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Fund-raising for Energy Projects in Pakistan

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Acronyms

ADB	Asian Development Bank
AFD	Agence Française de Développement
ANC	Al-Nakhra Company
CASA	Central Asia South Asia
DISCOs	Distribution Companies
ENI	Ente Nazionale Idrocarburi
FO	Furnace Oil
FPCCI	Federation of Chambers of Commerce and Industry
GDP	Gross Domestic Product
GENCOs	Generation Companies
GIDC	Gas Infrastructure Development Cess
HSD	High Speed Diesel
IGI	Industrial and General Insurance
IMF	International Monetary Fund
IPPs	Independent Power Producers
IPR	Institute for Policy Reforms
IRG	International Research Group
JICA	Japan International Cooperation Agency
KESC	Karachi Electric Supply Company
KPMG	Klynveld Peat Main Goerdeler
MMBTU	Million British Thermal Unit
MMCFD	Million Cubic Feet Gas per Day
MSW	Municipal Solid Waste
NEPRA	National Electric Power Regulatory Authority
NTDA	National Transmission Dispatch Authority
NTDC	National Transmission and Despatch Company Limited
OEM	Original Equipment Manufacturer

OSEC	Office Suisse d'Expansion Commerciale
PBC	Pakistan Business Council
PEPCO	Pakistan Electric Power Company
PKRs	Pakistani Rupees
PML-N	Pakistan Muslim League - Nawaz
PPIB	Private Power & Infrastructure Board
PPL	Pakistan Petroleum Limited
RPPs	Rental Power Plants
SROs	Statutory Regulatory Orders
TAPI	Turkmenistan-Afghanistan-Pakistan-India
T & D	Transmission and Distribution
TOE	Tons of Oil Equivalent
WAPDA	Water and Power Development Authority
WB	World Bank
USAID	United States Agency for International Development
VTT	Voice Tel Tech.

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Abstract

This paper reviews the investment situation in energy sector of Pakistan. Using secondary data sources, official documents and pledges by development partners, we have made an attempt to provide some estimates of prevalent investment, barriers to future inflows, and reforms required to lure investment in this sector so that energy security may be ensured in the country. Currently, investors are shying away from the energy sector due to fragmented energy governance, low revenue collection, transmission and distribution losses, etc. The role of fiscal policy in promoting investors for energy security in Pakistan needs to be quickly revisited. Key reforms should be (a) FBR may be asked to look into the 'unbalanced' slabs of corporate taxation in case of foreign versus domestic investor, (b) the part of the Finance Act 2014 that discourages the renewable and alternative means of energy generation should be removed, (c) business community should be taken into confidence regarding the utilization of GIDC proceeds, (d) processes and procedures involved in the import of petroleum products particularly for raw material should be rationalized, and (e) the issue of untargeted, hidden and cross subsidies in energy sector should be resolved.

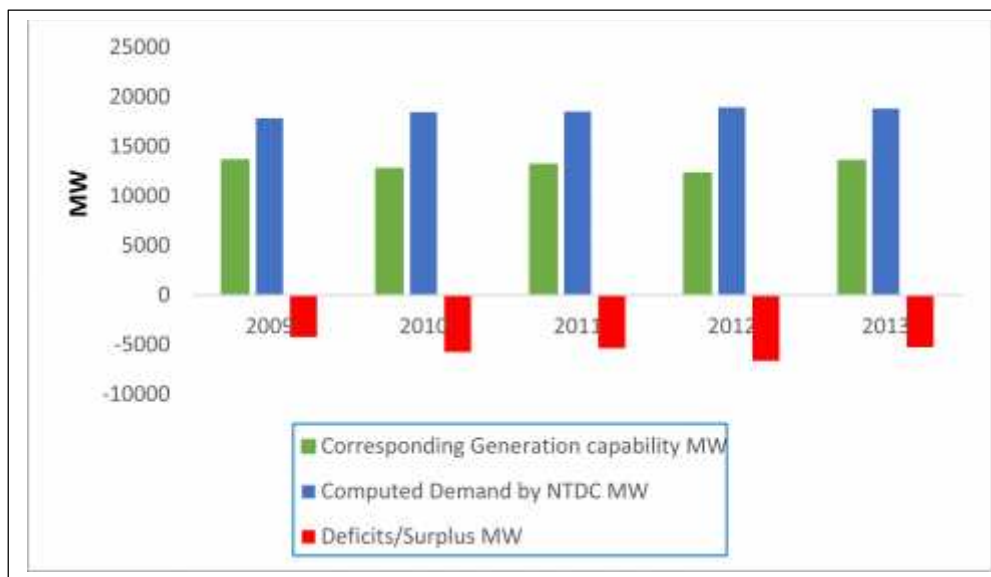
1. Introduction

Pakistan faces lingering energy crisis due to the poor generation capacity, rising demand for oil and gas, system losses, untargeted subsidies, and lack of an overarching integrated energy policy. It has been estimated that malfunctioning in power sector is resulting in a 4% GDP loss annually (Sattar 2013). In order to alleviate these woes, the PML-N government, after assuming power in 2013, announced a number of energy projects under its new power policy 2013. However, the financing of many such projects still remains a substantial challenge. The power sector's total investment had declined by 9.1% in 2013. The share of this sector in GDP had also declined from 2.4% in 2011-12 to 1.9% in 2012-13 and 2013-14 (Ministry of Finance 2013a).

Currently, the country is not able to produce the required energy demand (Fig. 1). With 22,158 MW installed capacity averaging almost 18,000MW, the short fall stands at 5000-7000 MW per day (NEPRA 2013). It may be mentioned that 30 per cent of Pakistan's population has no access to the formally supplied power (Mills 2012). If this segment of the population has to be serviced, the officially estimated demand will actually be a number greater than 7,000MW.

Though the newly-initiated projects could lend about 5094MW by the end of 2017-18, this additional supply will again be passing through an inefficient power transmission and distribution (T&D) network. Around a quarter of generated power is lost during T&D; this includes power theft. The National Transmission and Despatch Company (2008), in a load forecast report, mentions that the electricity demand will rise to 35,000MW by 2017-18. Pakistan will be facing a shortage of about 7,748MW, even if the government succeeds in adding 5,095MW along with operating at full installed capacity of 22,158MW.

Figure1: Persistent Demand and Supply Gap



Source: NEPRA (2013)

The pricing and tariff structure in the energy sector needs to be revisited. The power sector received PKR 22-24 billion in subsidies per month till June 2014, which had been increased to PKR 35 billion in the month of Ramazan during 2014 (Kiani 2014). About PKR 1.7 trillion is the total amount of subsidy given to the power sector over the last one decade, i.e. from the year 2003-2013 (Ministry of Finance 2013b). Subsidizing the power sector is an ineffective and fragile policy that benefited the select power generation entities and larger energy sector entities of the country. A very less amount out of the total subsidy was actually targeted for the poorest of the poor whose consumption is under 100 units. Even key exporting industries having a large concentration of small and medium enterprises were deprived of power at subsidized rates. The hidden and cross subsidies are also resulting in a loss to the exchequer.

Pakistan is now under a stand-by balance of payments support program, which demands of the government to remove untargeted, hidden and cross subsidies. Under this program, Pakistan has committed with the IMF a reduction in subsidy outlay. Already a reduction of PKR 60 billion had taken place by August 2014. Moreover an equalization surcharge² has also been levied on industrial and commercial consumers. The amount collected after imposing the additional surcharge on the commercial and industrial consumers will be used to pay the circular debt of the power sector i.e. PKR 239 billion and its markup.

In the absence of structural reforms in energy sector, the circular debt reappeared after the government had cleared the previous stock of PKR 500 billion in July 2013. One of the key reasons why circular debt increased was due to 18.5 per cent of the natural gas diverted to fertilizer sector. This led to a reduction of natural gas supply to the power sector by 8% contributing PKR 239 billion to the circular debt (Institute for Policy Reforms 2014).

In 2012, Pakistan's indigenous energy availability was 65,639 thousand tons of oil equivalent (TOE) with 64,588 thousand TOE as a primary energy supplies, implying a 2% loss of energy during conversion procedures. In 1995, Pakistan's total energy supply was 28 million TOE with main sources as oil (41.6%) and gas (36.8%). Though, the energy supply has increased, but the pattern of primary energy sources has also changed. The share of gas has increased to 48.2% while oil decreased to 32.5%. This shift in energy source from oil to gas is due to a general rise in oil prices globally. Gas being a domestic source was found easy to subsidize.

Electricity is secondary source of energy, obtained by converting primary sources like gas, oil, coal, nuclear and other natural resources. The share of electricity in energy supply during 2013 was 12.9%. The total installed capacity of Pakistan Electric Power Company (PEPCO) was 22,812 MWs in June 2013 with major contribution of 6,773 MW hydroelectric power followed by thermal with 15,289 MW and nuclear power of 750 MW.

² *Price equalization surcharge* is an additional duty levied for equalization of prices of certain goods imported at different prices under different conditions and from different countries under section III of 1967 Act, also called "The Import of goods Act 1967"

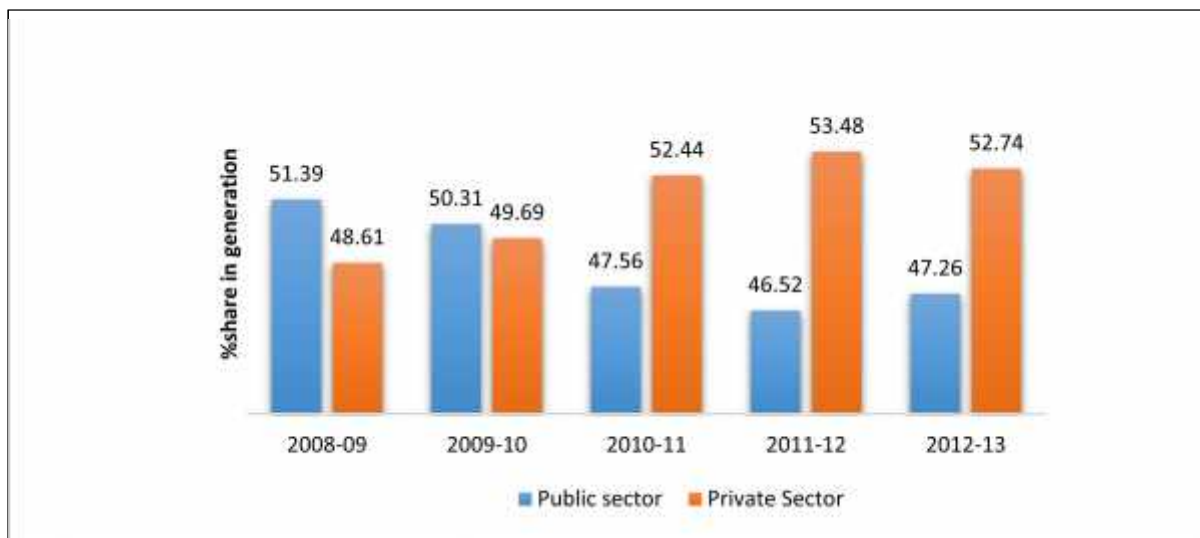
During the fiscal year 2012-13, total energy of 98,894 GWh was generated in the country, with high share of thermal electricity generation (64%),-followed by hydel (30%), and nuclear (4.2%). The alternate modes of energy generation are still accounting for a low contribution. For example the share of wind power was 0.03%. The increased use of thermal energy generation has depressed the country's scarce financial resources. Around 65% is thermal electricity generation based on high speed diesel (HSD) and furnace oil (FO). Efficient and relatively cheap source of hydel seems out of sight. The share of public sector in total electricity generation shows a decreasing trend, while private sector is increasing. Electricity generation by-type and sector during 2009-10 and 2012-13 are given in the following table 1 and figure 2.

Table 1: Energy Generation by Source (GWh)

Source of generation	2008-09	2009-10	2010-11	2011-12	2012-13
Thermal	64978	68606	65462	65298	64681
a. Public	19520	19594	13018	12893	13235
b. Private*	45458	49012	52444	52405	51446
Hydel	28183	28492	31990	28652	30032
a. Public	27636	27927	31685	28207	29326
b. Private	547	565	305	445	706
Nuclear					
a. Public	1486	2668	3130	4872	4181
Total	94647	99766	100582	98822	98894

*includes Import from Iran and K-electric. Source: PSS/NTDC (www.ntdc.com.pk)

Figure 2: Total Electricity Generation by Sector



Source: NEPRA (2013)

In this paper, we will look at the investment demands of the energy sector and how best to raise such funds from domestic and external sources. The objectives of this paper are as follows:

- What are the current modes of investment being pursued by the Government of Pakistan to raise public investment for energy projects?
- How has the government planned to attract private investment in the energy sector?
- What are the challenges and future opportunities in raising investment for energy sector development in Pakistan?

2. Summary Literature:

A number of local studies have tried to explore the relationship between energy consumption and economic growth in Pakistan. Similarly, some studies have also discussed causality between GDP and energy use (Ahmed and Zeshan 2013 and Aqeel and Butt 2001). However, one finds fewer studies on how the changing patterns of public and private investment in energy generation, transmission and distribution have impacted the GDP growth. It is important to recognize that the modes of financing used for energy generation have a bearing on the overall structure of GDP over the medium to long-term. This is also a concern for the multilateral funding bodies and international financial institutions that support the development of energy sector in developing countries.

Current literature also informs us regarding the fair rationale to invest in the power sector of Pakistan as the demand for electricity is outstripping the supply. The Independent Power Producers (IPPs) have a certain long-term tariff structure for 25 years with power purchase public authorities heavily dependent on private production. Any rise in fuel cost or change in taxation pattern will be passed on to the power purchase authorities by the IPPs (Ali and Khaliq 2008). The same report highlights that the power sector's annual average sales growth is 35%, which is above the regional sales growth of 14.8%.

Around 13% of Pakistan's river water flows could be stored and made available for power generation. This again will require fund mobilization in the water sector which has its own regulatory and political issues (Office Suisse d'Expansion Commerciale 2011). The PPP government had considered a strategy in 2008 whereby construction of several small dams could be completed within a decade. Later, it decided to import 19 rental power plants (RPPs). The investment outlay planned to make available 2,734MW of rental power, however only one plant (Kaya Bey-Turkish power) with 62MW against the guarantee to provide 231.8 MW with a diesel based system for five years was made available.

The same study also highlights that the restructuring in power sector (deregulation, privatization, management reforms at WAPDA and PEPCO), running of PPIB, implementation of National Power Regulatory Authority (NEPRA) decisions and various initiatives under the national power policy will require substantial financial resources through domestic and foreign sources.

The investors, however, are shying away due to lack of energy governance reforms, losses and theft during T&D, low revenue collection by distribution companies, persistent circular debt, and higher capital cost of alternative resources like hydro, failure to exploit cleaner coal based generation methods,

and slow progress on import of energy supplies from neighboring countries (Ahmed 2014). The role of state in the energy sector has also been termed ambiguous. The government is controlling import, export, prices and domestic supply quotas. Such a heavy regulation is a barrier to entry for the new investors. There have also been controversies surrounding the privatization of distribution companies, for example K-electric (Abbasi 2012).

KPMG (2013) has reviewed investment in power sector of Pakistan along with the possible opportunities it provides to the investors. The report stated that the government has taken some positive initiatives to produce additional power supply of around 16,800MW by end 2015-16. One of the initiatives is an agreement that has been signed between Baluchistan government and a Korean solar investment firm to install 300MW solar power project in Quetta. A joint venture of construction of a 1500MW hydropower project on Kunar River between Pakistan and Afghanistan was also envisaged.

The same study showed that 135,000 ToE costing US\$ 100million can be saved with the New Bong Escape Hydro Power Project built by EPC contractors of Sambu Construction Company of South Korea. The private hydel power project in Azad Kashmir is expected to generate 84MW of electricity. Pakistan is still struggling to attract similar or higher levels of investment in wind energy for power generation. This report shows that Ghara-Keti Bander wind corridor at Thatta with a potential of 50,000 MW has close vicinity to the national grid and major load cities, which can be made attractive for investors through policy and regulatory measures.

The public private partnership in energy sector is another area which has been discussed in the literature. Munir and Khalid (2012) state that the private sector can deliver its best if power policy fosters a facilitator environment rather than an intrusive attitude by the state. Furthermore, the government's trade and taxation policies should also reflect its seriousness for partnering with the private sector. A key example of discouraging private sector through trade policy was seen in the federal budget of 2014-15 when customs duty was slapped on the import of solar cells and inputs that go into producing such cells.

Investment patterns in the energy sector also impact the mix of factors of production and employment patterns. Ammad and Ahmed (2012) show that in some sectors employment has increased due to public investment in energy while in the other sectors capital has substituted labour due to high level of capital intensity required for complex operations. As the energy sector achieves greater sophistication, improved quality of human resources will be required to manage production and distribution. This implies that public and private investment should also go in to providing higher levels of skills to the labour force involved in this sector. There is also evidence that public sector's borrowing from the banking sector in the country has resulted in crowding out of private investment in general.

We also see some quantitative modeling to forecast investment needs of the energy sector in Pakistan. A policy analysis report prepared by International Resource Group (2011), using an integrated energy model for Pakistan, says that for achieving an annual average economic growth rate of 6% until 2030, electricity generation capacity will have to increase four-folds, implying that around 82,000 MW will

have to be added to the current capacity. A three-fold increase in consumption of petroleum products from 6.2 to 18 million TOE by 2030 will also take place. The natural gas reserves under the business as usual scenario were projected to deplete by 2030. Apart from the investment requirements, this is e paper points out significant annual savings with best policies and practices of energy conservation. PKR 41 billion was the estimated net savings by improving the end-user energy efficiency. Around 20% more gas could be delivered by investing in successful exploration and this could save Rs.37 billion in 2011 prices. Investment in alternatives renewable, e.g.; wind, solar, bio-energy and Municipal Solid Waste (MSW) management could improve energy security and reduce 38% of total energy imports.

3. Investment Support by Multilateral Development Partners

After a threadbare discussion on key multilateral development partners currently financing the Pakistan’s energy projects, it may be mentioned that most of the new projects dealing with enhancing Pakistan’s generation capacity may not be very helpful in improving the lingering governance and management issues in this sector. This is why, the state department’s involvement in this sector still remains. It is only with governance reforms in this sector that the efficiency of new investments can be ensured.

Tables 2 and 3 provide investments carried out through loan facilities provided by the Asian Development Bank and the World Bank group. Most of these are long-term financing projects with secure cash flows once completed.

Table 2: Asian Development Bank (ADB) Energy Projects

Project Name	\$ Thousand	Approval Date
1. Power Transmission Enhancement Investment Program II	\$ 1500	16 Dec 2014
2. Strengthening the Central Power Purchasing Agency	\$1500	3 Dec 2014
3. Trimum & Panjnad Barrages Improvement Project	\$150,000	22 Sep 2014
4. Sustainable Energy Sector Reform Program - Subprogram 1	\$ 400,00	24 Apr 2014
5. Power Distribution Enhancement Investment Program Tranche 4	\$167,200	13 Dec 2013
6. Jamshoro Power Generation Project	\$900,000	9 Dec 2013
7. Power Distribution Enhancement Investment Program Tranche3	\$245,000	14 Dec 2012
8. Capacity Building for Enhanced Safeguards Management	\$550	10Dec 2012
9. Power Transmission Enhancement Investment Program Tranche 3	\$243,240	22 Dec2011
10. Power Distribution Enhancement Investment Program Tranche 2	\$2727	14 Dec 2010
11. Renewable Energy Development Sector Investment Program Tranche 2	\$200,000	13 Dec 2010

Source: www.adb.org

Table 3: World Bank (WB) Energy Projects in Pakistan

Project Name	\$ (Million)	Approval Date
1. Dasu Hydrpower Stage I Project	\$588	10 June 2014
2. IDA Partial Credit Guarantee for Dasu Hydropower Phase I Project	\$460	10 June 2014
3. Power Sector Reform: Development Policy Credit	\$600	1 May 2014
4. Natural Gas Efficiency Project	\$200	26 April 2012
5. Tarbela Fourth Extension Hydropower Project	\$840	20 March 2012

Source: World Bank, Energy Projects in Pakistan, WB, viewed 5 November 2014.

<http://www.worldbank.org/en/country/pakistan>

4. Investment Support by Bilateral Development Partners

This section, besides discussing the possibilities of energy trade with the regional countries especially the neighbouring ones, will discuss Pakistan's bilateral partnerships in energy sector. China leads in this way with a recent approval of 14 power projects and a potential to generate 10,400MW. Ongoing projects include Karot, Taunsa, Kohala, and Bunji hydro-power. The newly-approved projects are: Port Qasim (coal) that would generate 1,320MW, Sukki Kanari (hydropower) 870 MW, Sahiwal (coal) 1,320 MW, Engro Thar (coal) 660 MW, Muzaffargarh (coal) 1,320 MW, Gwadar (coal) 300MW, Quaid-i-Azam Solar Park 1,000MW, United Energy (wind) 100MW, Dawood (wind) 50MW, Sachal (wind) 50MW, Sunnec (wind) 50MW, Rahim Yar Khan (coal) 1,320 MW, SSRL Thar (coal) 1,320 MW and Karot (hydropower) 720 MW. In a second round of investment, China plans to engage with Pakistan in generation of another 6445 MW. Some analysts are though critical about China's engagement in coal-based power generation due to environmental implications for Pakistan.

The United Arab Emirates has agreed to provide an existing power plant with the capacity of 320MW. An agreement has already been established between the Pakistan Electric Power Company (PEPCO) and the Abu Dhabi Water and Electricity Authority since 2009. This will involve 13 gas turbines that will be transported and re-installed in Pakistan. To increase its power generation capacity, PEPCO had planned to transform this into a combined cycle power plant, by installing two steam turbines of a total capacity of 120MW. The project has been approved by the Executive Committee of the National Economic Council in December 2010 but the project is still pending with no further progress in its status (The News 2009 and Dawn 2013).

An MoU was also signed between Ministry of Water and Power Pakistan, Private Power and Infrastructure Board (PPIB), and Al-Nakhra Company (ANC) Holding LLC in March 2014. According to this agreement, two coal based projects with a capacity of 660MW each in Pakistan Power Park at Gadani will be installed by ANC to add 1320MW to the national grid. According to PPIB, total investment of USD2.5 billion will be made and the project will be completed in three years.

From the European Union, French government has been receptive to Pakistan's request in supporting energy demands. The French companies Total and Sun Power Corporation will support up to a 100MW solar power capacity in Quaid-e-Azam Solar Park at Bahawalpur, a district in Southern Punjab. The French firm GDF SUEZ has also constructed 404MW UCH-II independent power plant in Dera Murad Jamali, Balochistan. Similarly Jaggran II hydropower project (with an expected 48MW) in Azad Kashmir at Neelum river is under construction with a soft loan of Euro 68million. The project is expected to be completed by 2016-17, which will cater to the electricity needs of 1.2 million people in Muzaffarabad.

The Government of France has agreed to provide another PKR 8.5bn (USD 86.61m) funding for establishing two hydro power projects, i.e. Mohmand-Munda hydro power project and Harpo hydro power project, 775MW will be generated from these two projects. In the Mohmand Agency of Khyber Pakhtunkhwa province, Agence Française de Développement (AFD) will provide a loan for the Phase-I of 740MW Mohmand-Munda project.

From the European Union, German government and Kreditanstalt für Wiederaufbau³ (KfW) have agreed to provide Euro 20 million for 35 MW Harpo project in Gilgit-Baltistan. In case of alternate energy, AZUR energy group of Germany plans to setup 50MW solar project for Multan and Bahawalpur, for which the feasibility report has been conducted.

The Italian oil and gas company, ENI (Ente Nazionale Idrocarburi), discovered a gas field in Badhra near Karachi with an estimated reserve between 300-400 billion cubic feet. ENI is also the largest foreign producer in Pakistan's exploration and production (E&P) sector since 2000 with an yearly average net production of 54,800 barrels of oil equivalent per day in 2011.

Russia has been a recent entry in the list of countries supporting Pakistan in energy sector. Techno Pro Mexport Russia and Genco Holding Company limited (GHCL) signed an MoU in May 2014 for the rehabilitation and conversion of 660MW at Muzaffargarh Thermal Power Station to coal. The government has decided to privatize the station, however its conversion to solid fuel (imported coal) will also be taken up at a later stage.

From the neighborhood, Iran will build a powerhouse in its Zahedan province bordering Pakistan to export electricity. Iran has also expressed its willingness to provide a loan of USD 800 million for the project. A 1000MW power will be imported under this project and the power transmission will be materialized in a period of four years. A 700-kilometre transmission line of 500 kilovolts (0.5MW) will also be laid from the Pakistan-Iran border until Quetta. Iran has shown its willingness to provide USD 900 million for the project.

The government has already approved USD1.5 billion in January 2013 for constructing the 785 kilometers Pakistan segment of the pipeline with Iran to deliver 750 MMCFD (million cubic feet gas per day). About USD 1 billion will be financed through Chinese loan facility and Pakistan will raise USD500 billion through gas infrastructure development cess (GIDC). The project was expected to be completed by December 2014 but international sanctions on Iran has led to postponing of Iran-Pakistan (IP) gas pipeline project. Despite sanctions Pakistan is already importing 74MW of electricity at Gwadar.

Another possibility being considered by the Ministry of Water and Power is the import of 500MW initially on an urgent basis and 1,200 MW at a later stage from India. The World Bank (WB) has offered to finance the feasibility study and transmission line through Wagah-Attari border. The counterparts in the ministries concerned have met on three different occasions and terms have been decided at fair length. But security mistrust between the two countries has harmed the trade relations. This has partially been the reason for slow progress on Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline since 1995. This 1,680 km pipeline is envisaged to have a capacity of 3.2 billion cubic feet of natural gas per annum from Turkmenistan through Afghanistan and Pakistan up to Pakistan-India border with estimated capital cost revised in 2008 at USD 7.6 billion. Turkmenistan would be the only supplier of gas to Afghanistan. The latter will buy 500 MMcfd and Pakistan will purchase 1,325 MMcfd with India also purchasing 1,325 MMcfd. The first gas flow was planned to start from 2017.

³ KfW is a Reconstruction Credit Institute

Pakistan has also engaged Tajikistan, Afghanistan and Kyrgyz Republic for Central Asia South Asia (CASA) power project through which Tajikistan would export up to 1000 MW of electricity to Pakistan. The total project cost is estimated to be USD 997million and World Bank being the major contributor will grant a loan of USD 526 million. A transit fee of 1.25 cent per kilo watt hour has been finalized for supplying electricity to Pakistan from Afghan territory.

The Ciner Group of Turkey has also agreed to establish a 660MW power plant at Gaddani in February 2014 and offered to start work immediately in Gaddani Power Park. This park was announced by the government in August 2013. Another Turkish company, Limak Group, have completed the pre-requisites for investing in wind energy, coal-fired power plants in Gaddani Power Park in 2014.

An MoU was signed in August 2013 with Qatar for investing in power projects that will generate 6,600MW at Gaddani. China National Power and QInvest Qatar will make an investment of around USD 5 billion for these initiatives. Pakistan will also start importing 500 million cubic feet per day of LNG from Qatar at a cost of 19 dollars per MMBTU. The imported LNG will be provided to the power sector for generating 2,500 MW of electricity. The LNG terminal at Karachi port will become operational from January 2015. In the first year, the government will use 200 MMcfd of the capacity to import LNG and then plans expanding the import volume (Import Facility 2014).

Saudi Arabia provided a loan of USD 100 million for Neelum-Jhelum hydropower project in addition to USD81 million loans for the same project earlier. An USD 40 million agreement has also been signed with Kuwait in this regard.

An MoU between Pakistan and United Kingdom was signed in June 2013 for Kandhkot Gas-to-Power Project to be implemented by Pakistan Petroleum Limited (PPL) and Orion Energy Plc., an oil and gas exploration company based in UK. The power project will be installed near Kandhkot field with an initial size between 25-50 MW. An additional 40-45 MMscfd gas may be allocated to the project by the government in which case the power plant's capacity could be enhanced up to 250 MW. The Oracle Coalfields of UK will invest USD 610 million to produce 5 million tonnes of coal and 300 MW power plant planned for K-electric. The lease for the mine has been agreed for 30 years' time period and can be extendable, if required.

Rame Energy from UK has lined up an arrangement with Pakistan-based engineering company Vital Tech Engineering and Services. In August 2014, Rame's subsidiary, Beco, has signed an MoU with Vital Tech (VTE) to provide off-grid, renewable energy based power supply systems for a variety of applications, which VTE will then install and maintain.

A Norwegian company NBT (Nordisk Bageriteknik) is set to invest in a 500MW wind power project at Thatta with USD 1 billion investment that will cater power demand for the locals in the district. The preliminary studies regarding wind data, environmental protection report and technical studies has been done by the NBT. NEPRA is in the process of finalizing the tariff structure and modalities for this license.

With South Korea, the government has signed three MoUs in energy sector investments in April 2014. Under one of these MoUs, Korea will invest in 100 MW Gulpur hydel power project. Similarly, two Korean firms, Korea Midland Power Company (KOMIPO) and K-Water and Daewoo consortium will invest USD 2 billion for 1,161MW electricity generation in lower Spat Gah hydropower project and Lower Pallas Valley hydropower projects located in Kohistan district of Khyber Pakhtunkhwa.

The United States and Pakistan signed a USD 72 million project agreement to refurbish and upgrade the Mangla Dam located in Mirpur district of Azad Kashmir in March 2014 (Economic Times 2014). The rehabilitation will improve the operating capacity of the hydroelectric plant at Mangla Dam by 90 megawatts (MW), enough electricity for about 119,000 Pakistani households. A total amount of USD 150 million loan will be granted by USAID for the project, with \$72 million allotted for this initial phase. A detail of investments by USAID and Japan is provided below in Table 3 and Table 4.

Table 3: USAID Energy Projects in Pakistan

Project Name	Start Date	Funding (\$ thousands)
1. Energy Policy Project	Feb 2012	33,337
2. Gomal Zam Dam Project	Jan 2011	40,000
3. Satpara Dam Project	Jan 2011	26,000
4. Guddu Project	May 2010	18,068
5. Jamshoro Project	May 2010	18,360
6. Muzaffargarh Project	May 2010	15,193
7. Power Distribution Project	Sep 2010	124,000
8. Tarbela Dam Project	April 2010	16,500

Source: www.usaid.org.pk

Table 4: Japan International Cooperation Agency (JICA) Energy Projects in Pakistan

Project Name	Start Date	Million YEN
1. Energy Sector Reform Program	June 2014	5000
2. Project for Improvement of Training Capacity on Grid System Operation and Maintenance	May 2011	474
3. National Transmission Lines and Grid Stations Strengthening Project	March 2010	23,300
4. Introduction of Clean Energy by Solar Electricity Generation System	2010	480
5. Dadu Khuzdar Transmission System Project	December 2006	3702
6. Punjab Transmission Lines and Grid Stations Project	May 2008	11,943
7. Load Dispatch System Upgrade Project	August 2005	3839

Source: Japan International Cooperation Agency, Energy projects in Pakistan, JICA, viewed 3 November 2014,

<http://www.jica.go.jp/pakistan/english/index.html>

5. Fiscal Provisions for Energy Sector Investments

The private sector independent power producers (IPPs) are generating more than half of the power demand, i.e. around 57% of the total power production at an average of 6168 MW. There are 37 IPPs in thermal electricity generation (27 connected to PEPCO and 10 to K-electric) with 5 of these IPPs in hydel generation and 1 IPP in wind electricity generation.

The energy sector is marred with fragmented energy governance. Around six ministries and substantial number of ancillary organizations are involved in the country's power policy management and regulatory processes. The entry for the private sector is difficult in this sector given the collusive behavior of existing players. Even with certain profits for the existing private power sector entities, it is difficult to expand and raise investment owing to slow progress of power policy implementation and existence of preferential treatment and distortions through Statutory Regulatory Orders (SROs).

In Table 6, we exhibit the loss to national exchequer by the government's concession and exemptions granted in the taxation structure through SROs issued within time period of one year (2013-14).⁴ The sales tax exemption incur a loss of PKR. 249 billion and customs duty exemptions incur a loss of PKR 131 billion annually to the economy. These exemptions are granted to imports from China, Indonesia, Sri Lanka, Malaysia, Mauritius, and Pakistan-Iran and more recently to Pakistan-Afghanistan transit trade along with vendors and OEMs of automotive sector in the country. The exemptions once allowed are rarely revisited.

⁴ Not all of these SROs relate to energy sector, however they do have knock-on effects on all sectors of the economy. A detailed study is still required to assess the impact of energy-specific SROs.

Table 6: Economic loss to national exchequer

Type of Tax	2013-14 PKR Billion	2012-13 PKR Billion
Income Tax Exemptions	96.6	82.3
Sales Tax Exemptions	249	37.4
Custom Tax Exemption	131.5	119.7
Federal Excise Tax Exemptions	20	-
Total	497	239.4

Source: Economic Survey of Pakistan 2013-14

Some key factors responsible for the reluctance of private sector to invest in Pakistan's energy sector are discussed below.

a. Biased Slabs of Corporate Tax Rate

Finance Act 2014 states that 20% corporate tax rate will be charged to foreign investors for a period of five years to set up a new plant. This is in sharp contrast to the local investor, who is being charged at a rate of 33%. For the private sector or business class such concessions can cripple the local industry and reduce incentives for long-term investment by local investors. The position is exactly opposite in India where corporate tax rate is 40% for foreign investors and 30% for local businessmen. Table 7 highlights the prevalent corporate tax rates in different countries.

Table 7: Corporate tax rate comparison with different regions

Country	Tax rate	Country	Tax Rate	Country	Tax Rate
India	30%	Australia	30%	Switzerland	8.5%
Bangladesh	27.5%	Germany	15%	Norway	27%
Uzbekistan	8%	China	25%	Canada	15%
Kazakhstan	20%	Singapore	17%	France	33.3%
Azerbaijan	20%	Russia	20%	United Kingdom	21%
Bhutan	30%	Malaysia	25%	Denmark	24.5%

Afghanistan	20%	Indonesia	25%	Kuwait	15%
Pakistan	33%	Thailand	25%	Oman	12%
Kyrgyzstan	10%	Japan	25.5 %	Saudi Arabia	20%
Sri Lanka	28%	Singapore	17%	Brazil	34%

Source: www.kpmg.com/Global/en/services/Tax/tax-tools-and-resources/Pages/corporate-tax-rates-table.aspx

b. Discouraging Alternate Modes of Energy

Under SRO 575(I)/2006, the government had exempted the customs duty on imports of solar panels and related equipment like photovoltaic modules, solar lanterns, batteries, and inverters to control the energy crisis especially in hot summers when the country's energy demand jumped to around 18GW of electricity.

There is not only 5-10% duty on solar imports, a 32% import duty was also imposed on photovoltaic cells, 10% duty on batteries and 15% on solar lamps (Finance Act 2014). This has sent a discouraging signal to the private sector willing to invest in green technology and alternate energy generation in Pakistan. Such interventions discourage the raw material import of alternate modes of energy.

c. Gas Infrastructure Development Cess (GIDC)

The government has raised the GIDC by issuing SRO 1091(I)/2013. Initially, it was introduced by "Gas Infrastructure Development Cess Act 2011" in 2011 to finance the infrastructure development for the import of natural gas. It was estimated that the government will be able to collect PKR 34 billion under this surcharge (State Bank of Pakistan 1st quarter report 2014).

As per SRO 1091(I)-/2013, the GIDC surcharge on fertilizer sector has been raised to Rs.300 per (MMBTU) from Rs.197/MMBTU, and for power and industrial sector, it is doubled from Rs.50/MMBTU to Rs.100/MMBTU, which was later increased to Rs150/MMBTU through Finance Act 2014. Similarly the GIDC for IPPs has been increased to Rs200/MMBTU.

Under this surcharge of GIDC, PKR 140billion will be generated from the gas consumers (Business Recorder 2014), which can be used to finance the ongoing gas infrastructure projects including TAPI pipeline, Iran-Pakistan (IP) pipeline project and in the development of Liquefied Natural Gas (LNG) project. This increase in GIDC has put the investors in a liquidity crunch, who were already faced with gas shortage issue.

d. Discretionary Powers of Inland Revenue Authorities

Discretionary powers to intelligence and investigation authorities under Inland Revenue with the help of SRO 351(I)/2014 will be a major threat to keep private sector away from investment in mega projects. This would also allow constant intervention of public authorities and rent-seeking activities in the businesses run by private sector. Therefore, the private sector associations such as Federation of Chambers of Commerce and Industry (FCCCI) and Pakistan

Business Council (PBC) should be consulted before arbitrary issuance of such SROs. With their intervention, the revenue collection can be further broadened and new sectors can be brought under the tax net.

e. Monopolization of Energy Supply Chain

After the restructuring of WAPDA, NTDC, under the state control, is the sole buyer of electricity in the country.⁵ The National Electric Power Regulatory Authority (NEPRA), a regulatory authority, was established to promote efficiency and the interest of investors, operators and consumers. It is responsible for tariff structure and pricing mechanism in the power sector. The current scenario indicates that NEPRA has no effective role to stop the unnecessary interventions of the state in the former’s affairs. The private sector in energy generation has no open access in distribution and transmission network in the country; nor are they allowed to sell electricity directly to the consumers.

Box 1 provides a case study from India which has created competition within the private sector but with effective regulation. This has implied certain access of the consumers to both residential and industrial power supply.

<u>India Electricity Act 2003:</u>		
This Act marks the third phase of Indian Power Policy 1995. The Government of India has decided to increase the private sector investment in 1,000 MW power generation projects. The electricity Act 2003 replaced all the existing laws and created well-restructured framework of Indian power sector where special incentives were given to private producers. The three key components of the Electricity Act 2003 include:		
<i>Generation</i>	<i>Transmission</i>	<i>Distribution</i>
<u>Objectives</u> i. De-licensing of generation ii. Captive power policy liberalization	i. Access to transmission and distribution lines	i. Access in phase manner ii. Transparency in subsidy management iii. Penalties for power theft
<u>Impact</u> i. Attraction of more private investors ii. Captive generation Increases	i. Free choice to choose efficient way of power transfer/customer of own choice	i. Reduction in losses ii. All equally benefited iii. Open choice for buyer to choose supplier

⁵ WAPDA and KESC are the two main electric utilities in the country. After unbundling, WAPDA was split into nine distribution companies (DISCOs) and four thermal generation companies (GENCOs) and one National Transmission and Distribution Company (NTDC). All have their own institutional and organizational weaknesses, which are well documented across literature.

f. Liquidity Crunch

In 2013-14, 37 private power producers were involved in thermal energy generation either by consuming petroleum products or natural gas. Under 2002 energy policy, IPPs have to buy fuel on their own for running the thermal plants while in the case of IPPs of 1992 policy, the state will provide fuel to them through Pakistan State Oil or natural gas distribution companies (Fahd & Beg 2007, and Dawn 2014).

The IPPs working under 2002 power policy are not able to sustain their operations if they do not make payments to the fuel suppliers (otherwise they have to stop their production). However under 1992 power policy, IPPs are not bound to pay to national oil refineries until they get payment from the government.

The cash flow problems of the private sector is a hurdle in achieving full capacity level of generation. Almost 65% of the petroleum products used by the private sector are imported for thermal power plants (Ali and Khaliq 2008), which also require foreign exchange reserves to meet current demand.

5. Conclusion

This paper identifies challenges and opportunities in the way of fund-raising for energy projects in Pakistan. Our qualitative assessment reveals that the country's law and order situation while an important issue was not ranked as the most important barrier to investment in the energy sector. Those with larger capacity work under the regime of favorable sovereign guarantees and several layers of insurances and damage compensation.

Investors are however found to shy away from the energy sector due to (a) fragmented energy governance in Pakistan, (b) low revenue collection by existing energy generation and distribution companies, (c) persistent transmission and distribution losses and theft of both power and gas, (d) distorted fiscal incentives through SROs regime, and (e) lack of favourable regulatory and operational environment for alternative energy projects.

The business community perceives the role of state in energy market as "ambiguous". The state apparatus in Pakistan persistently controls prices, supply quotas and also the import of energy inputs through which power is generated. Such a heavily regulated environment is acting as a barrier in the way of new firms, who intend to invest in energy sector. Foreign investors have also pointed out towards controversies surrounding the privatization of Discos, for example, K-electric, where the federal government continued to subsidize the operations of this entity after several months of its privatization.

The role of fiscal policy in promoting investors for energy security in Pakistan needs to be quickly revisited. Key reforms should be as follows:

1. FBR may be asked to look into the 'biased' slabs of corporate taxation in case of foreign versus domestic investor.,

2. The part of Finance Act 2014 that discourages the renewable and alternative means of energy generation should be removed.
3. Business community should be taken into confidence as regards utilization of GIDC proceeds.
4. Processes and procedures involved in the import of petroleum products particularly for raw material should be rationalized.
5. The issue of untargeted, hidden and cross subsidies in energy sector should be resolved.

The multilateral and bilateral development partners have evinced their keenness to provide more assistance in energy sector. However, they are concerned about the lack of capacity to develop innovative project proposals by the public sector. A large part of investments by the friendly countries is a government-to-government contract. Nevertheless, for investment promotion, business-to-business joint venture involving foreign direct investment may be encouraged. In this regard, Board of Investment (BOI) should allow “automatic route” investment for all the countries. The rules related to foreign currencies movement, particularly repatriation of profits and invested capital, may be relaxed by the State Bank of Pakistan for the energy sector. This will also help raise funds for future energy trade opportunities such as CASA-1000 and TAPI.

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