambit of Federal Govt. Thus, all the activities including exploration concession, allocation and tariff etc.; from Policy aspect as well as Regulation has been dealt by it.

3.2.2 In year 2000, the Economic Reforms Program of Federal Government (FG) led to the establishment of independent regulatory bodies for public utilities like natural gas, electricity and telecommunication etc;. FG retained the policy making role and handed over the commercial operations to private and public sector and entrusted the role of regulation to independent Regulators in order to attract the confidence of investors and to gradually develop a competitive market.

3.2.3 OGRA was established under OGRA Ordinance on 28th March, 2002 to regulate midstream and downstream oil and gas sector with the Mission & Vision to "**foster competition**, **increase private investment** and ownership in the midstream & downstream petroleum industry, **protect** the public interest while **respecting** individual rights, carryout effective and efficient regulations and to provide level playing field to the investors".

3.2.4 In gas sector, OGRA's prime task is to determine the prescribed prices/tariff/revenue requirement for each financial year in respect of licensees engaged in the regulated activity of Transmission, Distribution and sale of natural gas. In the context of law i.e; OGRA Ordinance, the **Prescribed Price** is a sum of money or the revenue requirement which is required by the licensee to run its business and get return on investment as provided in its license. **"Consumer/Sale price"** is a price which is fixed by the Federal Government and charged by the gas companies from the gas consumers. Accordingly, the natural gas sale price is subject matter of GoP. The difference between the sale price fixed by the Federal Government and Prescribed Price determined by OGRA represents as Gas Development Surcharge (GDS) in terms of Gas Development Surcharge Ordinance 1967, which is distributed among provinces under a set formula.

3.2.5 Gas market in Pakistan is not competitive and commercialized. Federal Government has direct role for policy matters, gas concession agreement and allocation. Thus **Energy Security & Supply is squarely subject matter of the Federal**

Government. The companies are less involved in the arrangement of energy supplies on commercial consideration basis.

3.3 *Energy Market Situation – Primary Energy Mix*

3.3.1 In 2016, world primary energy mix has been observed in the ratio of Oil 30%, Coal 29%, Gas 21%, Nuclear 14% and renewables 5%. The same for 2040 has been projected with the Oil 26%, Coal 24%, and Gas 24%. Nuclear 7% and renewables 19%. Thus the emphasis has been shifted to renewable. Currently, **Oil, Coal and Gas** are almost in significant proportion.

3.3.2 In Pakistan, natural gas is a main and currently indigenous supply source which contributes almost half of the country's energy requirement. The share of natural gas in primary energy mix is approximately 46%. For FY 2016, Pakistan Energy Mix has been observed as Gas 46%, Oil 34%, Hydro 11%, Coal 5%, Nuclear 2% and others 0.6%. Currently, Pakistan energy dependency is on **gas and oil.** About 4 bcfd natural gas is produced and consumed in different sectors each year. In the current indices, domestic sector, on T&D system, is main consumer of natural gas having consumption of approximately over **34%** which is followed by power sector i.e; **30%** (on overall basis, Domestic sector share is around 20%).

3.3.3 The natural gas is a fuel of choice for all sectors, environment friendly and substitute of almost all other type of fuel. The persistent increase in the natural gas demand and dwindling energy supplies has therefore resulted in energy constraints/shortfall. Consequently, gas is being curtailed vis-à-vis priority of the sectors. The increase in demand of natural gas will amplify further in the next few years. This demand supply is likely to be unmet albeit the Federal Government measures including LNG import and cross country pipelines from Iran and Turkmenistan.

3.4 *Natural Gas Demand Supply situation*

3.4.1 The current supply of Natural gas is around 4 Bcfd (FY: 2015-16). Whereas, the constrained demand is around 7Bcfd, resulting in a demand / supply gap of around 3Bcfd.

3.4.2 The indigenous supplies of natural gas are expected to reduce drastically in the coming years. Projections w.r.t. demand supply scenario (indigenous supplies only) are given as under;

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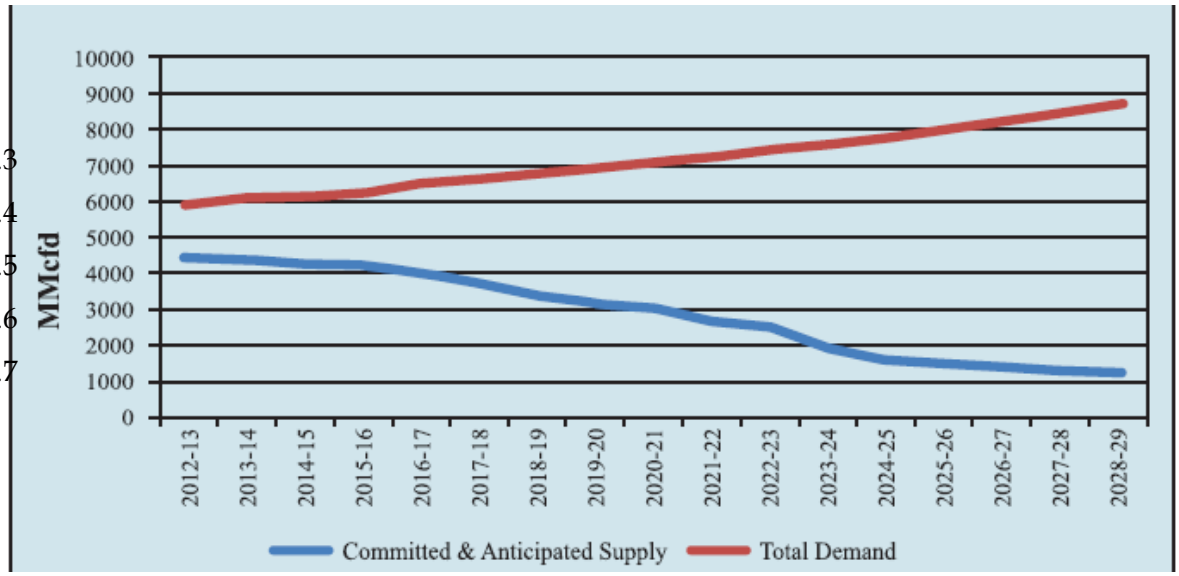
3.4.4
3.4.5
3.4.6
3.4.7



3.4.8 The projections of the natural gas demand and supply suggest that Pakistan is likely to face a huge gap of 6.5 Bcfd by the year 2028-29. The scenario calls for immediate measures today that should be taken to bridge this gap.

3.4.9 In view of severe energy constraints, there is a dire need to increase energy supplies and conserve the existing supplies. In this regard, pricing is also one of the tool for the judicious utilization of energy sources.

3.5 *Natural Gas- Future outlook*

3.5.1 Natural Gas reserves are depleting day by day while its demand is expanding with intensive pace. In this scenario, LNG and cross border pipelines are only solution to abridge the demand supply gap. IPI and TAPI seem to be time taking. In the coming five years, LNG import seems to secure the maximum contribution in the energy mix while LPG is also right substitute if focused properly as it quickly rescues the emergent situation.

3.5.2 In the wake of ever rising energy shortfall, the energy market is moving towards LNG import. Significant investment plans are under way, which in the coming years may contribute almost fifty percent ofnatural gas supply.

3.6 *Challenges& Strategies*

3.6.1 Pakistan is energy starved country which is almost (46%) dependent on gas. The gas reserves are depleting day by day. There are 32 tcft proven gas reserves which are consumed @ over 1 tcft per annum. If new reserves are not explored, the gas contribution in the energy in the next ten years shall be dropped around 20%. If

TAPI and IP projects are materialized, even then the constrained gas demand shall be prevailing.

3.6.2 Scarcity of gas supplies and ever rising trend of gas losses/UFG, since last many years has become an issue among all stakeholders impacting the gas price. The gas companies have reckoned this ever rising trend to shift bulk retail ratio, gas losses in law and order affected areas and pilferage by non- consumers and pleaded the same beyond its control. Accordingly, they demand the same under UFG allowance through adjustment in their tariff/prescribed prices. The consumer on the other hand have always opposed the price increase on this account and demanded for a reasonable UFG level to be recovered.

3.6.3 In order to mitigate the energy shortfall, there is need to place two pronged strategy i.e;

i. Increase in energy supplies

- *Through import projects (LNG, TAPI, IPIetc). The Government is expecting 1.2 bcfd in 2017 and 1.8 bcfd in 2018. However, in view of expanding demand, further supplies on this ground have to be arranged.*
- *Incentivitize and develop LPG market.*
- *Incentivitize the E&P companies for increase in indigenous supplies (including rock gas, shale etc;).*

ii. Conserve the available energy sources through fiscal measures;

- *Control of gas losses. Approximately over 10% gas is lost every year which, if arrested, can substantially reduce the demand supply gap.*
- *Rationalization of tariff for each category of consumer in view of cost of alternate supplies. There is massive degree of discrimination among the utilization of different supplies for same category of consumers. Domestic gas consumers are paying much lesser tariff viz-a- via LPG, coal and wood consumer.*

iii. Gas Sector Reforms for Improving Competition and Efficiency in the Gas Supply Chain

- At present, two state owned gas companies are operating for the distribution of gas. The Federal Government at present in order to improve the efficiency of gas companies and attract the private investment in this sector is considering the proposals including unbundling of gas network, laying of dedicated transmission network and encouragement of common carrier through third party access regime. In this connection, some suggestion that are worth consideration include;;

  (i) Further expansion of T&D network under private sector.

(ii) Level playing field at all level of LNG supply should be provided.

(iii) Infrastructure development be focused under private investment under the effective regulatory framework.

(iv) LPG/LNG investors be provided incentives to pave the energy deficit gap. Coal and other alternates should also be paced up.

4. Need for Gas Sector Reforms

4.1 *Federal Government vision & Planning*

4.1.1 Ministry of Energy -Petroleum Division (MoE) is advancing the development of the gas sector to meet the shortage of gas in the country. With expertise extended by the World Bank and consultation with stakeholders, MoE has formulated options for the evolution of the gas sector in line with the Government's policy objectives.

4.1.2 The gas sector involves a number of stakeholders including: entities from the public and private sectors, federal and provincial governments, investors and end-consumers. Each stakeholder has its unique set of considerations and objectives. Therefore, for the sustainable gas sector reform, there should be consensus among all stakeholders.

4.2 *Operational Expansion of T&D Companies*

4.2.1 During last decade, gas companies have expanded exponentially under different dimensions, exhibited as under;

Table 1: Comparison of Operating Expansion by T&D Companies

Operating Indicator	SNGPL		SSGCL	
	2017	**2005**	**2017**	**2005**
No. of consumers	**5,736,589**	2,516,975	**2,839,171**	1,788,689
T& D (Km)	**119,659**	48,406	**49,494**	28,707
WDV of Operating Assets (Billion Rs.)	**143**	36.8	**93.23**	25
UFG Losses	**8.07%**	6%	**13.29 %**	6%
Number of employees	**9,038**	7,168	**6,902**	4,238
Average PP (Rs./MMBTU)	**608.76**	164.93	**369.13**	159.80

4.3 *Change in Business Dynamics*

4.3.1 Since inception, two gas utility companies, with major Govt. shareholding, were undertaking whole gas related activities including construction, transmission, distribution and sale of natural gas. The natural gas was cheap in price and abundant in supply. Therefore, the efforts to find new avenue for gas exploration, alternative source of energy or private participation in the sector were less provoked.

4.3.2 Now the indigenous gas supplies are depleting, demand is increasing creating a massive shortfall while no alternate supply of energy is available. In view of above alarming situation, new ideas are under debate on the touchstone of primarily constitutional provisions including but not limited to;

(i) Private participation
(ii) Third party access regime
(iii) Import of gas
(iv) Encouragement of alternate source of energy including shale gas, flare gas, rock gas etc;

4.3.3 The existing framework has been designed with the focus of indigenous gas supply and as a part of socio economic agenda of the Federal Govt. Now there is paradigm shift which urges to consider commercial aspects and economic priorities for the effective utilization of scarce resource as local gas and import gas has different cost built up. Now each stakeholder has separate set of exigencies and aspiration. The market therefore needs to be rather liberal, independent and competitive, in consultation with all stakeholders.

4.4 *Promotion of efficiencies and control of gas losses*

4.4.1 The gas losses of the gas companies have reached to alarming level. The Government has introduced legal framework to curb this menace. Implementation of the same however is provincial subject to be proceeded by gas companies. Owing to less effective measures by the concerned quarters, no effective check has been placed on gas theft. This situation may improve through provincial participation in the overall gas sector reform.

4.5 *Uniform development and employment opportunities.*

4.5.1 The gas producing provinces have been expressing reservation that gas is explored from their province but the development projects for the utilization of the same is undertaken in other civic areas of the Country. Similarly,

employment opportunities and allocation of gas for industries have also been objected. The unbundling may address such issues as well.

4.6 *Commercialization- Private ownership & Investment*

4.6.1 It has been practiced world over that without private investment and participation, neither the resources can be mobilized nor the sustainable self relied economic growth can be achieved.

4.6.2 The policy maker has envisaged the plan wherein third party access regime has been conceived which provides the stakeholder to trace the solution of their own issues.

4.7 *Management of economic resources and provincial participation*

4.7.1 There is doctrine for getting the desired results to shift the autonomy with responsibility and get the required out put. The provinces participation may make them destiny of their own fate.

4.8 *Constitutional amendments*

4.8.1 A plain reading of the Article 158, 172(3) and 161(1) of constitution of Pakistan reveals that the Federal Government and the provinces are equal shareholder of gas resources. The gas reform is therefore aimed to have the role of provinces in the policy making process related to gas sector.

5. The Objectives Of The Reforms

5.1 To develop independent and free market regulated through competitive forces

5.2 To foster the competition and increase private ownership and investment in gas sector

5.3 To fairly distribute gas resources and involvement of stakeholders in policy making process & regulation related to natural gas, in letter & spirit of Constitution of Pakistan

5.4 To ensure future growth and success of gas sector to support Pakistan economy

5.5 Effective utilization of resources, efficiency improvement and energy conservation.

6. Tariff Modulation- Preliminary Overview

6.1 *Existing Tariff Regime understanding & Evaluation*

6.1.1 The existing tariff regime operates on cost transfer pricing basis wherein aggregate of all operating costs incurred in undertaking the regulated activities form prescribed prices to be retained by the licensees in order to run its business, and comprise of following components:

(i) ***Cost of gas*** paid to the gas producers (approx. around 80%-90% of prescribed price) based on Federal Government's long term gas pricing agreements with gas producers, and is linked with international prices of crude oil and High Sulphur Fuel Oil (HSFO). The gas allocation is also the domain of Federal Government. The gas companies/licensees accordingly pay the cost of gas purchased by them. This cost, as per Federal Government policy, is pooled to form weighted average cost of gas (WACOG) whereby uniform prices are maintained at the cost of gas level. Federal Government as a part of its socio economic agenda also maintains uniform consumer gas prices across the country.

(ii) **Transmission and distribution cost** including depreciation. This includes all expenses including HR, Admin, selling and maintenance related expenses in connection with the regulated activities. Depreciation is also part of it.

(iii) Prescribed return, which is currently 17% in case of SSGCL and 17.5% in respect of SNGPL on the value of average net operating fixed assets. This rate has to compensate the opportunity value of investment and cost of long term debts.

6.1.2 OGRA, at the touchstone of rationality, prudence, efficiency and effectiveness, examines all the Capital and Revenue expenses which form revenue requirement inter-alia the prescribed price.

6.1.3 The sale price to be charged by each category of consumers is fixed by the Federal Government keeping in view its socio political agenda and in that process, cross –subsidization is factored whereby domestic and fertilizer sector enjoys subsidy. The revenues allowed to the companies to collect from the consumers, as per legal framework, must be equal or higher than the revenue requirement determined by OGRA. Accordingly, the revenues collection exceeding revenue requirement determined by OGRA is called Gas Development Surcharge (GDS)

and pooled for distribution among provinces. Domestic, Fertilizer and at the moment Power sector however enjoys cross subsidy.

6.1.4 This tariff regime allows almost a risk free venture to gas companies to run its business. All the prudent expenses and cost of gas is totally passed through. Return on assets is guaranteed which has been compatible/ reasonable with respect to market rate of return. The company however is exposed to risk on account of controllable gas losses which in case of falling beyond permissible limits erodes the licensee profit.

6.1.5 The economically unfeasible areas, not meeting per consumer cost criteria prescribed by the Federal Government, are funded through consumer contribution or Government grants and are not eligible to earn return. Thus the assets built by companies through its own resources are assumed to be commercially viable and destined to be optimally utilized leaving no idle capacity.

6.1.6 During the last couple of years particularly from FY 2009-10, the gas losses have surged to an unacceptable level. Resultantly, the regulator has passed a certain limit around 5% to consumers and rest has been shifted to shareholders. This is very much the main factor which is deteriorating the companies' profitability. The regulator has allowed an unrestricted budget to control this menace; the companies however could not produce the amenable results. The impact of this factor is so severe that sustainability of the companies over the long run shall be suspected even if unprecedented high rate of return is allowed in any kind of network structure. The companies can retain the requisite return only if it achieves the operating efficiency at desired level.

6.2 *Relevance of Rate of Return tariff model with Gas Sector Reforms Agenda*

6.2.1 The existing tariff regime is broad based, operating on cost plus model (Rate of Return Model) and is therefore equally capable to determine tariff in bundled as well as unbundled gas network structure. Accordingly, under the rate of return tariff regime, the financial health of the gas companies under the unbundled scenario as a whole shall not reflect materially different position from the existing one. While the rate of return based tariff is only viable option viz a viz price cap/revenue cap regime on the basis of ground realities and inherent factors, the decision/analysis to unbundle the gas structure on the basis of tariff/return shall be not realistic. Accordingly, the focus of consideration regarding unbundling depends on the other factor as well described above in the chapter 5 "Need for gas sector Reform". The

canvas of the decision is therefore not totally on the commercial/financial considerations rather the constitutional, managerial and social considerations are equally important.

6.3 *Test of Financial viability of the companies upon unbundling*

6.3.1 Over the past and up till now, gas pricing, allocation of gas supplies, gas distribution development and choice of consumer category at various part of the country has remained as per policies of the Federal Government. The preference on this account has been focused keeping in view the Government socio economic agenda rather the only commercial considerations to conduct the business by gas companies. In this sphere, for all practical purposes, the situation regarding the financial viability for gas companies upon unbundling may not be different from the existing one.

6.3.2 While the rate of return and cost transfer mechanism is intended to continue, there would be as such no paradigm shift in respect of gas pricing structure. Accordingly, the distribution margin analysis or any other of similar kind is not relevant tool to assess the financial viability. The analysis shall be relevant in view of comparison of cost built up in respect of newly evolved units viz a viz integrated setup. The debilitating sales volume , profitability etc; as such are not primitive.

6.3.3 Significant change in fixed cost on account of “admin & selling” Increase viz a viz overall cost vs benefits has the weight, which too is applicable if T&D has not been expanded exponentially.

6.4 *Financial viability of the companies through tariff mechanism*

6.5 The working group on tariff methodology has been mandated to take into consideration the following factors;

(i) The unbundled companies will remain sustainable entities

(ii) There will be no adverse impact on the consumer prices

6.5.1 A cursory professional analysis of above said mandate clearly leads to a balanced mode and win-win situation and hint that it is very much the only “Operating Efficiency of the Licensees” which could meet this equilibrium. If we place this aspect of “operating efficiencies” aside, the tariff methodology shall either protect the consumer interest or shall to some extent compensate the companies. Thus the viability is very much in the hands of gas companies rather the subject matter of working group.

6.5.2 The return/tariff alone can assure the sustainability of gas companies while protecting the consumer interest provided companies operating efficiencies are upto the mark to retain the same. Therefore, analysis of tariff methodology needs to be carried out on the basis of operating parameters fixed by the Authority. Thus the working group devising the tariff methodology has been optimistically relying that gas companies are capable to achieve the efficiency benchmarks (UFG etc) fixed by the Authority through consultative sessions. No leeway, in principle, on account of failure to meet the operating efficiencies can be compensated through setting Rate of Return mechanism. The operating risk factor is separate phenomena.

6.6 *New Tariff Regime as a pre-requisite of new gas companies*

6.6.1 Under the rate of return model, the tariff methodology/rate of return may not be construed as a prerequisite of unbundling/gas sector reforms. Existing legal framework including tariff mechanism is capable to determine tariff for transmission & distribution functions separately subject to certain adjustments. Accordingly, the instant exercise is a view of tariff under the unbundling scenario as well as it is review of tariff regime under the existing set up.

6.7 Comparison of different Pricing Models

i. Price Cap or Revenue Cap Model

6.7.1 The Price cap tariff regime involves adjustment of gas prices on the basis of general rate of inflation in the economy and pass through items. Under this scheme, multiyear tariff is determined which is subject to certain adjustments on annual or bi-annual basis. Specifically with respect to gas pricing structure in Pakistan, the scenario would be that prescribed prices once determined shall be adjustable to the extent of cost of gas and fixed cost components, if applied. Cost of gas shall be adjusted on the basis of WACOG while fixed cost components shall be indexed with respect to general level of inflation index. The Price Cap Tariff Structure is almost similar to Revenue Cap tariff regime, the later only focus to do the same thing, but from the angle of revenue generation cap rather than prices.

6.7.2 The prime advantage of this gas pricing mechanism is that gas companies enjoy total liberty to strive for cost optimization and retain the efficiency advantage in addition to prescribed return, undertake the projects based on the commercial

viability, manage T&D network economically and efficiently, carry out OPEX and CAPEX on the basis of commercial considerations and ground realities. Eventually the gas companies shall extend the T&D network and incur the variable T&D expenses on the basis of gas supplies. Further, selection of customer's categories shall also be at their choice. This model operates on idealistic circumstances and gives maximum incentive to the companies to earn Prescribed Prices in the scale of economies. Argentina, Mexico, Ireland, America, Australia by and large has this system.

6.7.3 This pricing mechanism is best but it has application constraints owing to specific environment of natural gas sector in Pakistan. In Pakistan, the gas companies almost has no choice of selection of category of consumers, T&D operating cost structure is not aligned and flexible with respect to gas volume sold and extension in T&D network and other cost incidentals (LPG air mix, RLNG etc) are important elements which are undertaken as per Federal Government policies from time to time. Accordingly, in the consultative sessions, the stakeholders appreciated this kind of regime as an ideal regime, the same however were considered less appealing for application in Pakistan owing to the factors narrated above.

ii. Fixed or negotiated Tariff

6.7.4 Fixed or negotiated gas tariff provide a set price for each unit of gas sold which is not supposed to change over the entire period of contract. This price does not account for variable/pass through items or fixed component despite vigorous changes in the market.

6.7.5 In Pakistan, the tariff offered by Liberty Power in Energy Sector was a classic example. In some countries, a composite tariff is offered regardless of fuel type used and nature of technology availed.

6.7.6 In Pakistan, such kind of tariff is not applicable as in the gas prices, cost of gas is main component which is linked with international prices of crude and HSFO, fluctuating regularly. To pass the impact of the same is therefore indispensable in all the cases.

iii. Rate of Return Model

6.7.7 The focus of rate of return model in gas pricing is on the Return available to the investor in compensation to its investment. Eventually, this system operates on

cost transfer pricing basis wherein economically efficient, cost effective and prudent expenses (CAPEX as well as OPEX) forms the overall revenue requirement of the gas company to be retained by it. The Revenue Requirement (RR) is the sum of money which would enable a licensee to conduct its business efficiently and earn a reasonable return on its investment. This model is currently applicable in Pakistan. According to this tariff regime, the RR comprises of the following major components:

(i) Cost of gas paid to the gas producers
(ii) Transmission and distribution cost including depreciation
(iii) Prescribed return

6.7.8 Cost of gas is linked with international prices of crude / fuel oil per Gas Pricing Agreements (GPAs) executed between the gas producer companies and Government of Pakistan. Transmission and Distribution cost is determined at the touchstone of rationality, logic and reasonability. Accordingly various tools are placed to determine the same.

6.7.9 The focus of this rate of return model is on both i.e; (i) Reasonable rate of return to compensate the investment (ii) Operating efficiency to earn and retain the prescribed rate of return.

6.7.10 There are various methodologies to prescribe reasonable rate of return based on assets or equity. The rate of return in vogue in various sectors in Pakistan refers KIBOR, PIB, CAPM model etc; Up till now, a guaranteed rate of return regime has been applicable @ 17.5% in case of SNGPL and 17% in case of SSGCL of the value of their average net operating fixed assets.

6.7.11 The scheme of OGRA Ordinance apparently refers to adopt Rate of Return Model wherein RATE OF RETURN has been specifically emphasized in terms of Section 6(2)(t) of OGRA Ordinance. Accordingly, the main focus of instant assignment is suggesting rate of return for bundled/unbundled structure which shall extensively be deliberated at the proper place.

7. Tariff Methodology for Proposed as well as existing structure under RoR Regime

7.1 Situational Assessment

7.1.1 Integrated T&D network

7.1.2 At present guaranteed rate of return @17.5% for SNGPL and 17% for SSGCL on the regulatory assets is prevalent since a very long time. The regulatory assets comprises of Transmission as well as Distribution network. The ratio of regulatory assets in terms of Transmission viz a viz Distribution as on June 30, 2016 in monetary terms falls in the proportion of 62:38 in respect of SNGPL and 68: 32 in respect of SSGCL.

7.1.3 The Transmission network of SNGPL spread over 8000 KM having WDV of approximately Rs. 89 billion while in case of SSGCL, it comprises 3,654 Km with WDV of approximately Rs. 31 billion.

7.1.4 Unaccounted for gas on companies network is at 8.07% in respect of SNGPL and 13.29% in respect of SSGCL, during the latest completed financial year. At transmission, it hovers less than 0.5%, rest is reckoned towards distribution network. UFG at distribution varies from region to region.

7.2 The Data Base

7.2.1 The accuracy of data base is pivotal for the reflection of gas sector reforms envisaged by the Federal Government. The main objective of the data base is to provide (i) extensive information about unbundling (ii) assist to comprehensively allocate and apportion the cost on the basis of provincial distribution companies and one national transmission company (iii) ensure the cross confirmation regarding the rationale and fairness of cost allocation.

7.2.2 In view of above, data base has been assembled in terms of following information for FY 2015-16 in respect of both the gas companies;

(i) Category wise sales (Volume (BBtu), Revenues in million Rs. and number of consumers)
(ii) WACOG with province wise demarcation
(iii) Manpower data
(iv) Transmission data on provincial basis
(v) Distribution Network along with normal assets
(vi) CWIP
(vii) LNG Assets

7.2.3 The information has been annexed from A to J and forms very basis for the evolution of instant unbundling exercise.

7.3 Selection of Cost Drivers& Guidelines

(i) Cost of Gas

7.3.1 Cost of gas is major component with 80-90% contribution in the prescribed prices.

7.3.2 In tier 1, Federal Government has passed on the cost of gas to sui companies uniformly. Accordingly, cost of gas supplies to distribution companies is pooled and equally charged through WACOG mechanism. Accordingly, this system shall continue.

(ii) Human Resource Cost

7.3.3 The human resource cost constitutes major portion of T&D cost. The analysis of cost allocation made by companies reveals that SNGPL, out of total HR cost, has charged around 75% to Transmission & Distribution cost and 25% pertains to H.O cost. In case of SSGCL, this ratio is in the proportion of 66:34.

7.3.4 The HR cost for T&D activities have been allocated on the basis of actual deployment for “Transmission” and “Distribution” in respect of each province separately. Accordingly, the relevant H.O cost for the purpose of determination of “Cost of service” in respect of proposed unbundling has been allocated in the above cost ratio. Following Table exhibits as under:

Table 2: HR Cost Allocation

SNGPL	PUNJAB	KPK	TOTAL DIST	PUNJAB	KPK	TOTAL TRANS.	Grand Total
T&D Cost	6,896	1,549	8,445	1,576	207	1,783	10,228
H.O Cost apportionment	2,261	508	2,768	517	68	584	3,353
Total	**9,157**	**2,057**	**11,214**	**2,092**	**275**	**2,367**	**13,581**
Percentage established	67%	15%	83%	15%	2%	17%	100%
SSGCL	**SINDH**	**Baluchistan**	**TOTAL DIST**	**SINDH**	**Baluchistan**	**TOTAL TRANS.**	**Grand Total**
T&D Cost	5,800	562	6,362	961	82	1,042	7,404
H.O Cost apportionment	2,958	286	3,245	490	42	532	3,777
Total	**8,759**	**848**	**9,607**	**1,451**	**123**	**1,574**	**11,181**
Percentage established	78%	8%	86%	13%	1%	14%	100%

7.3.5 H.O cost in view of above analysis reveals that it is merely a fixed cost and almost falling on the same line in respect of both companies. This cost however has been apportioned keeping in view the fact that at least minimum manpower shall move in Peshawar or Quetta. Further, Authority in the last determination has also directed

the gas companies to carry out a manpower assessment study which shall measure the revised organizational structure in the bundled as well as unbundled structure. This study shall facilitate the company for manpower transition along with terminal liabilities to newly established companies. Till that HR cost computed on integrated basis may be allocated in the above percentage so established.

(iii) **Gas Internally Consumed**

7.3.6 Gas internally consumed is the monetary value of gas utilized for Transmission as well as Distribution activities. In transmission, gas is mainly used to run the compressor stations and cogeneration. In distribution, cost incurs on account of free gas facility, coating plant and sabotage activities.

7.3.7 The main drivers to allocate this cost are location of such facilities and other premises where the gas facility is internally utilized.

(iv) **Repair & Maintenance and Store, Spares & supplies consumed**

7.3.8 Expenses on this account are allocated based on the Transmission and Distribution activities in respect of each province. Accordingly the expenses have been booked on the basis of actual spending. The Head office expenses are relevant to existing HO, accordingly it has been charged to Punjab and Sindh based distribution companies.

(v) **Fuel & Power**

7.3.9 In SNGPL case, fuel & power is consumed for the vehicles mostly utilized for official purposes and gas used for self power generation. In SSGCL case, there is no such account head appearing separately.

(vi) **All other operating, admin and selling expenses**

7.3.10 It has been observed that T&D cost of both utilities across all the heads of accounts has been properly accounted for, reconciled with the determinations and allocated based on the actual recording of expenses in respect of each activity in the respective province. There is therefore no need to place further check while accuracy of the data has revealed through reliable IT system in place.

7.4 Allocation of Other Operating Revenues

(vii) **Late Payment Surcharge**

7.4.1 Late payment surcharge has been allocated to the distribution companies only on the basis of sales revenue.

***(viii)* Sale of gas condensate, JJVL Royalty, Meter Manufacturing project , Income from NGL etc;**

7.4.2 The above operating head has been reckoned as part of Distribution/sale activity in whose territorial jurisdiction, this income is generated.

7.5 Summary of unbundled Cost of Service Structure in prevalent Tariff Regime

7.5.1 Under this section, focus has been made on T&D cost in respect of latest completed financial year FY 2015-16 only. Prior year's adjustment has not been accounted to retrieve the true picture of costs of service in the financial year, other petty operating expenses has not been focused. These have been charged to Punjab and Sind based companies owing to its huge share.

7.5.2 Only the latest completed financial year has been focused. The allocation of other years shall also reveal similar results.

Table 3: SNGPL Cost Flow under the unbundled Cost Structure

FY 2015-16	Transmission Network			Distribution Network		TOTAL	Description/ Allocation rationale
Particulars	LNG Segment	Punjab	Khyber Pakhtunkhwa	Punjab	Khyber Pakhtunkhwa		
Quantitative Data (BBTU)							
Gas Volume Received (MMBtu)	91,081	380,880	101,278	365,492	101,297		As per record provided by the Company
GIC		2453.2	19.8	877	193		
Net line Pack		-131	-				
RLNG Volume (Ringfenced)		12648	-				
UFG		-	-	32,337	11,317		
Deemed Sales Volume		-	-	3053.76	10904.64		
Gas Volume Sold (BBTU)	91,081	365,492	101,297	329,224	78,882	408,106	
WACOG determined by OGRA				328.21	328.21		
							Million Rs.
Cost of gas		-	-	120,624	28,902	149,526	Cost of gas sold
Transmission Charges				11,194	2,089	13,283	Transmission charges forwarded
Operating Cost	770	4,154	397	11,955	2,441	14,396	As pe co. allocation
Depriciation	137	2,477	622	6,238	1,129	7,367	Based on net assets value
Other operating expenses		738	97	3,536	725	4,261	Based on HR cost
						-	
Other Operating Income						-	
Late Payment Surcharge				6,204	1,486	7,690	Based on average revenue
Meter Rental & Service Charges				1,393	208	1,601	Based on No. of consumers
Amortization of Deferred Credit				2,341	424	2,765	Based on Net depreciation assets
Transmission income	2,080	535					
Other Income				816	195	1,011	Based on average revenue
Income from JJVL						-	
Sale of gas condensate						-	
Sale of LPG						-	
Meter Manufacturing Profit						-	
Total		(535)	-	(10,753)	(2,313)	(13,067)	
Total Operating Expenses							
Fixed Assets (Opening)							
Fixed Assets (Closing)		23,374	5,559	55,787	10,096		Provided by Co.
Average Assets							
Average Deferred Credits				14,414	2,608		Based on Net assets
Net Assets Eligbile for return		23,374	5,559	41,373	7,488		Existing ROR
Return	1,173	4,359	973	7,240	1,310	8,551	
Total Revenue Requirement	2,080	11,194	2,089	150,034	34,283	184,317	
Average Prescribed Price	22.84	29.39	20.63	455.72	434.61	451.64	
* Previous years impact not included i.es; 110.30				110.3	110.3	110.3	
Total PP				566.02	544.91	561.94	
Integrated Price determined by OGRA						**561.94**	

Table 4: SSGCL Cost flow under the unbundled Cost Structure

FY 2015-16	Transmission Network			Distribution Network		TOTAL	Description/ Allocation rationale
Particulars	LNG Segment	Baluchistan	Sindh	Baluchistan	Sindh		
Quantitative Data (BBTU)		446,760					
Gas Volume Received (MMBtu)	95,785	22,621	446,760	22,580	432,428		
GIC		41.0	911.0				
Net line Pack			-				
RLNG Volume (Ringfenced)			13,421.48				As per record provided by the Company
UFG			-	2,769	61,321		
Deemed Sales Volume		-	-	1844	5094.67		
Gas Volume Sold (BBTU)		22,580	432,428	17,967	366,012	383,979	
WACOG determined by OGRA				328.21	328.21		
							Million Rs.
Cost of gas		-	-	6,411	130,571	136,982	Cost of gas sold
Transmission Charges				610	3,005	3,615	Transmission charges forwarded
Operating Cost	107	62	1,071	946	11,345	12,291	As pe co. allocation
Depriciation	130	133	474	487	3,873	4,360	Based on net assets value
Other operating expenses					2,474	2,474	Based on HR cost
						-	
Other Operating Income						-	
Late Payment Surcharge				652	1,546	2,198	Based on average revenue
Meter Rental & Service Charges				65	653	719	Based on No. of consumers
Amortization of Deferred Credit		1	2	46	357	403	Based on Net depreciation assets
Transmission income							
Other Income	214	83	378	222	2,230	2,453	Based on average revenue
Income from JJVL						-	
Sale of gas condensate					749	749	
Sale of LPG					2,854	2,854	
Meter Manufacturing Profit					15	15	
Total	(214)	(83)	(380)	(986)	(8,405)	(9,390)	8,134.00
Total Operating Expenses							
Fixed Assets (Opening)							
Fixed Assets (Closing)							Provided by Co.
Average Assets							
Average Deferred Credits				14,414	2,608		Based on Net assets
Net Assets Eligbile for return		2,935	13,373	3,933	32,572		Existing ROR
Return	433	499	1,840	669	5,537	6,206	
Total Revenue Requirement	456	610	3,005	8,137	148,401	156,538	
Average Prescribed Price	4.76	27.02	6.95	452.89	405.45	407.67	
* Previous years impact				(48.61)	(48.61)	(48.61)	
Total PP				404.28	356.85	359.07	-
Integrated Price determined by OGRA						**363.48**	
* A slight difference is due to overstatemet of othe income taken by company.							

7.6 Commercial Analysis of Cost of Service Structure

7.6.1 The above tables reveal a notional/indicative glimpse of cost structure. Upon unbundling, the figures may observe change with both dimensions of increase/decrease in cost of service. Increase shall incur in terms of administrative cost for the establishment of new companies while efficiency parameters and improvement in service may better impact the company.

8. Debate on Rate of Return – Various Methodologies

8.1 Rate of Return Methodologies for unbundled gas structure

8.1.1 There are specifically two methods to compute return for the compensation of investment; as below;

- **Return on equity**
- **Return on assets**
-

8.1.2 The methods to compute equity or assets value "Regulatory Asset Base (RAB)" for the purpose of return computation vary with respect to mode of rate of return. Generally RAB comprises fixed assets at written down value when the WACC base rate of return is applied. If return on equity regime is prevalent, RAB comprises total assets net off long term loans. etc; .

8.1.3 Rate of return are mostly market based and may be of different kinds as under;

- CAPM
- WACC
- Market based rate of return on treasury bills, bonds etc
- Market indices KIBOR/Libor etc;

8.2 International best practices for Tariff methodologies in respect of unbundled gas structure

8.2.1 In order to have the experience of gas pricing approaches carried out world over, the analysis on the following to understand the ground realities is imperative for apple to apple comparison;

- Legal Framework
- Industry structure
- Tariff/Revenue setting mechanism
- Network development

8.2.2 On the above premise, the world gas market experience has been studied which displays the features as under;

i. Legal Framework

8.2.3 The Legal framework in respect of resource utilization is always coherent with the economic conditions of the country and primarily aimed to sensible consumption of

the same. In the world, gas market is almost liberal and competitive. There is presence of a National Regulator, but most of the regulated activities operates on auto approvals and incentive basis with pre-set benchmarks. Thus the Regulator and the Government in most of the countries provide broad-based principles and guidelines for setting the tariff. The determinations of tariff on frequent basis and interventions in this context as such are not exercised. This tariff is mostly end consumer tariff. The role of competent agencies is intrinsically minimal and the activities are undertaken on regulatory and commercial basis.

ii. Industry structure

8.2.4 The network structure in Asia and Europe has developed under different governance models. Generally, in Europe and America, it fell under the responsibility of municipalities or of relatively small district authorities (e.g. Germany, Austria, Netherlands, and Belgium). Eventually, the network is unbundled and size of the distribution network is comparatively small.

8.2.5 At the opposite extreme, in several countries, the network of the utility organizations working under the aegis and patronage of the Government is large. For instance in the Great Britain, Spain, most of France, Pakistan etc. Between these high and low in view of size of the gas network, several countries have followed intermediate models, with distribution network in the hand of provinces or larger districts, as in Czech Republic, Crotia and Portugal.

8.2.6 In Europe, the liberalization process has triggered remarkable changes in the structure of distributors, notably at country level. For example, Great Britain had split its single gas distribution set up into four smaller ones and sold to different companies. On the other hand, the Nether lands have promoted concentration of distributors, which have been reduced by an order of magnitude.

iii. Revenue/Tariff setting mechanism

8.2.7 In the World gas market, tariff is set by the national regulator. However in some countries the responsibilities are shared between the regulator and the gas distributors. National Regulatory Authority mainly defines the rules and approves the tariff proposed by the gas distributors. Such Distribution tariffs are published at retail level as well.

8.2.8 While setting the tariff, the Revenue or price cap approach is mostly adopted which place a bar on the maximum limit. In few countries of the developed nations, Government sets such revenue limit.

8.2.9 The tariff for transmission network, postal stamp rate approach is adopted. In this case, first the fixed cost is assessed which is divided on the total capacity. Variable charges are applied with respect to commodity usage.

8.2.10 Revenue cap operates on the cost Benchmarking/standard costing methodology while return is allowed on WACC basis. As earlier deliberated that this mechanism is not appropriate for Pakistani market. Further details into the insight have therefore not extended in this section.

iv. Distribution Development

8.2.11 In the developed countries in Europe and America, the Transmission network development plan is published and is subject to approval by the regulator or by the government. Distribution network extension involves the approval of local government.

8.2.12 The Transmission as well as distribution projects are undertaken commercially on full cost recovery basis.

8.2.13 Below are the glimpses about the legal framework, institutional structure and features of tariff distribution network in respect of various countries of Europe. In this collection, the focus of highlight is Tariff Mechanism as a whole and Return on investment in particular.

Source: Study on tariff design for distribution systems by European commission

https://ec.europa.eu/energy/sites/ener/files/documents/20150313%20Tariff%20report%20fina_revREF-E.PDF

Country Name	The Framework	Institutional Structure	Regulatory Regime Features
Austria	In Austria, the gas distribution sector is rather unbundled with over 100 number of small Distributor System Operators (DSOs), and	In Austria, 20 distributors with a network of about 36000 Km is supplying gas to 135 million customers covering about one third of the population,. As a general requirement	There are no formal end user price controls and the market is fully open. The features of tariff are as under; ▪ ***Form of price control*** Price-cap ▪ **Regulatory asset base** Tangible and non-tangible assets (no working capital), based on book values ▪ **Approach to operating expenditure (Controllable):** OPEX are subject to

	few Federal state operators as well as some centered in the cities. The sector is fully regulated. The regulator National Regulatory Authority (NRA) has a peculiar structure, with an independent Commission required to approve the tariff related decisions.	DSOs over 100,000 customers are legally unbundled. The responsibility for setting the principle and the calculation methodology of distribution tariffs rests with NRA.	benchmarking followed by Audit. ▪ **Form of WACC applied Nominal,** pre-tax Following formula is applied in determining the WACC: $WACC_{pre\text{-}tax} = \frac{D * (Rf + DP) + E * (Rf + e\beta * RP)}{(1-T)}$
Czech Republic	In the Czech Republic, the gas distribution sector is divided in concentrated mainly in Six Regional DSOs. There are another local DSOs which distributes to defined areas. Since 2007, DSO´s are legally unbundled. However DSO´s with less of 90,000 end customers have not unbundled.	In the Czech Republic there are three DSO Regional distributions companies with a total of 61265 km of pipelines distributed gas. Additionally, there are local DSOs which distribute to delineated areas.	The main responsibility of regulation and tariff setting is with NRA. The pricing methodology is laid down in the NRA public notice and it the same for all DSO. Features are as under; ▪ ***Form of price control: CAPEX and OPEX*** are subject to "cost reimbursement" ▪ Regulatory **asset base:** revaluated (once based on replacement values) ▪ **Capital expenditure:** There is no approval process of investment in the regulation. ▪ Approach **to operating expenditure:** OPEX of regulated subjects is compared only in Special cases. **Form of WACC applied Nominal,** pre-tax as given above.
Germany	Germany has a rather unbundled distribution industry, mostly controlled by	In *Germany* there are 720 distributors supplying gas to over 14 million customers, covering almost the whole country.	The distribution sector is regulated under a concession regime. Revenue cap form of incentive regulation is applied ▪ ***Form of price control*** Revenue Cap ▪ **Regulatory asset base;** Historical costs ▪ **Capital Expenditure** Expansion factor

	state and local government. DSOs with fewer than 100000 final customers are predominantly under the responsibility of the regulatory authorities of the German Federal states.	The responsibility for setting distribution tariffs is spread between Government in cooperation with the Council of the States and NRA. NRA approves cost allocation methodologies, performs the Efficiency benchmark and calculates the allowed revenues.	applied related to output ▪ Approach **to operating expenditure (Controllable):** actual and benchmarking. **Rate of Return**: In contrast to other EU states, the regulatory framework in Germany does not use WACC and RAB, but instead takes into account the effective capital structure of the DSO. New assets are valued at historical costs. Old assets (before 01.01.2006) are valued at replacement costs if they are financed by equity 40%: 60%. The return on equity is determined using the Capital Asset Pricing Model (CAPM)
Denmark	In Denmark, the distribution sector is concentrated, with the state owned DSO DONG Distribution serving more than 90% of gas end customers.	In Denmark there are 3 distributors. The responsibility for setting distribution tariffs is spread between DSO , NRA (The Danish Energy Regulatory Authority –DERA) and Government	An incentive-based form of regulation is applied with a revenue cap and benchmarking of operating expenditure. ▪ ***Form of price control*** Revenue Cap ▪ **Regulatory asset base;** Book Value ▪ **Capital Expenditure** N/A ▪ **Approach to operating expenditure Benchmarking of operating costs.** Benchmarking based on a unit cost model. **The WACC is updated every fourth year ahead of a new regulatory period**. ▪
Spain	There are four main large DSOs groups operating in Spain´s gas distribution sector. Government is the main entity responsible for deciding the level of allowed revenues; the NRA is responsible for proposing the tariff structure. TPA tariff is bundled into a single tariff which includes the gas transmission tariff. The	In Spain there are 4 distribution groups supplying gas to 7448827 customers In the process of setting distribution tariffs, the counters of the functions are as follows. 1.The Government (Ministry) issues the revenue calculation methodology and relevant principles in the primary law. It also calculates the allowed revenue and approves that amount. 2. The regulator is involved in the process, in somuch as it provides a non-binding opinion, whic	Distribution activities are regulated under a mixed regulatory regime, composed of cost reimbursement, an income Price cap and incentives. The regulator does not monitor DSOs´ planned investments, and DSOs do not require the regulator´s approval to make specific investments. **Form of price control** Price cap **Regulatory asset base** The RAB **Approach to operating** expenditure Not specified . WACC ROI is allowed.

	current TPA tariffs are published on the Spanish Official Botelin (BOE)	h the Government can choose to take into consideration or not.	
Finland	There are 25 DSOs operating in the gas sector, each of which serves an individual customer base of less than 100000 customers. The NRA is responsible for setting the level of allowed revenues and individual DSOs are responsible for setting their own tariff structures to be offered to customers.	In Finland there are 25 distributors supplying gas to 75742 customers with a gas distribution network length of 1959 km. The responsibility for setting the allowed revenues (distribution tariffs) in Finland is held by the NRA. Allowed revenues are assessed in every four years, but some of the parameters are updated annually. Investments by DSOs are not subject to any form of approval by the NRA.	The regulatory regime is based on cost plus, and an incentive based mechanism. A revenue adjustment mechanism is in place and can be applied in the event that revenues are substantially different from previously-planned values. ▪ **Form of price control** Cost plus ▪ **Regulatory asset base** RAB, with ex-post adjustments if necessary ▪ **Approach to operating** Cost plus, no benchmarking. ▪ **Form of WACC applied Real** reasonable rate of return after corporate tax
France	In France the distribution sector is rather concentrated The sector is regulated. The DSO has a rather limited role in setting the allowed revenue and the distribution tariffs.	In *France* there are 26 distributors supplying gas to approximately 11 million of customers through a roughly 200,000 km gas distribution grid. The regulatory process adopted to setting distribution tariffs involves (i) Government elaborates it role as policy maker for tariff issues NRA implements the same.	The distribution sector is regulated under a concession regime. A mix of "cost reimbursement" and "incentive-based" form of regulation is applied. Main incentive mechanisms are related to OPEX through quality of services. ▪ **Form of price control** Concession Regime **Distribution tariff setting regime** Distribution tariffs are revised every 4 years. Current tariffs are updated every year ▪ Form of WACC applied: WACC real, nominal, ten years Treasury b ond + adder, …) Real before tax WACC, th at is updated at the beginning of each new regulatory period (i.e. every four years)
Greece	The regulatory regime covering the distribution sector is	In Greece there are 3 distributors supplying companies. At the current time,	Distribution tariffs are bundled within an integrated retail supply tariff. A revenue cap, set by the NRA for each DSO, is used to limit the revenues of each DSO. Reform process

	currently being reformed. At present, distribution activities are not unbundled from other gas supply activities.	distribution tariffs are included in the final supply tariff to customers. Distribution tariffs are not calculated separately from supply tariffs. Similarly, the allowed revenues of each Greek DSO are not separated into distribution-related Costs and supply-related costs. Rather, each DSO has allowed revenues which are a single value.	is underway. ▪ **Form of price control** Revenue Cap ▪ **Regulatory asset base** No ▪ **Capital expenditure** Not specifically assessed, to be covered within the allowed revenue value of each DSO ▪ **Approach to operating expenditure** Not specifically assessed, to be covered within the allowed revenue value of each DSO ▪ **Form of WACC applied** N/A It is not possible to isolate and examine the tariffs for distribution services, and there is no specific methodology in use to allocate the costs of distribution activities to tariff components.
Croatia	There are 35 DSOs, but only one has more than 100000 end customers and is legally unbundled. All other DSOs are functionally unbundled.	Gas distribution is operated on a concession regime for the distribution system and another for construction, which are tendered for a period of a minimum of 20 and a maximum of 30 years. A concession is issued by regional self-government.	The gas distribution tariff system has been reformed recently. An Incentive-based method of maximum allowed revenue (revenue cap) has been introduced. The allowed revenue is set for regulatory period, based on planned CAPEX, with an ex-post adjustment based on real values. OPEX is projected for the regulatory period based on 1+CPI-X formula, without ex-post adjustment, and if realized below projected level profit-sharing mechanism applies. ▪ **Form of price control** Revenue Cap ▪ **Regulatory asset base** No ▪ **Capitalexpenditure**Planned value subject to ex-postassessment within the allowed revenue value of eachDSO ▪ **Approach to operating expenditure** Benchmarking and revenue cap revision ▪ **Form of WACC applied** Pre-tax nominal WACC
Hungary	The main stakeholders in the distribution tariffs are the DSOs, the Government and the NRA. Natural gas distribution systems are operated by 10 region	In Hungary there are 10 regional DSO, five of them being predominant and diving up the territory of the country among themselves. DSO´s are supplying gas to approximately 3,06	The NRA (Hungarian Energy Office) main responsibilities is consumers. The distribution sector is regulated under a licence regime. A “cost-reimbursement” form of regulation is applied. ▪ **Form of price control** Revenue Cap ▪ **Regulatory asset base** Based on the revaluation of the book value of the DSOs assets.

	al distributors, five of them being predominant and dividing up the entire territory of the country among themselves	million of customers with a gas network of 82018 km. The five large DSO are completed legally unbundled.	▪ **Capitalexpenditure** CAPEX are separately approved by NRA. ▪ **Approach to operating expenditureOPEX** is revised at the start of each regulatoryperiod when the NRA undertakes a costandasset review to determine the cost level for the period ▪ **Form of WACC applied** Pre-tax nominal WACC is calculated at the beginning of every regulatory period after updating its parameters.
Portugal	In Portugal, there are 11DSO that operate indelimited regions. DSO´s with more than 100000 customers are legal unbundled according EU directives. Small DSO´s have only unbundling of accounts. Distribution activity is Regulated which sets and approves the regulatory methodology according to the general Principles of the law.	In Portugal there are 11 DSO´s which operate with regional scope. The DSO´s are delivering gas to 1,341million of customers. Generally, all DSO are legally unbundled from storage, regasification, transmission, supply and other activities.	The NRA is responsible of define, approve and publish the Tariff Code. This code is presented to public consultation and to the Tariff Board for an opinion. Ultimately, the NRA approves and publishes the code. ▪ Form of price control Capital costs are subject to “cost reimbursement”, while operating cost are calculated in year one of the regulatory period and subject to a “incentive based” Price cap system. ▪ Regulatory asset base In the first regulatory period the asset base of DSOs was re-evaluated by the Government, under the concessions contracts. New investments are considered in the RAB by its book values. ▪ Capital expenditure Capital costs are assessed every year. There are ex-post real values adjustments. DSO investment plans are subject to ministerial approval. ▪ Approach to operating expenditure Opex cost base is fixed in the beginning of each regulatory period. ▪ Form of WACC applied Pre-tax nominal WACC
Great Britain	There are 4 large-scale DSOs active in the gas distribution sector in Great Britain, which are legally-unbundled. The	In Great Britain there are 31 distributors supplying gas to 23.329.812 customers covering an area of 230.000 km2.	The regulatory model includes incentives on efficiency and quality output basis. The tariff regime has duration of 8 years, to provide longer-term regulatory stability. ▪ **Form of price control** Revenue based with efficiency adjustments ▪ **Regulatory asset base** allowed on book

	12 DSOs which supply a customer base of less than 100.000 supply around 0,4% of total gas demand. The regulator determines the amount of Allowed revenues;		value ▪ **Capital expenditure** Total expenditure benchmarking ▪ **Approach to operating expenditure** Total expenditure benchmarking ▪ **Form of capital applied:** Real Vanilla WACC

8.3 Gain from the World Experience

8.3.1 Gain from the World Experience and its applicable relevancy with Pakistan gas market, from the above has been retrieved as under;

i. Structural Arrangement

8.3.2 There is unbundled gas infrastructure split into Transmission and number of the small Distribution System Operators. Hungary, Croatia, Portugal are the relevant example with respect to size of the network. These countries operate distribution system of reasonable magnitude fed through the transmission network. Natural gas sector in Pakistan is unmatchable with the World practice. Its gigantic in size, integrated in structure, monopolistically controlled and captured consumers with no alternate choice.

8.3.3 The proposed unbundling of gas sector thus shall make it aligned with the international pattern and it may accordingly boost the market owing to its inherent feature which invites the private investment and aimed to liberalize the market.

ii. Tariff Setting

8.3.4 For transmission network, postal stamp rate is in vogue wherein cost in maintaining the network is recovered by the consumers on the basis of capacity of the transporter. This activity is undertaken purely on commercial basis under the principles and guidelines set by Regulator.

8.3.5 The tariff mechanism for transmission is well featured and the same may be applied for the Pakistan gas sector as well. However the tariff has to be based on the achieved/contracted capacity rather the installed capacity since the market is not purely competitive.

8.3.6 The tariff charged by Gas Distributor System operators is mostly based on the revenue cap/price cap. This mechanism at the moment is not applicable as explained above. Accordingly, it is suggested that existing Transfer Pricing Mechanism shall continue.

8.3.7 Rate of return is normally before tax. However, Vanilla WACC model can be applied. Accordingly rate of return shall be post tax.

8.3.8 In the Vanilla WACC model, corporate tax is not accounted for in the rate of return. It is treated as pass through item.

iii. Rate of Return Methodology

8.3.9 For the unbundled structure of Transmission and Distribution, WACC with slight modifications is applicable across Europe and America.

8.3.10 The local Regulator for Electricity sector also applies the WACC model for the computation of return in respect of almost similar setup i.e; Transmission/distribution of Gas. Accordingly the same can be applied for gas net work. For the balance of convenience, the optimal financial structure may be assumed at 70:30.

8.3.11 The financial structure of the Sui Companies however is more leveraged for debt. For FY 2016 SNGPL debt equity ratio falls in the ratio of 90:10 and in case of SSGCL it is 72:28. Similarly in FY 2015 this ratio was 80:20 and 70:30 for SNGPL and SSGCL respectively.

8.3.12 NEPRA in respect of Discos has applied WACC model. In the distribution case, the same model has been applied and for all computation purposes optimum financial structure of 70:30 has been adopted.

iv. NEPRA Determinations

8.3.13 In the determination of multi years in respect of power distribution company – Faisalabad Electric Supply Company (FESCO) and Transmission company Karachi Electric (KE), NEPRA has worked out the WACC in the following manner;

i. Weighted Average cost of capital

8.3.14 Return on Rate Base may be determined through WACC using the principles of comparative risk. The assessment of optimum capital structure would be made, whereby, a minimum of 30% equity will be assumed in case of negative equity. Equity in access of 30% may be considered as Debt. Under this approach the cost

of Debt would be an assessment, irrespective of its actual debt profile and it actual capital structure. Any fluctuation in the reference KIBOR would be adjusted subsequently. Formula for determining WACC is as under;

RORB = RAB * WACC

Where:

RORB = Return on Rate Base

RAB= Regulatory Assets Base

WACC=Weighted Average Cost of Capital

The WACC will be calculated as under;

WACC = {ke x (E / V)} + {kd x (D / V)}

where,

ke = cost of common equity , kd = cost of debt

D = the amount of debt in the capital structure

E = the amount of common equity in the capital structure

V = E+D ,

ke = Rf + (Rm-Rf) xβ

where

ke= Cost of Equity Rf= Risk free rate of return

Rm= Market rate of return, also (Rm-Rf) is called market risk premium

β= Beta, the measure of systematic risk

8.3.15 The WACC in respect of Transmission and Distribution company has been computed as per following;

Particulars	Transmission	Distribution
Cost of equity	15%	16.67%
Cost of debt	11.71%	9.76%
Equity	30.00%	30.00%
Debt	70.00%	70.00%
WACC	**12.70%**	**11.83%**

8.3.16 Cost of Equity in respect of KE Transmission Company (KE) is 15% in view of IRR of the Sindh Transmission Company limited. In respect of NTDC, it is in process..

8.3.17 Cost of debt in respect of Transmission is KIBOR +2.5% which is 11.71%.

8.3.18 Cost of equity in respect of Distribution FESCO has been computed as under;

ke = RF + (RM — RF) x [3
=8.9652% + (7% x 1.1)
= 16.67%

8.3.19 Cost of debt in respect of distribution setup is 9.76% i.e; Kibor bi-annually 7.01% +2.75% spread.

9. Proposed Tariff Regime For Natural Gas Sector in Pakistan

9.1 Legal Scope

9.1.1 Section 7 of OGRA Ordinance 2002 stipulates that the Authority shall determine or approve tariff for regulated activities whose licenses provide for such determination or such approval or where authorized by this Ordinance. The criteria for determination, approval, modification, evaluation of applications, and revision of tariffs have been prescribed in the rules and in the terms and conditions of the respective license. The tariff scope is further highlighted in terms of Section 6(2)(t) of OGRA Ordinance which provides that the Authority in consultation with the Federal Government and licensees for natural gas shall determine for each such licensee a reasonable rate which may be earned by such licensees in the undertaking of its regulated activity pertaining to natural gas keeping in view all the circumstances. Section 6(2)(s) empowers that the Authority shall prescribe, review, approve and regulate tariffs for regulated activities pertaining to natural gas and operation of the licensees for natural gas. Section 21 of OGRA Ordinance empowers the Federal Government to issue policy guidelines to the Authority on matters of policy, not inconsistent with the provisions of the Ordinance or the rules.

9.1.2 The above said legal framework provides a complete sequence and legal framework to deal the tariff of the licensee for the regulated activity. The following tariff proposals under these auspices /guidance are therefore put forward.

9.2 General Principle

(i) Applicability

9.2.1 The proposed tariff regime can operate for the bundled as well as unbundled entities and gas network structure in Pakistan.

(ii) Tariff Type

9.2.2 OGRA shall determine integrated or separate tariff for licensed activity/activities in accordance with the network structure or as the case may be.

(iii) Tariff Design and Methodology

9.2.3 Proposed tariff regime shall be based on Cost Transfer Mechanism wherein aggregate of expenses incurred in connection with the regulated activity/activities shall form the revenue requirement in respect of licensees. The expenditure in

respect of relevant regulated activity/activities under the integrated/bundled or unbundled structure may inter-alia comprise out of the following;

- Cost of gas
- Operating expenses (OPEX)
- Return on Regulated Fixed Assets (CAPEX)
- Federal Government /Provincial Government taxes , levies etc;, if any.
- Transportation charges

9.2.4 The other operating revenues from all sources, directly or indirectly connected with the regulated activity shall reduce overall Revenue Requirement of the licensee.

9.2.5 OGRA shall determine an integrated tariff or separate tariff for each licensed activity, as the case may be keeping in view the network structure operated by the licensee.

9.2.6 The Revenue Requirement shall be represented by (Million Rs.) translated into prescribed price /tariff in terms of Rs./MMBtu.

9.2.7 ***Transportation tariff for Transmission activity in*** respect of Transmission company/entity at national/regional level shall be an aggregate of operating expenses plus return and shall be entirely passed onto Distribution (D)/Transmission & Distribution (T&D) companies and any other private parties under Third Party Access Regime (TPA) at a postal stamp uniform rate on the basis of their contracted natural gas volume, on annual basis.

- ***For the purpose of clarity, the Regional level company means a company in the existing area of operation (integrated) or at provincial level while the national level company shall be the company transmitting the gas across the country.***
- ***Natural gas means indigenous gas plus import gas.***

9.2.8 ***Transportation Tariff at Distribution network/ existing T&D network*** in respect of regional level companies/entities shall be aggregate of operating expenses, transmission charges, if any, plus return. The private parties accessing such T&D companies infrastructure (Distribution or existing Transmission & Distribution) under TPA and Tier 2 consumers (other than indigenous natural gas consumers), shall be charged incremental costs (specifically incurred to provide respective service) in accordance with the Federal Government decision,

9.2.9 The Authority shall set the transportation tariff in a manner that it shall strike a balance among divergent interests of various stakeholders, provide level playing

field to all stakeholders to foster competition, encourage private investment and shall eliminate the discrimination among all stakeholders.

(iv) Rate Of Return

9.2.10 The licensed utilities shall receive market based rate of return i.e; WACC model, on the value of their net regulated fixed assets in operation.

9.2.11 The rate of return on net operating fixed assets in respect of Transmission network at national level/ regional level shall be computed as per deliberation and worked example in Chapter 10.

9.2.12 The rate of return on net operating fixed assets in respect of regional level Distribution (D)/ integrated Transmission & Distribution companies/entities (T&D) shall also be Vanilla WACC based, as per work example and deliberation in Chapter 10. The difference of rate of return in respect of Transmission network and distribution network/existing integrated network shall be due to Beta factor which has been taken at 1.06 and 1.30 respectively.

9.2.13 Bi-annual KIBOR + 2% spread shall apply to compute the cost of debt.

9.2.14 All assets created through the consumers' contribution and Government grants shall be allowed a 3% fixed return on their average assets.

9.2.15 Debt equity shall be assumed at the optimal structure of 70:30

(v) Corporate Tax.

9.2.16 In the above ROR model, it shall be treated as Pass Through Item.

(vi) Yardstick Regulation/Efficiency benchmarks

9.2.17 The Authority shall formulate and implement yardstick regulation in terms of efficiency related benchmarks related to UFG and operating expenses which shall be introduced to provide the incentive to licensee and protect the consumer interests.

9.2.18 The efficiency related benchmarks shall be implemented through a consultative process with the licensees and a detailed mechanism shall be developed in his regard. However, the decision of the Authority shall be final and applicable.

9.2.19 The targets /efficiency related benchmarks may be implemented on long term basis, specifying target in respect of each financial year.

(vii) Assets Built through Government grants /Aid etc;

9.2.20 The Assets built through Government grants/Aid etc; shall be amortized over the prescribed period thereby decreasing the overall revenue requirement of the licensee.

(viii) Fixed Assets in Operation &Asset Valuation

9.2.21 The regulated fixed assets in operation shall be calculated as one half of the sum of the value of fixed assets in operation at the beginning and at the end of the fiscal year, less the amount of accumulated depreciation.

9.2.22 The value of assets for rate base purposes shall be historical cost of the assets. However, at the time of unbundling, the assets shall be assessed/re-valued. The treatment and inclusion of "gain on revaluation of fixed assets" and replacement value of assets in the Regulatory Assets Base/revenue requirement, shall be subject to approval of the Authority.

9.2.23 The fixed assets shall also include advances for fixed assets and the intangible assets including IT expenses which are subject to depletion.

9.2.24 Only prudent, cost effective and economically efficient capital expenditures shall be included in the asset base for the purpose of rate of return, in line with legal framework.

9.2.25 The utilities shall not obtain any loan from the consumers. However, in accordance with Rule 20 (xxii) of the Natural Gas Licensing Rules, 2002, they may agree with the consumers for cost sharing of an asset for provision of service.

9.2.26 The approval of the projects exceeding the estimated amount of Rupees twenty million shall be sought separately and shall be included in the petition if such approval exists in advance.

(ix) Depreciation

9.2.27 Depreciation shall be calculated on the basis of rate and method approved by the licensee's BoD directors and the same shall be inconsistent with SECP regulations.

9.2.28 Depreciation, in the year of addition in fixed asset, shall be allowed to the extent of 50% of the normal/prescribed rate.

9.2.29 There shall be uniformity of depreciation rate as per regulated accounts and corporate accounts.

9.3 Methodology for determination of Transportation tariff for Transmission network/activity

9.3.1 The cost components provided below shall form the revenue requirement to charge Transportation tariff in respect of Transmission network/activity from the consumers. It is pertinent to mention that such tariff shall be determined by the Authority under Section 8(1) and 8(2) of OGRA Ordinance, NGT Rules and TPA rules. This shall not involve any kind of Federal Government advice or approval since this kind of licensee shall act as natural gas / RLNG carrier for non-retail consumers. Further, this cost shall also be inbuilt in the distribution tariff under Section 8 of OGRA Ordinance. The components shall comprise as under;

(i) Operating expenses
(ii) Gas Internally Consumed in compression
(iii) Depreciation
(iv) Return
(v) Any other relevant to this activity.

9.3.2 The transmission tariff shall be determined on bi-annual /annual basis, which shall be gradually phased out to multi year's tariff.

9.3.3 The Transmission setup at national level or Transmission companies/entities at regional level shall be entitled to charge postal stamp rate for tier 1 & 2 customers on full cost recovery basis**.** For the purpose of such rate, natural gas and RLNG shall be indiscriminately treated as natural gas.

9.4 Methodology for Determination of Revenue Requirement/Prescribed prices of Distribution or integrated Transmission & Distribution company

9.4.1 Different cost components (OPEX & CAPEX) to determine the revenue requirement of the licensee in undertaking the natural gas regulated activity (T&D) in Pakistan shall be treated as under;

(i) Cost Of Gas

9.4.2 The cost of gas from indigenous sources shall be determined in accordance with the gas price agreements executed between the Federal Government and the gas producers.

9.4.3 The cost of gas for the public utility/utilities shall be based on the "weighted average cost" of indigenous gas and shall be accordingly charged at uniform rate.

9.4.4 ***Other Operating Revenues***

9.4.5 All revenues directly generated in carrying out of the licensed regulated activities, including sale of gas condensate / NGL, revenue from Jamshoro Joint Venture Limited including royalty, late payment surcharge, other incomes, meter rentals, gas transportation and service charges as elaborated in chapter 10 shall be treated as operating income.

9.4.6 All indirectly generated revenues including Meter Manufacturing Profit, revenues from construction contracts, revenues from coating plants and all such ventures wherein company extra efforts is involved while utilizing the existing resources/platform, such income shall be equally shared between licensee and consumer.

9.4.7 Any other income which unconventionally emerged owing to specific circumstances shall also be treated as operating income.

(ii) Transportation charges on transmission

9.4.8 The transportation charges on account of transmission of gas received in the D/T&D regional work shall be included in the revenue requirement.

(iii)Operating Expenses

9.4.9 All prudently incurred expenses on the operation of the licensed regulated activities including depreciation, GIC, etc; but excluding financial charges on loans & debt servicing charges, taxes (other than corporate tax) and dividend shall be treated as operating expenses. Mainly, all such expenditures that are directly incurred for carrying out regulated activities will form part of operating expenditures.

9.4.10 The regulated resources including the management, good will and assets utilized in undertaking the non-regulated activities of the licensees shall compensate the regulated cost on the basis of fair allocation method.

9.4.11 The Authority shall adopt a fair and meticulous method for the allocation/bifurcation of lump sum booked cost and revenue items in respect of different activities, wherever required.

9.4.12 Any other expense which unconventionally emerged owing to specific circumstances of non-recurring nature shall also be treated as operating expense.

(iv)Expenses incurred owing to statutory obligations

9.4.13 The payments made connection with the statutory obligations including WPPF, 10 C bonuses etc; shall not form part of revenue requirement of licensee.

(v) Non-Core Activities

9.4.14 All the activities undertaken by the licensee separately other than regulated activities shall be treated as non-core activities. The degree of relevance of such activities with the regulated activities, not covered above, shall be assessed on case to case basis. Accordingly, its treatment as operating or non-operating shall be decided by the Authority.

9.4.15 No gain/loss on account of non-core activities shall form part of revenue requirement if such business units are set up under subsidiary companies/SPVs.

(vi) Expenses on Account of CSR/Donations etc;

9.4.16 The expenses incurred by the licensee on account of CSR/Donations shall not be allowed as part of revenue requirement.

(vii) Prior Years Adjustment/Accruals/Contingency Reserves/Deferral Account

9.4.17 Prior year's adjustment including un-adjusted shortfall in the total revenue requirement, expenses and revenues pertaining to a financial year may be adjusted by the Authority in the revenue requirement of other financial year. However such practice shall not be a regular feature and avoided upto maximum extent.

9.4.18 The Authority may take suo-motto decision pertaining to previous years RR shortfall, correction of errors/omissions, clubbing of various petitions etc;

9.4.19 The expenses which are not materialized but certain to happen may be allowed as part of revenue requirement.

9.4.20 Deferral/contingency reserve account may also be established to the justified extent to capture variations owing to economic volatility when ascertainment of expenditure is not possible. This mechanism shall enable to give correct pricing signals and charge of cost to present consumers else future consumers shall be

additionally burdened. This contingency reserve shall be an adjusting account which shall be squared off at the time of final decision.

(viii) Amortization /Staggering Of Capital/Revenue Expenditures

9.4.21 Impact of revenue /expenditure may be staggered by the Authority over a period of more than one year in order to dilute the impact to the benefit of all stakeholders.

(ix) Up-dation /Renewals

9.4.22 Tariff regime shall also stand updated/renewed from time to time upon Authority decisions and Federal Govt. advice/policy guideline consistent with the law.

9.4.23 The License conditions, with respect to revenue requirement, shall be aligned in accordance with the tariff regime in place.

(x) Effectiveness

9.4.24 Proposed tariff regime shall take immediate effect prospectively.

10. Justifications/Assumptions and Worked Example used in the Tariff Proposals

i. Rate Of Return

10.1.1 A market based rate of return shall be Vanilla WACC for Transmission & Distribution network accordingly. The return shall be computed on the value of net regulated fixed assets. This rate is after tax. Corporate tax paid during the year shall be a pass through item.

10.1.2 There is general acceptability that WACC for distribution activity may have a risk allowance owing to more risk exposure. For all practical purposes, the integrated T&D network shall get the WACC for distribution network.

10.1.3 The above rate of return methodology is widely acceptable and prevalent across the world for Power and gas sector. NEPRA, a local regulator in power sector apply same Vanilla WACC for its different kind of network.

10.1.4 In the above WACC shall be, based on domestic indices (except beta factor) as per this formula**;**

WACC = Re * E/(D+E) +Rd * D/(D+E)

10.1.5 Return on equity is computed under CAPM model while cost of debt is computed on the basis of KIBOR. The formula for ***Cost of equity (r_e)***is as under;

Re= Rf + beta * Market Risk Premium

ii. Illustration/computation

Pariculars	Transmission	Distribution
Rf (10 Years Pakistan Investment Bond)	8.75	8.75
Market Return (10 Years Average PSX- KSE 100 index)	16.42	16.42
Market Risk Premium	7.67	7.67
Beta Equity	1.06	1.3
Nominal Post Tax Cost of Equity	16.88	18.72
Nominal Cost of Deb (6 monthly Kibor)+2% spread	8.14	8.14
Vanilla Nominal WACC after tax	**10.76**	**11.31**

10.1.6 **For equity,** domestic indices per State Bank of Pakistan and Pakistan Stock Exchange/KSE shall be used.

10.1.7 ***Cost of equity (r_e)*** will be calculated as R_e = Rf + beta * Market Risk Premium where

Rf is **Risk free rate** for a 10-year Pakistan Investment Bond (PIB) calculated as the average for the last year prior to determination of the WACC. In the above working, **Risk free rate (Rf)** is based on the average of coupon rate offered on the 10 years PIB auctions made during the last year. During FY 2016-17, only one auction took place @ 8.75 % coupon rate which has been taken into account. PIB rate shall always updated based on the recent results.

10.1.8 ***Market Risk Premium*** is the difference between the market return on a diversified portfolio of stocks and the risk-free rate. The Market Return has been calculated based on actual stock data using the KSE-100 Index for a period of last years, The Market return in the above calculation is average of last 10 years increase/decrease in PSX KSE 100 Index. There is considerable degree of volatility in this indicator on the basis of period. The average of 15 or 5 years reveals much higher market. It has been assumed that 10 years period is moderate and the same shall be updated. Further average has been taken in the model. Generally the MRP for gas T&D utilities is found to be in the range of 7-8% internationally and the value for Pakistan may be upto 10%-11%.

10.1.9 ***Beta*** is a measure of the company stock's return variability relative to the Market Premium. The beta estimate available for each company today, however, represents the stock return variability for a bundled transmission and distribution utility. For an unbundled sector, separate beta's for transmission and distribution is required. The average beta of gas transmission and distribution has been based on international experience. In that regard, beta estimates for transmission in Pakistan were obtained from a sample of US transportation companies; since distribution companies usually command a larger beta than transmission, the differential with transmission beta was obtained from an average of international cases. Accordingly Beta @ 1.06 for Transmission and @ 1.30 for distribution business has been adopted.

10.1.10 ***Cost of debt (R_d):*** is based on 6 monthly averages of last twelve months Kibor which comes to 6.14%. Kibor during the last 10 year is at the minimum level. Kibor spread has been taken at 2%.

10.1.11 ***WACC re-set:*** The WACC shall be fixed for the next 2-3 years. During this period, if the WACC changes by ±2% than the reference figure (the first WACC under this regime), it will be automatically re-set and become effective in OGRA's next determination of revenue requirement.

iii. Assets Base

10.1.12 Additions in fixed assets per the projections of the gas utilities.

10.1.13 The fixed assets shall also include advances for and the intangible assets which are subject to depletion including IT expenses as per current practice and the rational that same are part of it.

10.1.14 Depreciation rate for the regulatory accounts and corporate accounts shall be same as per rate and method in accordance with SECP regulation. This shall facilitate the company to maintain similar set of accounts of regulatory and statutory obligation.

10.1.15 Depreciation and addition in assets be allowed on half yearly basis since the same are assumed to be carried out throughout the financial year.

10.1.16 Treatment of deferred credit shall be suggested by the working group for the approval of the Authority.

iv. Operating Revenue

10.1.17 All the revenue generated directly or indirectly through carrying out of the regulated activates have been assumed operating revenue for T&D companies.

10.1.18 Financial expenses including interest expense, debt servicing cost and financial revenue including return on bank deposits have been kept out of tariff computations.

10.1.19 With respect to income on account of LPS and interest on arrears, it shall be allowed as part of revenue requirement.

v. Classification of Incomes in respect of Regulated activities in unbundled scenario

10.1.20 In principle, income generated relevant to structure shall be reckoned accordingly. All the sources of incomes in undertaking the distribution activities shall therefore be charged to distribution network. The income on account of Late Payment Surcharge, Other income, Meter Manufacturing shall be charged to distribution unit. The sale of gas condensate, extraction of Propane/butane from transmission

line/field are relevant to sale activity. Since the sale and distribution activities are combined in the proposed setup, therefore it shall be charged to distribution network.

10.1.21 Transmission activity is involved primarily in the transportation of gas and acts as a common carrier. As such it does not involve in any kind of venture with respect to mercantile activity. The title of product i.e; gas does not rests with it. Therefore, no other operating income is relevant to it.

vi. Allocations of Incomes as operating or non operating

10.1.22 **Following income are suggested to be treated as under ;**

Income Heads	Proposed Treatment	Rationale
Meter Manufacturing Profit	50% Non Operating	Meter Manufacturing has neither direct nexus with the regulated activity nor it can be undertaken without utilizing the regulatory resources. Therefore in all fairness, net profit from such activity has been shared between consumer and company equally.
Sale of Gas Condensate and NGL.	Operating	Condensate is a part of regulated activity. These are the energy molecules, the cost of the same has been inbuilt part of in the gas price. This may therefore be treated as operating income.
Income from LPG, other incomes, LPS etc	Operating incomes	As per existing rationale which holds consistent validity.
Recoating of plant Construction contracts	50% Operating 50% non-operating	As per existing rationale which holds consistent validity.
Transportation Charges	Operating	These emerged from the operation of regulated activities.
Any other income not covered above		To be decided by the Authority based on the degree of the relevance with the regulated activity.

vii. Cost Of Gas & UFG

10.1.23 WACOG concept is in accordance with the policy of Federal Govt. to maintain uniform price structure in respect of both gas utilities.

10.1.24 UFG is an efficiency related benchmark implemented by the Authority.

viii. Operating Expense

10.1.25 All the prudent cost incurred to undertake the licensed regulated activities and to generate the operating revenue shall be operating expenses.

10.1.26 GIC, WPPF and depreciation are also operating expenses.

10.1.27 Efficiency benchmarks are for the purpose of efficiency and provides prudent and a reasonable limit to incur the expenditures.

ix. Prior Years Adjustment, Deferrals Etc;

10.1.28 Treatment of Prior Years adjustments, deferrals, accruals are in accordance with the regulatory practices.

A. Gas Sales Infos –SNGPL

Gas Sales	including Federal Capital	Khyber Pakhtunkhwa	TOTAL	including Federal Capital	Khyber Pakhtunkhwa	TOTAL	including Federal Capital	Khyber Pakhtunkhwa	TOTAL
								BBTU	
Gas Sales Volume	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	148,644	33,131	181,775	148,693	31,664	180,358	149,907	30,616	180,523
Commercial	19,841	2,640	22,481	21,092	2,658	23,750	23,588	2,797	26,385
Power	65,030	-	65,030	78,256	-	78,256	88,956	-	88,956
Industrial	59,245	43,057	102,303	78,058	45,360	123,418	118,204	43,036	161,240
Fertilizer	36,463	54	36,516	15,527	34	15,561	16,713	55	16,769
Total	**329,224**	**78,882**	**408,106**	**341,626**	**79,717**	**421,343**	**397,369**	**76,504**	**473,873**
								Million Rs.	
Gas Sales Revenue	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	4581251	669,643	5,250,894	4,359,536	630,002	4,989,538	4,141,891	592,496	4,734,387
Commercial	49024	9279	58,303	48,692	9,339	58,031	48,964	8,977	57,941
Power	15	0	15	15	0	15	15	0	15
Industrial	5787	880	6,667	5688	978	6,666	5814	853	6,667
Fertilizer	5	1	6	5	1	6	4	1	5
Total	**4,636,082**	**679,803**	**5,315,885**	**4,413,936**	**640,320**	**5,054,256**	**4,196,688**	**602,327**	**4,799,015**
								No. of Consumers	
Number of Consumers	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	4,431,397	660,748	5,092,145	4,193,041	622,355	4,815,396	3,975,203	590,790	4,565,993
Commercial	42,080	6,639	48,719	43,237	6,678	49,915	56,772	6,863	63,635
Power	16	-	16	16	-	16	16	-	16
Industrial	3,854	794	4,648	4,759	803	5,562	5,282	818	6,100
Fertilizer	4	1	5	4	1	5	4	1	5
Total	**4,477,351**	**668,182**	**5,145,533**	**4241057**	**629,837**	**4,870,894**	**4,037,277**	**598,472**	**4,635,749**

B. GAS SALES INFOS - SSGCL

Gas Sales	Sindh	Balochistan	TOTAL	Sindh	Balochistan	TOTAL	Sindh	Balochistan	TOTAL
Gas Sales Volume (BBTU)	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	70,348	8,849	79,196	69,670	8,932	78,602	65,413	8,324	73,737
Commercial	8,818	790	9,607	8,914	723	9,637	8,976	690	9,665
Power	162,318	6,389	168,707	137,589	7,493	145,082	132,067	7,042	139,110
Industrial	79,969	1,461	81,430	88,574	1,546	90,120	91,663	1,499	93,162
Fertilizer	21,734	-	21,734	16,174	-	16,174	15,880	-	15,880
Total	**343,187**	**17,488**	**360,675**	**320,921**	**18,694**	**339,615**	**313,999**	**17,555**	**331,554**
Gas Sales Revenue (Million Rs)	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	15,649.371	2,690.909	18,340.280	14,583.253	2,505.791	17,089.044	13,682.635	2,426.323	16,108.958
Commercial	6,499.204	573.305	7,072.509	5,918.448	496.089	6,414.537	5,814.645	464.250	6,278.895
Power	70,249.160	3,803.371	74,052.531	77,319.420	3,835.724	81,155.144	72,035.732	3,539.971	75,575.703
Industrial	77,277.348	967.667	78,245.015	49,531.056	1,018.418	50,549.474	50,058.014	974.106	51,032.120
Fertilizer	5,693.089	-	5,693.089	3,645.249	-	3,645.249	3,545.866		3,545.866
Total	**175,368.172**	**8,035.252**	**183,403.424**	**150,997.426**	**7,856.022**	**158,853.448**	**145,136.892**	**7,404.650**	**152,541.542**
* Sale Revenue figure must be after shortfall adjusted.									
Number of Consumers (No.)	**FY 2015-16**			**FY 2014-15**			**FY 2013-14**		
Domestic	2,493,089	253,113	2,746,202	2,434,850	248,174	2,683,024	2,378,661	240,145	2,618,806
Commercial	20,457	2,624	23,081	20,893	2,515	23,408	21,380	2,360	23,740
Power	-	-	-	-	-	-	-	-	-
Industrial	4,117	57	4,174	4,096	57	4,153	4,100	56	4,156
Fertilizer			-			-			-

C. Province wise Gas Supply in WACOG

		SNGPL				SSGCL				TOTAL			
Year	Province	MMCF	MMMBTU	Rs per MMBTU	Rs Million	MMCF	MMMBTU	Rs per MMBTU	Rs Million	MMCF	MMMBTU	Rs per MMBTU	Rs Million
FY 2010-11													
	Sindh					358,335	341,981	356.17	121,803	358,335	341,981	356.17	121,803
	Balochistan					39,404	39,059	152.37	5,951	39,404	39,059	152.37	5,951
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**672,460**	**634,404**	**233.21**	**147,947**	**397,738**	**381,039**	**335.28**	**127,755**	**1,070,198**	**1,015,444**	**271.51**	**275,702**
FY 2011-12													
	Sindh					369,966	350,908	410.99	144,219	369,966	350,908	410.99	144,219
	Balochistan					36,586	36,250	187.39	6,793	36,586	36,250	187.39	6,793
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**682,689**	**640,142**	**257.32**	**164,723**	**406,551**	**387,158**	**390.05**	**151,012**	**1,089,240**	**1,027,300**	**307.34**	**315,735**
FY 2012-13													
	Sindh					383,244	362,294	453.75	164,390	383,244	362,294	453.75	164,390
	Balochistan					36,031	35,689	212.92	7,599	36,031	35,689	212.92	7,599
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**646,156**	**602,446**	**284.89**	**171,630**	**419,275**	**397,983**	**432.15**	**171,989**	**1,065,430**	**1,000,429**	**343.47**	**343,618**
FY 2013-14													
	Sindh					386,597	373,592	483.61	180,673	386,597	373,592	483.61	180,673
	Balochistan					37,416	37,031	222.01	8,222	37,416	37,031	222.01	8,222
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**587,163**	**553,533**	**300.19**	**166,163**	**424,013**	**410,623**	**460.02**	**188,895**	**1,011,176**	**964,156**	**368.26**	**355,057**
FY 2014-15													
	Sindh					394,016	389,532	479.32	186,711	394,016	389,532	479.32	186,711
	Balochistan					40,597	40,015	232.71	9,312	40,597	40,015	232.71	9,312
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**526,905**	**496,417**	**287.64**	**142,789**	**434,613**	**429,548**	**456.35**	**196,023**	**961,518**	**925,965**	**365.90**	**338,812**
FY 2015-16													
	Sindh					428,735	425,252	410.90	174,736	428,735	425,252	410.90	174,736
	Balochistan					40,646	39,103	181.04	7,079	40,646	39,103	181.04	7,079
	Punjab							-		-	-	-	-
	KPK							-		-	-	-	-
	Total	**513,981**	**482,158**	**265.50**	**128,013**	**469,381**	**464,356**	**391.54**	**181,815**	**983,362**	**946,514**	**327.34**	**309,828**

D. SNGPL Transmission Network 2016

Transmission Summary	Punjab including Federal Capital			Khyber Pakhtunkhwa		
Transmission (Network)	FY 2015-16					
Dia (inches)	KM	Historical value (Million Rs.)	Assesed Value (Million Rs)	KM	Historical value	Assesed Value (Million Rs)
Less than 8"	148.13		138	54		92
8	1,307.49		5,281	680		2,755
10	505.91		774	173		637
12	308.53		2,899	108		1,114
16	1,212.16		7,108	123		1,403
18	675.92		2,518			-
20	97.70		1,846			-
24	956.02		11,846	148		4,228
30	705.17		12,116			-
36	596.75		22,833			-
42	129.70		1,848			-
Total	6,643.46	-	69,209	**1,286**	**-**	**10,229**

Amount in million Rs.

Assets Nomenclature	Closing Cost	Closing depreciation	Net Book Value	Closing Cost	Closing depreciation	Net Book Value
Builing on Freehold land	1,300	848	452	26	14	12
Compressor Station Equipm	10,943	6,358	4,585	9	4	5
Computer Hardware	460	270	190	50	27	23
Construction Equipment	2,561	2,167	394	314	272	42
Distribution Mains Services	2	0	2	-	-	-
Furniture & Fixture	93	78	15	11	8	3
Land Freehold	1,493	-	1,493	241	-	241
Land Leasehold	0	-	0	-	-	-
Measuring & Regulating Sta	28	6	22	-	-	-
Motor Vehicles	844	753	91	73	66	7
Office/Security Equipment	49	35	15	3	2	1
Plant & Machinery	1,526	995	530	63	55	8
SCADA System	252	252	-	-	-	-
Telecommunication Eqt	1,705	1,590	116	68	65	3
Tools & Equipment	83	68	15	4	3	0
Transmission Mains	48,529	33,076	15,453	9,193	3,978	5,215
Sub Total (A)	**69,868**	**46,494**	**23,374**	**10,054**	**4,495**	**5,559**
TRANSMISSION OTHER ASSETS /(LNG-PROJECT) - (B)	14,709	737	**13,972**			
Grand Total (A+B)	**84,578**	**47,231**	**37,346**	**10,054**	**4,495**	**5,559**

CWIP Million Rs.	Punjab			ber Pakhtunkhwa		
TRANSMISSION Section/segment	TRANSMISSION (Normal)	TRANSMISSION LNG Segment	TOTAL	TRANSMISSION (Normal)	TRANSMISSION LNG Segment	TOTAL
Transmission Lines	6,794	-	6,794	1,176	-	1,176
SMSs	62	-	62	32	-	32
Compressor Station	-	152	152	-	-	-
Total	**6,856**	**152**	**7,008**	**1,208**	**-**	**1,208**

E. SSGCL Transmission Network 2016

Transmission Summary	Sindh			Balochistan		
Transmission (Network)	FY 2015-16					
Dia (inches)	KM	Historical value (Million Rs.)	Assesed Value (Million Rs)	KM	Historical value (Million Rs.)	Assesed Value (Million Rs)
Less than 8"	43	413		-		
8"	-			-		
10"	-			-		
12"	170	2,071		351	2,219	
16"	531	521		27	26	
18"	654	1,959		297	1,529	
20"	761	6,309		89	453	
24"	660	9,769		30	904	
30"	9	230		-		
42"	31	2,156		-		
Other Enclosures/ Valve Assemblies/ Check M		532				
Total	2859	23,962		794.00	5,131	
	78%	82%		22%	18%	

Description/Cost Account	COST	Cumulative Depreciation	WDV
BUILDING ON FREEHOLD LAND	1,823,000	**1,005,249**	**817,751**
COMPRESSORS STATION EQUIPMENT	3,616,296	2,411,900	1,204,396
COMPUTER HARDWARE	152,288	146,316	5,972
CONSTRUCTION EQUIPMENTS	2,233,193	1,083,362	1,149,831
FURNITURE & FIXTURES	191,723	176,991	14,732
LAND FREEHOLD	5,439,796	0	5,439,796
MOTOR VEHICLES	973,352	627,849	345,503
OFFICE EQUIPMENTS	148,384	124,836	23,548
PLANT AND MACHINERY	1,014,893	470,969	543,924
SCADA SYSTEMS	1,142,477	667,408	475,069
TELECOMMUNICATION EQUIPMENT	606,893	492,284	114,609
TOOLS AND EQUIPMENT	183,576	173,451	10,125
TRANSMISSION SYSTEM (PIPELINES/SMS/CP SYSTEM E	27,079,812	14,004,774	13,075,038
TRANSMISSION SYSTEM (PIPELINES/SMS/CP SYSTEM E	2,013,002	1,540,447	472,555
	46,618,685	22,925,836	23,692,849

CWIP Million Rs.	FY 2015-16	
	SINDH	BALOCHISTAN

F. SNGPL Distribution Network 2016

Distribution	Punjab including Federal Capital			Khyber Pakhtunkhwa		
Distribution Summary (Million Rs.)	FY 2015-16					
Assets Nomenclature	Distribution (Total Regions + HO)	Depreciation Closing	Net Book Value	Distribution (Total Regions)	Depreciation Closing	Net Book Value
Buildings on Freehold land	484	138	346	139	93	46
Buildings on Leasehold land	8	8	-	-	-	-
Compressor Station Equipment	11	11	0	9	8	1
Computer Hardware	789	444	345	135	78	57
Computer System Software	-	-	-	-	-	-
Construction Equipment	972	671	301	110	80	30
Distribution Mains Services & Regulators	64,912	28,045	36,868	13,189	5,529	7,660
Furniture & Fixture	191	121	70	22	16	7
Land Freehold	9	-	9	3	-	3
Land Leasehold	0	-	0	-	-	-
Measuring & Regulating Assets	33,023	16,510	16,513	4,541	2,411	2,130
Motor Vehicles	855	722	133	135	114	21
Office Equipment and Security System	70	49	21	9	6	3
Plant & Machinery	946	478	468	125	65	60
SCADA System	305	305	-	-	-	-
Telecommunication Equipment	448	133	314	34	17	17
Tools & Equipment	202	187	15	15	13	2
CP stations on Distribution Lines (Transmission N	601	218	383	95	34	61
Total	**103,826**	**48,039**	**55,787**	**18,560**	**8,464**	**10,096**

G. SSGCL Distribution Network 2016

	FY 2015-16		
Description/Cost Account	**Closing Cost**	**Closing Depreciation**	**WDV**
	Distribution Total Region + HO		
Buildings on freehold land	1,141,261	701,793	439,468
Compressor Station Equipment	-	-	-
Computer Hardware	810,900	688,662	122,238
Construction Equipment	-	-	-
Distribution System Mains	61,652,007	25,986,848	35,665,159
Furniture & Fixture	344,577	281,216	63,361
Land Freehold Land	6,667,495	-	6,667,495
Measuring and Regulating System	-	-	-
Measuring and Regulating System (TBS/CMS etc)	-	-	-
Motor Vehicles	1,418,791	760,277	658,514
Office Equipment	260,823	207,890	52,933
Plant & Machinery	1,298,801	820,303	478,498
SCADA System	-	-	-
Telecommunication System	437,688	165,283	272,405
Tools & Equipment	191,711	165,745	25,966
	74,224,054	29,778,017	44,446,037

H. SNGPL Manpower Data 2016

	Punjab Including Federal Capital				KPK	Punjab Including Federal Capital			
Manpower (No.)	Manpower Stregth					Manpowe			
	Transmission, Compression & Telecom	Distribution	HO	Projects	Distribution	Transmission & Compression	Distribution	HO	Projects
Executives									
Grade 1	1	13	12	9	1	522,437	-	27,470,260	1793830
Grade 2	53	196	61	38	32	29,806,786	22,469,551	197,627,574	19172878
Grade 3	61	283	89	33	55	32,730,049	87,171,418	237,638,513	32413513
Grade 4	49	96	71	22	23	68,064,182	49,932,366	222,407,869	43554258
Grade 5	26	43	35	14	7	46,389,255	50,632,942	118,480,420	29638756
Grade 6	8	37	37	12	7	22,945,602	85,541,088	139,145,799	36032189
Grade 7	9	16	36	3	3	45,292,324	73,291,694	154,979,192	15062880
Grade 8	3	6	17	5		24,260,390	59,099,943	98,223,005	49470522
Grade 9	1	1	4			12,042,441	10,393,982	45,287,630	
Grade 10			2			-	-	69,981,294	
Contract			2				526,290	11,477,974	2398948
TOTAL	**211**	**691**	**364**	**136**	**128**	**282,053,466**	**439,059,274**	**1,322,719,530**	**229,537,774**
Sub-ordinate									
Grade 1	42	135	67	0	6	4,235,351	49,819,221	12,895,238	426,979
Grade 2	43	461	34	7	34	8,974,409	73,569,767	29,590,253	1,218,950
Grade 3	37	143	22	3	57	3,515,803	18,225,279	40,326,443	1,394,470
Grade 4	35	232	37	6	33	25,151,123	111,661,130	78,713,381	2,987,967
Grade 5	177	904	101	33	210	100,295,266	228,327,025	326,726,391	12,789,648
Grade 6	234	861	172	65	241	189,695,667	505,717,817	378,489,089	40,616,403
Grade 7	219	828	76	51	220	241,572,677	657,929,987	722,467,316	47,501,404
Grade 8	67	340	27	11	56	101,553,817	308,566,518	265,737,725	21,335,301
Grade 9	177	708	137	72	276	235,571,993	382,439,206	1,265,582,265	98,906,249
Grade 10									
TOTAL	**1031**	**4612**	**673**	**248**	**1133**	**910,566,107**	**2,336,255,951**	**3,120,528,102**	**227,177,371**
Grand Total	**1242**	**5303**	**1037**	**384**	**1261**	**1,192,619,573**	**2,775,315,225**	**4,443,247,632**	**456,715,145**

I. SNGPL UFG & GIC Data 2016

UFG	Punjab including Federal Capital	Khyber Pakhtunkhwa	TOTAL
UFG (MMCF)	**FY 2015-16**		
Gas Taken into system	511,276	97,469	608,745
Gas Carried for PPL, POL	- 376	-	- 376
RLNG Volume sold /Third party	- 101,791	-	- 101,791
GIC	- 935	- 206	- 1,140
Gas Sales without RLNG	372,488	73,944	446,432
Gas Deemed Sale	2,001	11,359	13,360
UFG	33,684	11,961	45,645
Acceptable	18,368	4,377	22,745
UFG Disallowance	15,317	7,584	22,900
Total			
GIC (MMCF)	**FY 2015-16**		
Compression			-
Free gas	407	108	515
coating plan			-
co-generation	110	-	110
Ruptures	407	96	503
Purging	10	2	12
Total	935	206	1,140

J. SNGPL LNG ASSETS June 30,2017

Rupees in million

Description	Cost				Accumulated Depriciation			Book Value of Assets as on 30-06-2017
	Balance as on 01-07-2016	Adjustment 2016-17	Addition 2016-17	Balance as on 30-06-2017	Balance as on 01-07-2016	Depreciation for the Period	Balance as on 30-06-2017	
LAND FREEHOLD	-	-	60	60	-	-	-	60
LAND LEASEHOLD	-	-	-	-	-	-	-	-
BUILDING ON FREEHOLD LAND	-	-	-	-	-	-	-	-
BUILDING ON LEASEHOLD LAND	-	-	-	-	-	-	-	-
TRANSMISSION MAINS	9,297	123	20,681	30,101	158	984	1,142	28,958
DISTRIBUTION MAINS	-	-	-	-	-	-	-	-
COMPRESSORS STATION EQUIP	340	142	3,198	3,679	7	131	138	3,542
TELECOMMUNICATION EQUIPMENT	1	-	10	11	0	1	1	10
PLANT AND MACHINERY	123	54	82	259	6	22	28	231
MEASURING AND REGULATING	-	-	-	-	-	-	-	-
TOOLS AND EQUIPMENT	10	-	0	10	1	3	4	6
MOTOR VEHICLES	734	-	12	745	126	184	311	435
CONSTRUCTION EQUIPMENT	4,112	(99)	211	4,223	417	830	1,246	2,977
FURNITURE & FIXTURES	200	-	23	223	30	43	73	150
OFFICE EQUIPMENTS	4	1	2	7	1	1	2	5
COMPUTER HARDWARE	8	(0)	4	11	2	1	3	8
COMPUTER SYSTEM SOFTWARE	-	-	-	-	-	-	-	-
SCADA SYSTEMS	-	-	-	-	-	-	-	-
TOTAL	**14,829**	**220**	**24,282**	**39,331**	**748**	**2,201**	**2,949**	**36,381**