

Hydrocarbon Exploration and Licensing Policy

[HELP]

Way Forward to

Self-Sufficiency in Oil & Gas



Center for Research and Security Studies

Policy Brief

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Foreword

The New Government is inheriting an economy mired in multi-pronged crises. Foreign-reserves' crunch, massive unemployment, devaluation of the Pakistani rupee, high inflation are among the challenges it will need to grapple with. One of the fundamental causes of the economic crisis are energy imports. This dependence on energy import has crippled Pakistan. Meeting almost 85 percent of the energy demand through imports weighs heavily on Pakistan's trade and current account deficit. To address these challenges on an economic front, Pakistan needs to enhance the domestic production of Oil & Gas on war-footing by removing the structural constraints. Proven oil & gas reserves are enough to meet national demand and make the country self-sufficient but lack of a conducive policy and regulatory environment hinders the boosting of domestic exploration and production.

Introduction of a proposed petroleum policy, given the acronym of HELP (HYDROCARBON EXPLORATION AND LICENSING POLICY) and a regulatory environment will be the main challenge. The Report finds that unnecessary regulatory burdens could be reduced through new institutional arrangements — principally the new hydrocarbon exploration & licensing policy, establishment of an upstream regulator along with implementation of best practices in regulatory principles in all jurisdictions.

The objective of this brief report is to help government make better Oil & Gas Exploration policy for self-reliance in production. It charts out a roadmap for exploration of hydrocarbons to make the country self-sufficient in minimum lead time and set it on a new trajectory of economic growth. The report reviews and highlights shortcomings in petroleum policies and suggests reforms to be able to attain self-sufficiency.

I would like to express my gratitude for the support of eminent energy expert Engineer MA Jabbar Memon, who provided me the chance to work on Oil and Gas Exploration Regulations. Engineer Jabbar has not only motivated me to identify significant unnecessary costs from delays and uncertainties in obtaining approvals, duplication of compliance requirements, and inconsistent administration of regulatory processes but also reviewed the report very minutely.

This report aims to set the context for deliberations for achieving self-reliance in oil & gas production as a national *mission* at the earliest. Feedback and suggestions from industry experts, members of the media, National Assembly, Senate members and civil society are welcome.

I am also grateful to the experts who have taken the time to provide feedback on the draft report. List of testimonial is attached.

Oil & Gas Sector Can Make or Break the Economy of Pakistan

Dependence on imported oil & gas importation has crippled Pakistan economically. The indigenous crude oil production meets only 15 percent of the country's total requirements, whereas 85 percent of the requirements are met through imports. Pakistan's oil import bill in July-May 2017-18, increased 30.5 per cent year-on-year to \$12.93¹ billion from around \$9.91 billion in the same period last year. Needless to say, the huge costs worsened the economy, substantially weakening the Pakistani Rupee, and have resulted in depletion of foreign exchange reserves. Cumulatively, these costs have translated into a higher current account deficit, which has also precipitated a further decline in the value of the Pakistani currency.

Pakistan's recorded exports stand at \$23.2 billion² during the FY2017-18; thus oil imports amount to almost 63% of Pakistan's export earnings. Moreover, the oil trade deficit of Pakistan has risen over the years and currently accounts for around 40% of the country's total trade deficit as compared to the total imports of \$60.867 billion during July-June (2017-18). Amongst the petroleum products, the highest increase of 86.94 percent was reflected in the imports of LNG, which grew from \$1.312 billion during 2016-17 to \$2.453 billion in 2017-18.

Had Pakistan produced Oil & Gas to its full potential the drawdown could have been avoided. In other words, with higher domestic production, the depreciation of the rupee could have been minimized and inflation contained, along with reduction in the import bill. Together, these savings could have translated into a higher GDP. Furthermore, Pakistan would have definitively increased its GDP if the import of crude oil had could have been avoided completely.

Last but not the least, such is the power of the oil & gas exploration and production sector that had the right decisions been taken at the right time with regard to indigenous exploration and production of fuels, the industry could have helped to generate employment for approximately two million people over a period of 5 years. In light of the above, it cannot be stressed enough that fresh exploration efforts in both conventional and unconventional hydrocarbons comprise the only panacea for the ills of Pakistan's economy, beset by dwindling foreign reserves, a diminishing economic growth rate, and a deplorable balance of payments deficit. Moreover these ills have left it vulnerable not only to external shocks but also to potential internal breaches from the national security perspective.

Oil & Gas exploration aimed at achieving self-sufficiency can ensure energy security, which as a sub-set of national security. While many internal security threats leading to militancy and violence have ideological underpinnings, the employment generation and economic development generated through the proposed exploration plan, can delink the poverty-crime-militancy nexus by engaging the youth of the country, in meaningful gainful employment.

¹ Statistics Division, Pakistan Bureau of Statistics

² State Bank of Pakistan,

Imported oil & gas dependence has crippled Pakistan's economy

Pakistan largely depends upon oil and gas resources to fulfill energy requirements, and within the country oil and gas are two key components contributing to almost 65 percent of the total energy mix. Domestic production has not only remained flat due to inconsistent petroleum policies but it has also considerably decreased in Pakistan with the exception of the province of KPK. In addition, the increase in oil prices is likely to result in decreased foreign reserves further as borne out by the recent depreciation of the rupee that raised the cost of crude oil import for Pakistan and led to an increase in inflationary pressure on the economy. It is also a hard reality that if domestic oil and Gas production is not increased then the widening trade deficit may result in the paucity of foreign exchange reserves of the country which it needs to deploy in other critical projects of national importance.

Impact of Imported Fuels on Energy Security

The promise of energy security is alluring. Energy security is not only one of the most critical issues facing the economy but also an integral part of national security. It is a critical imperative for the Pakistani economy which is in a shambles. Pakistan today faces the daunting challenge of meeting its growing need for energy resources in a cost effective, sustainable and environment-friendly manner, especially with so many jobless and million more entering the job market.

Affordability or cost of energy is a major component of energy security, but this is badly ignored when decisions are being made to import LNG, at the cost of unlocking huge domestic hydrocarbon potential. LNG can never be the true alternative of local natural gas, and this has been the key topic of heated and protracted debate over the last four years. Ex-Prime Minister Shahid Khaqan Abbasi, as Minister for Petroleum was instrumental in opting for the policy of LNG import, terming it a 'game changer' and declared as the one and only solution for boosting the country's economy. Because of this decision, Pakistan lost its focus on indigenous Natural Gas exploration and production.

Valuable natural resources remained unexplored due to the curbs on the new allotment of petroleum blocks. This negligence reached a new high when the quantum of oil & gas from domestic discoveries, shown in the table below, are not connected to National Grid, simply to give weightage to imported LNG at \$ 12.63³ /MMBTU . While, domestic Oil & Gas production could have provided multiple benefits like lower prices, enhanced growth and creation of job opportunities for local communities, but beside Oil & Gas following discoveries by Ministry of Petroleum reluctant to connect with national grid.

³ PSO- LNG Price for Month of August 2018

Oil and Gas Discoveries NOT connected to Grid ⁴						
	Discovery	Status	Company	Province	Oil BPD	Gas MMCFD
1	Thal East-1	Gas	OGDCL	Sindh		24
2	Nashpa X-5	Oil & Gas	OGDCL	KPK	1032	1
3	Thal West-1	Gas	OGDCL	Sindh		17
4	Bitrism West-1A	Gas Cond.	OGDCL	Sindh	290	5
6	Mithri-1	Gas	OGDCL	Sindh		8
7	Gundanwari-1	Gas Cond.	OGDCL	Sindh	15	19
9	Chabaro-1	Gas Cond.	OGDCL	Sindh	20	15
10	Bhambhra-1	Gas	OGDCL	Sindh		6
11	Tando Allah Yar South West-1	Gas Cond.	OGDCL	Sindh	72	10
12	Dhok Hussain-1	Gas Cond.	OGDCL	KPK	700	29
13	Umair-1	Gas	OGDCL	Sindh		11
14	Kotri X-1	Gas	PPL	Sindh		4
15	Hadi-X-1A	Gas	PPL	Sindh		1
16	Bashar X-1	Gas	PPL	Sindh		9
17	Zafir X-1	Gas Cond.	PPL	Sindh	10	29

One the slogans adopted in favor of importing LNG was the most effective milestone to reduce electricity generation cost. But, in reality the slogan proved to be empty rhetoric, as tariff breakup for the month of June 2018 exposed that the energy component of the tariff, which normally constitutes 60 to 80% of total tariff structure to produce one unit of electricity was only PKR 4.7 using domestic natural gas, which is even 22% less than the cost of the electricity produced from imported coal. There is no comparison with the cost of the electricity produced using LNG, where the electricity unit produced is 98.5% more expensive than when using domestic gas.

Indigenous gas for domestic use was also diverted to the rural for political gains. The area of Murree, Kotli Sattian and Kahuta Tehsil was facilitated with natural gas connections, and there the cost per connection is more than PKR 180,000 although almost 60 % of the households move to these areas only for two months of the summer season from the twin cities. Policy decisions such as these, coupled with inefficient thermal power plants ran up a huge circular debt that has now soared to PKR 1178 billion.

Fuel Consumption to generate ONE UNIT of Electricity (KWh) -June 2018			
	GWh	%	PKR/ Unit
Hydro	3,589	27.79%	0
Coal	1,522	11.79%	5.76
HSD	3.99	0.03%	11.76
RFO	1,162	9.00%	13.12
Gas	2,026	15.69%	4.7
RLNG	3,252	25.18%	9.3

⁴ OGDCL & PPL Sources

Textile Industry Biggest Victim of Imported Fuel

The textile industry in Pakistan is the country's largest manufacturing industry, as well as the second largest employment sector and makes up for 57% of the exports. It contributes 8.5% to the GDP, employs about 45% of the total labor force and 38% of the manufacturing workers. The high energy costs had adversely impacted textile manufacturing from the years 2013-18. During this tenure, the sector was hit by a 61 percent increase in electricity tariff which was disastrous considering that energy accounts for 35 percent of the production cost of textile products including manufacturing of yarn.

The Ministry of Petroleum's decision to supply LNG to textile at an average rate of PKR 1,100/ (MMBTU) resulted in stiff competition from regional players including Bangladesh, India and Vietnam.

In the recent past, the share of Pakistan in the global textile market has decreased to 1.7 percent from 2.2 percent because of the high cost of energy, thus paving the way for Bangladesh and India to take a lead in the global market. The share of both countries increased from 1.9 to 3.3 percent and from 3.4 to 4.7 percent, respectively. Vietnam, a new player in this sector exported textiles worth \$18.1 billion in 2012-13, and in 2016-17 its textile exports touched \$31.5 billion. Sri Lanka's exports jumped from \$4 billion in 2012-13 to \$4.9 billion in 2016-17.

During the same period, the textile exports from Pakistan declined from \$13.1 billion to \$12.5 billion. The spinning industry has become unviable not only due to high power and energy cost but also due to its inability to operate at full capacity. The cost of electricity and gas forced shutting down of more than 110 textile mills, which also created massive unemployment. If the Ministry of Petroleum had focused on exploring indigenous abundant natural gas reserves, the textile industry would have added \$11.9 billion in the form of additional exports, which would also have created three million more new jobs.

Solution- Domestic Oil & Gas Production

Pakistan's E&P sector has a long history but it is one that has been challenged on many fronts. The biggest challenges have been the petroleum policies. Unfortunately, poor policy formulation and implementation, as well as lawlessness in resource-rich provinces have reduced global investment interest in the sector. As a result, proven natural gas reserves have declined by 25 percent over the past decade.

The E&P sector can improve the economic outlook of Pakistan in two ways. Achieving self-sufficiency in the oil and gas industry would allow Pakistan to create more jobs and facilitate access to affordable energy rather than resort to importing it. Secondly, self-sufficiency in Oil and Gas production would create an energy market that could bring money into the country rather than to siphon it off the country.

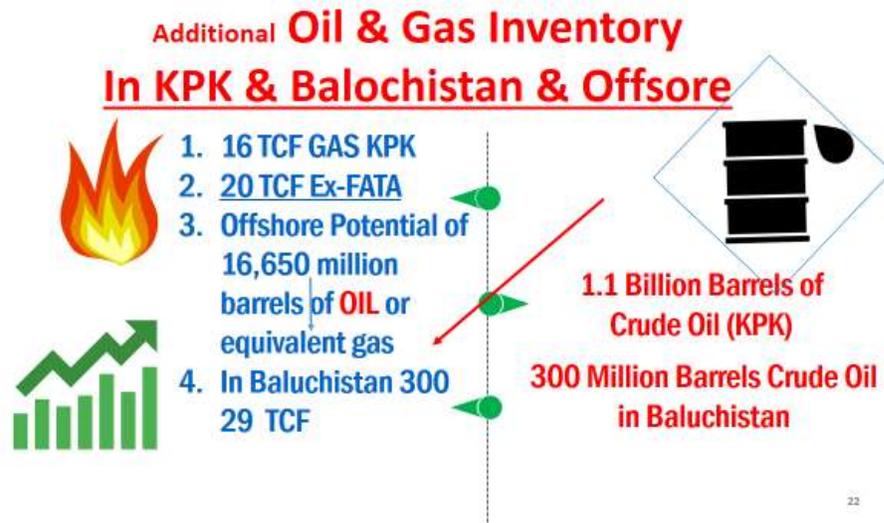
After assessing the domestic Oil & Gas potential carefully, it can be argued without doubt that DOMESTIC OIL & GAS PRODUCTION is the most viable and effective solution for addressing the economic crisis and massive unemployment in the country, which have contributed to conditions conducive to the negative activities of the dispossessed.

The government and the industry together can establish a stable and enduring framework to accomplish this huge task. However, developing the domestic exploration and production sector has a set of challenges. The biggest

challenge is firm commitment on part of the government to withstand pressure from energy import lobby groups with deep roots in the bureaucracy and political parties. Positive steps in this direction include the launching of an investor-friendly hydrocarbon policy offering a level playing field and partnership between the government, service companies and the private sector. These steps are a must in achieving self-sufficiency in Oil & Gas Sector and should be among the first tasks taken up by the new government.

Enormous Hydrocarbon Potential

The domestic oil and gas sector has enormous potential. The balance recoverable reserves of crude oil of the country as on 30th June, 2016 were calculated at 350.632 million barrels. The total oil resource potential is 27 billion barrels while the indigenous production is 86,032 barrels per day. Further, Pakistan as the largest consumer of the gas has a total resource potential of 282 trillion cubic feet with recoverable reserves estimated at 24 trillion cubic feet and production of almost 4 billion cubic feet per day.



The biggest issue in realizing this potential has been a lack of commitment at the national level. As of April 2017, an area of around 361,218.72 square kilometers out of a total sedimentary area of 827,268 sq. km has been under exploration for oil and gas throughout the country. Yet only 27,710 square kilometers located in Khyber

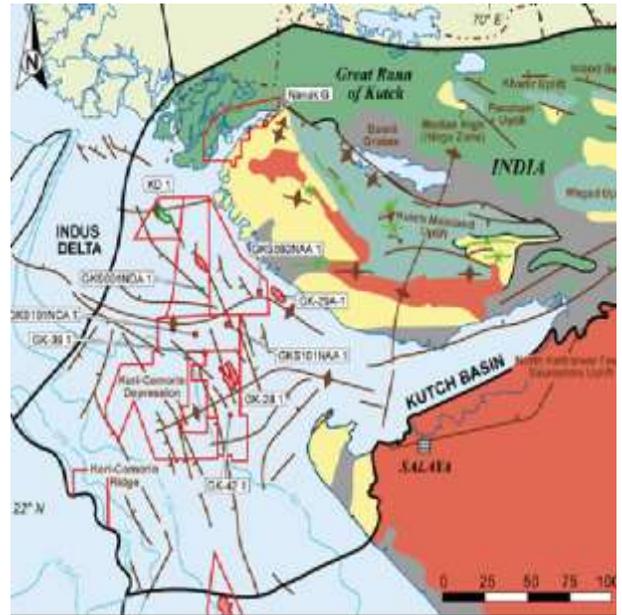
Pakhtunkhwa has been explored. This shows that since independence, only 27% of the area of KPK has been explored for oil & Gas. Recoverable potential in KPK alone is 2 Billion Barrels Oil and 46 Trillion Cubic feet Gas.

In Baluchistan alone, the total proven oil reserves are an estimated 313 million barrels and proven gas reserves are estimated at 29.67 trillion cubic feet. According to another international assessment, Balochistan has 6 Billion barrels of oil in onshore/offshore and 19 trillion cubic feet gas reserves. Building a shale oil & gas industry for the future of Pakistan will generate vast investment opportunities, and shale gas exploration and production may transform Pakistan's economy and revolutionize the existing energy mix within the country.

Untapped offshore potential

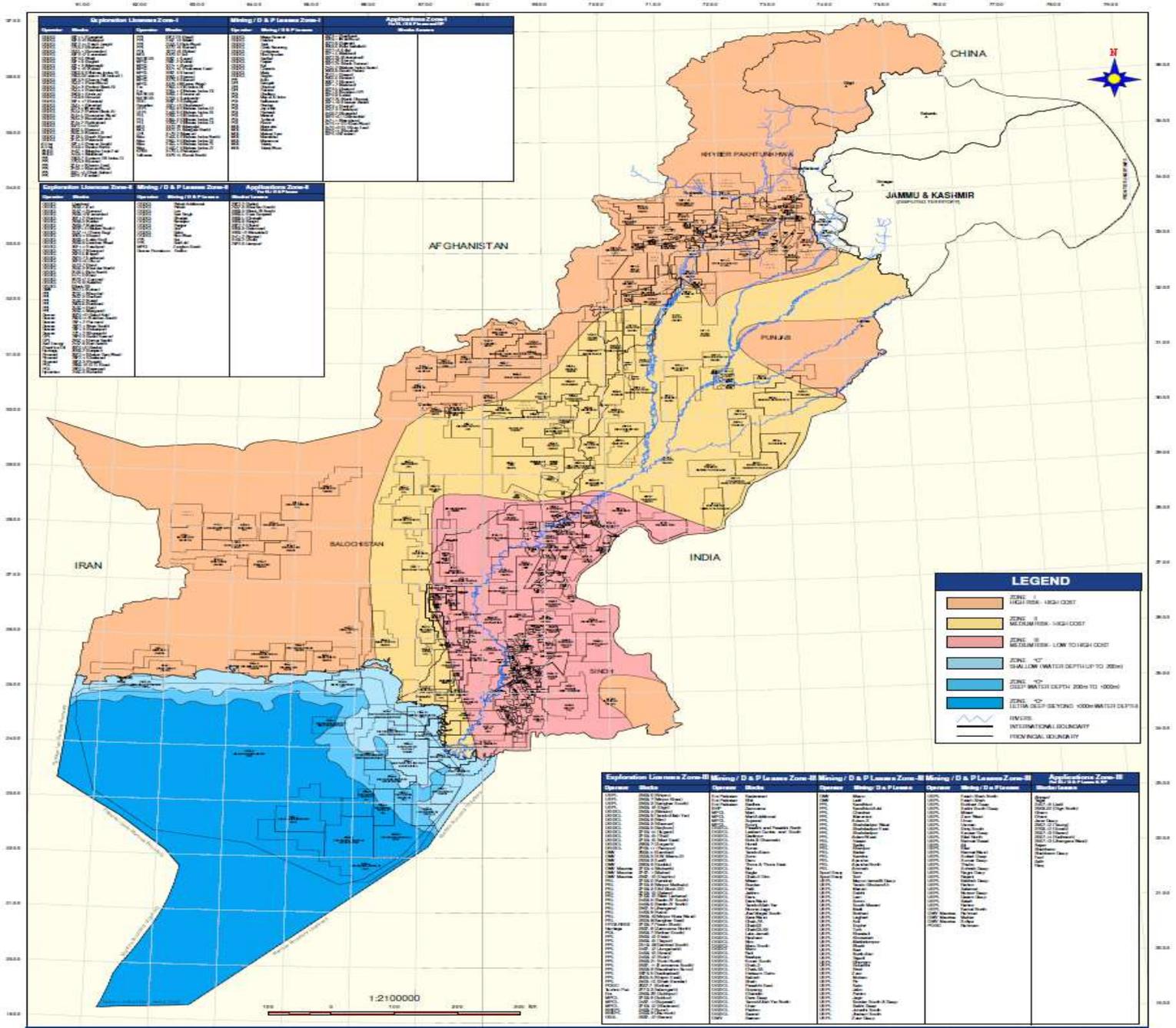
Pakistan's offshore comprises of the Makran coast and the Indus delta, which is one of the largest basins, comparable to world's most prolific offshore deltas such as Niger, Mahakam and the Nile. Geological data is available for the offshore basin but only sixteen (16) exploration wells have been drilled in Pakistan offshore so far and the potential has not yet been identified.

The Kutch sedimentary basin⁵, which is a part of the Indus Offshore Basin, is becoming another source of oil & gas production for India. The Kutch offshore is a shallow water acreage where Indian state-run oil & gas exploration company, ONGC has completed appraisal process and moved on for development of resources in 2017. ONGC has reportedly discovered 550 million barrels of oil, more than one trillion cubic feet (tcf) of natural gas in the Kutch offshore basin and is trying to bring it into production in 2-3 years.



⁵ International Energy Statistics – EIA, World Energy Statistics Global Energy ..., OECD Library | World oil statistics, Crude Oil Production Statistics, United Nations Statistics Division– Global Industry Report

Prospectivity Zone Map - April 2018



KPOGCL – A Success Story

KPK, a province badly hit by terrorism, the Provincial Oil and Gas Company KPOGCL (Khyber Pakhtunkhwa Oil and Gas Company Limited) boasts a unique success story. Law and order was one of the biggest hurdles in extracting Oil & Gas in KP, whereby all Oil and Gas exploration activities were stagnant in KP after the onset of the Taliban insurgency from 2006. In this hostile environment, KPOGCL established an innovative foolproof security model by collaborating with Pakistan Army and other security agencies. KPOGCL also set-up a cost-effective '**Single Window Facilitator**' Cell for other national and international Oil & Gas exploration companies by offering services such as Survey Design & Modeling, Seismic Acquisition, customized Geophysics Software, Geological Services among other relevant Services.

Although KPOGCL started operations from scratch in Jan-2014, within a short span and in receipt of only limited funding, the company managed to achieve remarkable results. With the rigorous efforts of KPOGCL, the province became the epicenter of oil and gas activities in Pakistan in such short span and also created an enabling environment for other national oil and gas companies by facilitating them with a detailed valid security plan and other allied services.

The National Oil and Gas Development Company Limited (OGDCL), the market leader in Pakistan and MOL Pakistan Oil & Gas Co, both companies responded to these conducive environment took the production of Oil in KP from 30,000 BPD (barrel per day) in 2013 to 54,000 bpd by Jan-2017. A remarkable 70% increase compared to 9% increase in Punjab and 4% decline in Sindh. KP is producing almost 55% of indigenous due to innovative business model introduced and implemented by KPOGCL.

Similarly, KPK also displayed phenomenal increase in production of Natural Gas and LPG because of this strategy and one window facilitation by KPOGCL. A number of Petroleum Blocks, dormant since 2006, were reactivated by E&P companies and investors, due to KPOGCL's model. Now, KPOGCL has set a realistic target of Oil production of 200,000 bpd, gas production of 2,000 MMCFD and LPG production of 3,000 tons per day by the year 2025.

Key Lessons Learned from KPOGCL- Services & Security Model

- KPOGCL set a Security Model, that can be easily replicated in EX-FATA and Baluchistan to explore Oil & Gas.
- KPOGCL rolled out the red carpet by offering services for international and national investment in the oil and gas sector, especially by removing red-tape.
- Transparency is a key to drawing FDI. Thus, institutional transparency in KP-KOGCL attracted international oil & gas companies like Rosgeo (Russian), Halliburton (largest service company), CCK, Jereh and Eriell Oil Field Services to invest in KPK.
- KPOGCL changed the socio-economic conditions of Oil & Gas producing districts of Kohat, Karak & Hangu. In 2014-15 alone, a sum of PKR 1.88 billion was released for infrastructure development, which contributed significantly to the elimination of terrorism in these districts.
- KPOGCL successfully demonstrated that oil & gas exploration in troubled areas, such as KPK, is a reality that can be achieved using innovative models and strategies to attract national and international support.

The Rajasthan- Oil & Gas Production Hub for India



On the map of petroleum producing states, the Indian State of Rajasthan was till recently in 2009-10 a backward state with vast stretches of desert. However, Western Rajasthan gained prominence after the discovery of oil by NOC of India which currently produces 175,000 barrels of oil per day (bpd). The basin, especially the Jaisalmer Basin has resources with a potential of 7.8 billion barrels. NOC of India (Cairn) plans to invest an additional \$ 5.4 Billion to increase its production to 5 bpd. The same company plans to drill more than 450 wells over the next 3 years along the Pakistani border.

While the Oil & Gas Explorations companies of Pakistan has not been active in the area close to the Indo-Pak border, Tatot Block of Rajasthan which is only at 10 kilometers from the border will soon become a major oil field for India. As we are not exploring and producing oil & gas in districts Sanghar, Sukkur, Ghotki, Kasur, Bahawalnagar and Rahim Yar Khan, the question arises as to whether ‘our oil and gas migrating to the Indian-side?’ Indeed this should be of primary concern to the PM, MOD, MOF & Ministry of Petroleum.

Shale Oil & Gas potential

In terms of total technically recoverable shale gas reserves, Pakistan stands 19th in the world. It has about 205 TCF technically recoverable reserves. In the USA and Canada, the daily production of Shale Gas is 32 BCF and 4 BCF, whereas in China and Poland, despite heavy utilization, the production is 600 and 150 million Cubic Feet per day respectively. In India, two oil & gas giants failed to unlock shale gas mainly because of the complex geology and the lack of accurate data.

However, the comparison of imported LNG and the cost of unlocking shale serve as the illogical basis for a campaign against shale gas exploration. These arguments reflect an ignorance of basic concepts of energy security and the importance of the national economy and jobs creation. The most glorious advantage of shale gas are large-scale employment opportunities for skilled and semi-skilled Pakistanis. SDPI report on **“Shale Oil & Gas: The Lifeline for Pakistan”** launched in 2015, highlights the need and importance of developing shale oil and gas resources in Pakistan. The research report has been compiled by utilizing all the available data and has been endorsed by all engineering universities and academia. The expected challenges in exploiting this resource and strategies to minimize the chances of failure have also been discussed in detail. It sketches a complete framework for initiating the exploration process and also highlights the potential to generate economic activity and benefits that can be accrued to thousands of Pakistanis.

The report suggests that the development of shale oil & gas may be sufficient to fulfill the gas and oil demand for the next 50 years. Achieving this self-sufficiency through the development of these resources, the country would be able to eliminating the trade deficit. It also looks at the strong nexus that exist between energy and employment generation. The report suggests that the development of shale oil and gas is more labor intensive as compared to conventional resources, especially during the drilling phase, which can accommodate both skilled and semiskilled laborers. It is estimated that around 750,000 jobs would be generated during the exploration of shale oil and gas, thus offering sustainable livelihoods in least developed areas. KPOGCL being in the forefront of shale gas has found two 'SWEET SPOTS' but lacks funding support from the Government of KP.

Lifting people above the poverty line and bringing in socio-economic development with the least environmental footprint has to underpin all development initiatives. The youth bulge that Pakistan possesses has to be a shareholder in the dividends if it is not to become a liability for the future. The resource constraint that has led to the large number of out of school children has to be removed by channeling the revenues from such investment to equip them with the skill set needed to access job opportunities in such projects.

Pakistan has to align its development paradigm to meet the 17 SDGs it has committed to meeting. Long gestation projects of the oil and gas sector afford the opportunity to sustain growth in a manner that enables the country to spread the benefits of opportunities equitably. The example of the turn around in areas where the investment in the people through the revenues of the sector are proof that the policy measures can strike at the nexus of poverty-crime-extremism.

The resource rich areas unfortunately suffer from one or the other or all of the three mentioned ills. A focus while wearing a development lens rather than just a resource extraction-revenue generation lens will have to be there if a restive elements are to be made stakeholders in the development of the area. This alone will bring in the confidence of the investors as the world too demands stringent adherence and compliance with shared development targets.

Other than this, we must bear in mind that a lot of work has gone in in determining causes of violence and extremism and certain measures have been identified as a CVE or Countering Violent Extremism measures.

UN OBLIGATION JOB CREATION TO PREVENT VIOLENT EXTREMISM

Global Counter-Terrorism Strategy opted by UN as a Plan of Action to Prevent Violent Extremism opted by General Assembly on 24 December 2015 on Page 7, explicitly says that "Countries that fail to generate high and sustainable levels of growth, to create decent jobs for their youth, to reduce poverty and unemployment, to improve equality, to control corruption and to manage relationships among different communities in line with their human rights obligations, are more prone to violent extremism and tend to witness a greater number of incidents linked to violent extremism. Citizens may consider weak development outcomes as confirmation of the lack of a government's legitimacy, making state institutions less effective in responding to violent extremism when it arises. The absence of alternative employment opportunities can make violent extremist organizations an attractive source of income"

Key issues limiting growth and development of oil and gas industry

Almost two-thirds of Pakistan's highest-potential lands may have yet to be explored to any considerable degree. The petroleum industry is truly global, and major investments tend to occur where the risks and rewards are believed to be the greatest. Opportunities in Pakistan are unfavorable. Ambiguous petroleum policies and overregulation are the main hurdles. Exploration and appraisal activities in the country are very limited due to the absence of secure access and hostile environment in hydrocarbon high potential areas of Balochistan and Ex Federally Administered Tribal Areas (FATA) of Khyber-Pakhtunkhwa.

The Petroleum Policy 2012 is up for review as section V clause 12.5 of the policy clearly stated that "this policy may be reviewed by government of Pakistan after 5 years." However, the obsolete petroleum policy has not been revised so far, although KPOGCL had sent a summary to CCI some 6 months ago only to find no help from the Federal Government.

The differences between the federation and provincial governments on the integration of the 18th Amendment into the Constitution have hindered oil and gas exploration. This resulted in a complete halt on exploration activities from 2014 onwards, and the major multinational companies in the sector left the country. Three of the provinces rich with oil and gas deposits, Sindh, Khyber Pakhtunkhwa and Balochistan are unhappy that not a single exploration block has been offered for bidding over the past five years under the Petroleum Policy 2012.

The 18th Amendment allows provinces to exercise joint, equal and individual management and control over oil and gas reserves inside their respective boundaries and a review of the federal government's petroleum policy that they claim is 'stagnating investments' is therefore warranted. The provinces allege that key players at the Centre are intentionally holding back on domestic exploration to pave the way for imported LNG.

According to Board of Investment (BoI) figures, foreign direct investment in oil and gas sector has declined since 2013. FDI in oil and gas sector was \$502 million in 2013-14, whereas it declined to \$73.9 million (July-November 2017). While KPOGCL made all efforts to bring in investment to start exploration and development work in eight blocks in the province which have immense potential for increasing KP-GDP from USD25bn to USD125bn by 2025 through oil and gas production, the reluctance of the Ministry of Petroleum has obstructed exploration activities. The new Federal Government needs to create synergies with the provincial governments to achieve and build on the successes of KPOGCL.

In this bleak scenario, only a new innovative policy that is favorable to attracting, retaining and leveraging investment for oil & gas exploration can change the foreign investment in E&P sector to make Pakistan self-sufficient in oil & gas. Given that Pakistan has slipped back three places on the World Bank's Ease of Doing Business Index and is now ranked a lowly 147th amongst 190 economies, the issues highlighted below also negatively impact the E&P sector:

- The passage of the 18th Amendment has created a new level of regulatory uncertainty within the industry. In Article 172, a new Clause (3) has also been added which states that "*Subject to the existing*

commitments and obligations, mineral oil and natural gas within the province or the territorial waters adjacent thereto shall vest jointly and equally in that province and the Federal Government". The aforementioned amendments, which are all about devolution have accordingly enhanced the rights of ownership and management of the provinces in respect of oil and gas. The lack of clarity on this issue is another reason that concession awards have not been finalized, and is a contributor to a general gas industry drilling slowdown.

- During 2017, deliberately provincial rhetoric over 18th Amendment was fueled, paving the way to import LNG. Otherwise provincial concerns over additional burdens of taxes, permits, and permissions could have been addressed amicably.
- Another challenge to attracting increased foreign capital and technology from service providers to oil and gas operating companies is the Policy. The overarching challenge in E&P is the lag in starting a business in oil & gas exploration, law & order, absence of service industry, lack of enforceable contracts and difficulty of obtaining construction permits.
- There are many obsoletes and uncertain points in the Petroleum Policy 2012, implementation timelines as well as tax regimes.
- The Petroleum policies, particularly Policy-2012 leads to an attitude of "government knows best," with bureaucracy, patronage, and favor, demonstrating partiality towards Public-sector units.
- Ministry of Petroleum failed to provide infrastructure, such as educational institutions, hospital, roads, and culverts in areas where oil and gas is produced. Nor did the Ministry develop a transparent mechanism to distribute legitimate benefits as perceived by local communities. This is a hard fact that very little benefit was passed on to those inconvenienced the most by petroleum operations.
- The bad precedent set by the Ministry is another reason for low level of exploration in Balochistan.
- Poor dispute resolution process causes cases to get stuck in the judicial system for years, even decades.
- The lack of market scale is another challenge, with poor economic underpinnings vs energy security as a strategic driver for expanding production. The formulas in petroleum policy for well-head price tacking with crude oil price is another barrier in attracting international investors.
- Slow market reform in Pakistan over the last couple of years has limited investment.
- Ineptitude of national oil & gas Regulator sends poor signals to international investors. The Regulator needs a professional management team to run the Ministry of Petroleum.

Road Map toward Self-Sufficiency

Self-sufficiency in the oil and gas industry will allow Pakistan to create more jobs and access to affordable energy rather than relying on imports. Secondly, self-sufficiency in oil and gas production will create an energy market that will bring money into the country rather than sending money out of it. However, this is only possible if the Federal government takes appropriate legal, fiscal and regulatory steps to create a more attractive environment for foreign investors such as streamlining the license approval for upstream oil and gas exploration and promoting joint ventures. Climbing up the Ease of Doing Business scale would be one way of restoring investor confidence, and facilitating the processes.

To achieve the target of self-sufficiency, the Exploration & Production sector must be driven by a more open and progressive policy. The Federal Government needs to introduce a fresh Hydrocarbon Exploratory Licensing Policy (HELP) to enhance transparency and reduce administrative discretion to achieve self-sufficiency at the earliest. HELP will not only set a new direction in overcoming challenges in the E&P sector but also transform the whole ecosystem. HELP can make significant inroads into attracting new capital.

The uniform licensing policy of HELP must enable the Companies to explore conventional and unconventional oil & gas resources including Shale Oil & Gas, CBM and tight gas under distributed licenses. The concept of Open Acreage Licensing Policy (OALP) must be introduced to enable E&P companies to choose the blocks from the designated area. To attract new investment, the policy must be framed in line with a “Ease of Doing Business” strategy, as well as to create a level playing field for IOCs and new entrants with the NOGECs along with certain incentives to NOCs and PHCs for opening new horizons.

To spur growth of domestic production and attract new entrants, the government must initiate new investor friendly policies. The new Hydrocarbon Exploratory Licensing Policy (HELP) must act as the vehicle for a transition from government control to government support in the E&P sector. Based on a review of investor-friendly policies of India, Australia, Brazil and other African countries having oil & gas potential, some suggestions for a new policy and strategy are being reiterated:

- Distribution of the authority to grant licenses across hydrocarbon types, including Conventional and Unconventional Oil & Gas Sources.
- Delineation of a market oriented approach with companies given marketing and pricing freedom.
- Introduction of an Open Acreage Licensing Policy (OALP) to allow companies to seek permission to explore any block.
- Replacement of the policy for cost-recovery based production with ‘sharing to revenue’ if companies desire so.
- HELP as the new policy must allow companies the freedom to market and price their production without government intervention under the Constitutional provisions.

The new government must develop a business environment wherein policy, tax regimes and the judicial systems are viewed as stable and performing in a neutral and just manner so as to further loosen the grip of government entities on the sector. To achieve self-sufficiency in Oil & Gas Production, the government should seek to accelerate appraisal of sedimentary basins to maximize Exploration and Production (E&P) in minimum lead-time. The suggestions for greater energy self-sufficiency and some related steps are summarized below.

Revamping National Oil & Gas Exploring Companies (NOGEC)

National Oil & Gas Exploring Companies, such as POL, OGDCL, PPL, and others are playing an important role in supplementing the country's energy security, and initiatives to strengthen and empower the NOGES must be undertaken as suggested below:

- Strengthening of Board of Directors’ governance with greater accountability and autonomy. The Boards should also be strengthened through the presence of credible and honest experts without any political

interference. Instead of interacting with 6 Chairmen of Board of Directors of 6 Companies, the Honorable Minister may interact with one person only.

- Complete financial and operational autonomy in decision making must be conferred on NOGES. Install same person as Chairman of OGDCL, PPL, GHPL, PARCO & SNGPL/SSGCL.
- Give Targets to 1 person and hold him accountable for 6 Companies.
- Also having different Chairmen will cause lack of coordination between these companies, which has been a major cause of low oil & gas production.
- Cabinet via PM/Ministry of Petroleum is competent to appoint Chairman of Board and CEO/MDs.
- Reviewing of the current oversight and control mechanisms for NOGES san-bureaucrats and various and Parliamentary Committees must be undertaken in the light of international best practices.
- Empower the NOGES to hire and retain the best-in-line global talent based on right man for right job.
- Provide greater autonomy to the NOGES in accordance with global best practices.

Initiation of OALP in the shortest possible time-The OALP (Open Acreage Licensing Policy) should be initiated as soon as possible at the earliest with launching of HELP (Hydrocarbon New Exploration and Licensing Policy). This measure will enable the offering of blocks round the year instead of waiting for the bidding rounds.

Independent Upstream Regulator- At present, the multiple roles of government as policy maker, regulator and operator lead to conflicts of interest and dampens investor confidence in the sector. This creates the need for an independent and transparent regulatory mechanism. Therefore, the Directorate General for Petroleum Concessions (DGPC) should be transitioned to become a policy wing while the regulatory portions of it need to be transferred to OGRA under the policy guidance of the Council of Common Interest (CCI) and administrative structure of CCI Secretariat.

Setting up of Global Partnerships for National Oil & Gas Exploring Companies

There is a dire need for global R&D initiatives through partnerships that help to bring together complementary capabilities and resources to promote basic research in the country in upstream E&P. Applied research should be undertaken by the OIL & GAS companies with global collaboration to resolve the key issues or challenges facing the industry.

Strengthening of industry-academia linkage

Fostering collaboration between the industry and academia is one of the most effective way of addressing the supply gap for manpower. Energy Excellence Centers at NUST and UET Peshawar, Departments of Petroleum of UET Lahore, NED Karachi should strengthen their industry linkages. The Hydrocarbon Sector Skill Center of OGDCL must open the doors to talented candidates so as to enable development of a skilled workforce for the oil and gas sector.

Replication of KPOGCL model in former FATA & Balochistan

KPOGCL Model can be replicated in both Ex-FATA and Balochistan to explore and produce Oil & Gas. For example, in upstream operations, ICTs and related technologies may provide possibilities for expanding proven crude oil reserves, improving the rate of crude oil extraction from existing wells and for providing further means to discover new wells. Pakistan is heading towards ICT enabled State as the emergence of IT systems, internet penetration, 4G services have created opportunities to use ICT to control, surveil and monitor Exploration and Production activities remotely.

Short Term Strategy to Produce Oil & Gas

1. Launching of New Hydrocarbon Exploration and Licensing Policy in two months
2. Increase Gas Production by 400 mmcf/d in next 3 months by uncapping discovered wells (200 mmcf/d) and reducing leaks (200 mmcf/d). This action will save PKR 150 Billion annually
3. Increase Oil Production by 2,500 barrels/day in next 3 months by uncapping discovered wells.
4. Bidding through existing Petroleum Policy for 41 Petroleum Concession Blocks before 10-Sept-2018 thus creating **40,000 jobs**.
5. Start work in 20 Petroleum Blocks before 1-Nov-2018 thus creating **20,000 jobs**.
6. Oil production can be increase from 84,000 to 150,000 Barrels per day in next 2.5 Years.
7. Gas production can be increased from 3,900 to 6,000 mmcf/d in next 3 Years.
8. Increase Crude Oil refining capacity from 20 to 35 Million Tons per year thus creating 5000 permanent jobs and 7000 temporary construction jobs.

Conclusion

The dream of self-sufficiency originates from the possibility of double rewards. A scenario of 100% of the domestic requirement met by domestic production is projected to generate an additional value of at least \$18 billion. The benefits that accrue to the economy would, however, be even higher if we consider the perceived gains in terms of foreign exchange savings through import substitution, leading to a better trade balance.

The path ahead is to capitalize on the initial optimism generated through the change in political leadership expected to help Pakistan start afresh free from the legacy of corruption and successive economic fiascos over the decades that have crippled it as a country and as a nation.

In this context, Hydrocarbon Exploration Licensing Policy (HELP) represents a new paradigm for a cooperative framework for the Oil & Gas Exploration & Production ecosystem. The actions for converting the dream of self-sufficiency into a reality can hardly be delayed. KPOGCL in Pakistan and StatOil in Norway and Petrobras in Brazil have demonstrated that it can be achieved and that it is possible!

The new government is urged to put self-sufficiency in oil & gas production at the top of its agenda and to declare it a National Mission. Neglecting to do this would not only mire it more deeply into circular debt but also exacerbate the already devastating ramifications for economic, as well as social solvency of our nation.