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Saying "No" to Foreign Direct Investment in Wind Power Generation Sector by Attracting Indigenous Entrepreneurs: A Step towards Self-reliance

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ABSTRACT

Pakistan opened its gates for foreign direct investment (FDI) in 1970s. The power sector was regulated by government itself. Considering public sector limitations and energy shortfall, later in 1994, Pakistan allowed independent power producers to install private power projects by providing them one-window operations through private power infrastructure board. After realizing alternative renewable energy (ARE) resources (wind, solar, biogas, and small hydel projects up to 50 megawatt), Pakistan established alternative energy development board with plan to install projects with ARE technologies by 2030 to produce up to 5% of total national power generation capacity. Pakistan has provided various incentives to attract investors including FDI. This qualitative inductive study focuses on to identify the indigenous potential of entrepreneurs and adopting a policy of self-reliance in wind power sector to avoid dependency on FDI. The sample is drawn from wind power projects/companies for conducting semi-structured interviews with open-ended questions. The participants' views were converted into five broad themes. It was found that establishing wind power project is easy to install and it necessarily not relies on FDI, but rather policy framework is required to attract indigenous entrepreneurs, which will ultimately lead to self-reliance and overall sustainable socio-economic development.

Keywords: Foreign Direct Investment, Wind Power/Alternative Renewable Energy, Entrepreneurship, Self-reliance
JEL Classifications: F21, L26, Q2

1. INTRODUCTION

Different studies show that foreign direct investment (FDI) is considered as the major tool for economic development and sustainability keeping in view the dearth of availability of resources and technology required for development in developing countries. These studies invariably corroborate that FDI introduces avant-grade technologies and knowledge spillover, employment opportunities, income generation and skills' development, improves productivity, import, export and economic growth, reduces poverty and substantially enhances quality of life, etc. in the host country, which requires reinforcing the policies of opening up the domestic markets and offering attractive incentives to foreign investors (Antanaviciene, 2014; Li and Liu, 2005; Liu et al., 2002). Konings (2001) conducted an empirical comparative study using panel data on three emerging markets of Eastern and Central Europe, where he found that out of three, the domestic firms outperformed in two markets than those with FDI. It suggests that FDI is not the only solution and the economies should spur domestic entrepreneurial talent as well. On the contrary, there exist studies that depict various instances of exploitation by foreign companies in the name of FDI. There are observations even by United Nations about such cases including exploitation of scarce natural resources like diamonds, gold, copper, uranium, oil and gas, and so on in the poor to transition economies. There exist examples from Congo and several other African countries for diamonds copper, etc. and Balochistan-Pakistan for gold and gas; etc. Reko Diq, Chaghi region and copper-gold Saindak project in Balochistan fall in the list of the areas where media reports discover involvement of greedy international companies, which are allegedly involved in multibillion dollar transactions and where the natives are extremely exploited (Dawn, 2010). It cannot happen without the support of political forces; Busse and Hefeker (2007) conducted a study in nexus with FDI that confirmed such concern. The UN General Assembly Resolution 1803 (XVII) of 1962 condemns plundering of natural resources and wealth of marginalized communities and countries of the world (Dawn, 2010; The Balochistan Point, 2013).

Busse and Groizard (2008) emphasized on the salience of role of regulations in bringing FDI in a country, since governments of various countries even compete for attracting and bringing foreign investors. Gorg and Greenaway (2004) conducted a study for World Bank, which questioned about whether the domestic firms reap the fruits of FDI or not and critically examined the role of institutions and stakeholders in that matrix. Li and Resnick (2003) posited that in democratic countries having strong institutions, the FDI inflows exhibited positive effect on economic prosperity. They empirically analyzed FDI effects on fifty three developing nations during fourteen years' time between the decades of 1980s and 1990s. They discovered that protection of property rights and reducing transaction cost by making business friendly policies lead to positive inflows of FDI, or otherwise jeopardize the FDI inflows. According to Buckley et al. (2007; 2009), for doing outward direct investment (ODI), the Chinese multinational companies (MNCs) considered political risk, cultural proximity and host market size as essential variables for ODI. Hence, the role of policy framework for facilitating and incentivizing foreign investors remains the forefront concern of the competing governments to MNCs.

Pakistan opened doors to international capital market to bring FDI in 1970s. Accordingly, Pakistan has introduced different policies in different sectors. State Bank of Pakistan - SBP (2016) introduced policies and regulation through foreign exchange act, 1947; and Foreign Exchange Manual (FEM) to regulate inflow and outflow of FDI and facilitate foreign investors.

Pakistan faces energy crises and its electricity supply is lower than its total demand. It faces an alarming amount of deficit of almost 5000–7000 MW with 8–10 h to 10–14 h of severe load shedding in urban and rural areas respectively in soaring summers (Kiani, 2007; Tariq, 2017; The Nation, 2017). Its public sector is generating, transmitting and distributing electricity. With gradual increase in the demand over the period, it was observed that public sector has capacity limitation and private sector should be allowed in power sector domain. In 1994, private sector was allowed in energy sector by offering them attractive tariff and permission to bring FDI.

Pakistan has abundant natural resources. Considering the chronic situation and turmoil of electricity outage and energy deficit, it needs to formulate the policies to overcome the situations via bringing FDI or attracting domestic investment, especially in the wind power energy generation sector. It can encourage local investors cum entrepreneurs in the area of electricity generation through wind, solar and other sources. It will help in reducing the reliance on FDI, and thereby support national cause and sustainable development via self-reliance approach. Hence, this paper ascertains whether FDI appears utmost salient in overcoming power generation turmoil, especially in the wind power generation or indigenous entrepreneurs possess the potential to resolve this issue, which will consolidate the way towards self-reliance and socio-economic prosperity. Furthermore, what are the modalities to attract investors towards such projects in terms of cost-benefit analysis? Are the technological requirements too tough for indigenous entrepreneurs? Are skilled human resources or expertise available to work on such projects? What are the facilities and support system provided by the government to such sort of companies?

2. LITERATURE REVIEW

2.1. Power Generation and Distribution Companies (DISCOs) to Regulatory Bodies in Pakistan

Ministry of Water and Power (MoWP) regulates the affairs for generating, transmitting and distributing electricity. There are three functional levels of organization of MoWP: (i) Generation, (ii) transmission and dispatch, and (iii) distribution and sales. It regulates nine (9) DISCOs and four (4) power generation companies (GENCOs). The list of those companies is illustrated in Table 1 underneath.

DISCOs purchase bulk electricity and sale to consumers; they also purchase electricity under bilateral sales contract with small independent power producers (IPPs). DISCOs purchase bulk electricity from National Transmission and Dispatch Company Limited (NTDC), a sole entity that purchases electricity (from public and private sectors), which distributes and dispatches among DISCOs (NTDC Limited, 2018). There are four GENCOs. GENCO I, III and IV produce electricity through thermal, whereas GENCO II uses combined cycle – all GENCOs are public sector companies, which generate and sale electricity to NTDC. Pakistan atomic energy commission (PAEC), a public sector organization, also produces electricity through nuclear technology, and produces and sells electricity to NTDC (MoWP, 2018).

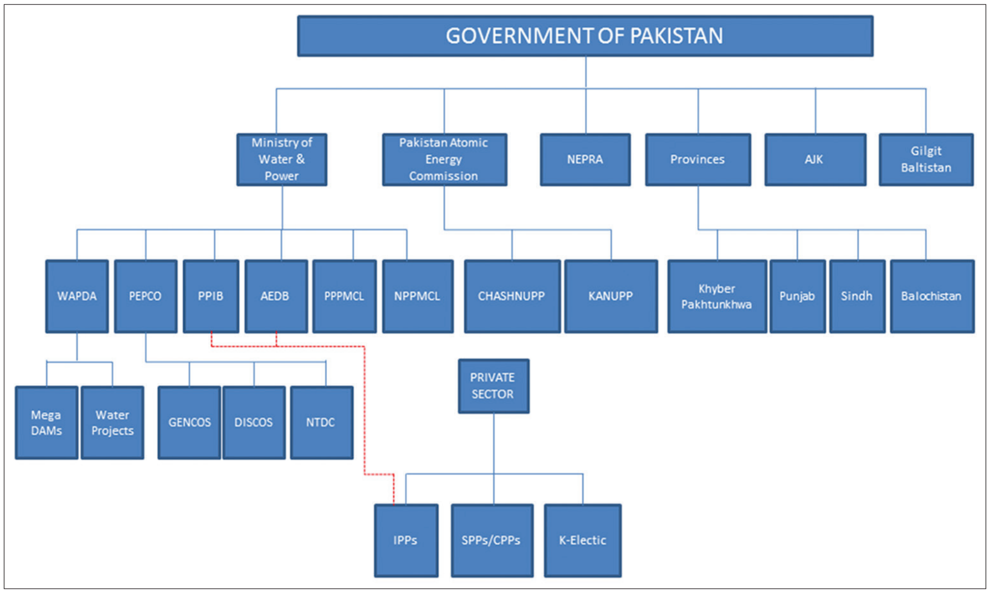
Pakistan conventionally produces electricity through mediums like hydel, thermal, coal, gas, oil, nuclear, etc. From time to time, government builds new projects to increase electricity generation

Table 1: Names of DISCOs and GENCOs

Names of DISCOs	Names of GENCOs
Faisalabad Electric Supply Company; Gujranwala Electric Power Company; Hyderabad Electric Supply Company; Islamabad Electric Supply Company; Lahore Electric Supply Company; Multan Electric Power Company; Peshawar Electric Supply Company; Quetta Electric Supply Company; and Sukkur Electric Power Company	Jamshoro Power Company Limited - GENCO I; Central Power Generation Company Limited - GENCO II; Northern Power Generation Company Limited - GENCO III; and Lakhra power Generation Company Limited - GENCO IV

Source: Ministry of water and power (2018). DISCOs: Distribution companies, GENCOs: Generation companies

Figure 1: Power sector structure as per private power infrastructure board



Source: Private power infrastructure board (2016)

capacity for overcoming the shortfall and meeting demand for electricity supply. Historically, Pakistan was generating electricity through public organizations, however, from 1994 Pakistan opened gates for IPPs for installing projects, generating and supplying electricity to national grid (i.e., to NTDC). In 1994, Government of Pakistan (GoP) had established Private Power and Infrastructure Board (PPIB) as one window facilitator to encourage private sector or IPPs contribution in the power sector. PPIB is operating with the objective of facilitating investors in setting up private power projects, related infrastructure, and executes "implementation agreement" with project sponsors and issues sovereign guarantees on behalf of GoP. PPIB explains the power sector structure in Figure 1 on the next page. It displays that the GoP possesses bodies like MoWP, PAEC, national electric power regulatory authority (NEPRA), provincial authorities, Azad Jammu And Kashmir, and Gilgit Baltistan. MOWP oversees water and power development authority, which deals with power generation through mega dams and water projects. Pakistan electric power company deals with power generation and supply companies, called GENCOs and DISCOs respectively, and NTDC Limited (NTDC). Private power infrastructure board (PPIB) deals with IPPs to small IPPs and K-Electric. In the same way, other relevant bodies of public and private sector are displayed, whereas the role of the prime bodies is delineated in the literature part (MoWP, 2018).

PPIB has accomplished 30 projects since its inception in 1994. The Table 2 on the next page is extracted from PPIB website lists all completed projects. It has planned to install 22 new projects till 2024 to meet future electricity demand of Pakistan. Table 3 on the next page illustrates the breakup of those potential projects. After emerging of alternative renewable energy (ARE) medium worldwide, GoP established another independent agency namely alternative energy development board (AEDB) in May 2003 with the objective of facilitating, promoting and encouraging development of RE in Pakistan. IPPs under AEDB regime also generates and sells electricity to NTDC. K-Electric (formerly Karachi Electric Supply Corporation - KESC) is independent to GENCOs and DISCOs and MoWP have only administrative oversight on K-Electric (AEDB, 2018; PPIB, 2018).

(NEPRA is an independent regulatory body for granting licenses and to generation, transmission and DISCOs. NEPRA scope also includes reviewing and approving tariff. NEPRA works in coordination with MoWP and its associates organizations; however, being a regulator, it makes its decision independently (NEPRA, 2018).

2.2. Establishment of ARE for Attracting and Incentivizing the Private Sector Investment

Pakistan is rich in natural resources like wind, solar, biogas, small dams at various locations, and its electricity demand and shortfall can be recovered by producing electricity from these resources - these natural resource are termed as ARE. Accordingly, AEDB mission was set to introduce ARE in Pakistan at an accelerated rate. Later on, in 2016, AEDB was made part of MoWP with mandate to: (i) Govern policies, attract and help private sector in the area of ARE, (ii) develop ARE for achieving sustainable economic growth, (iii) foster ARE technology transfer, etc. In May 2010, GoP had promulgated AEDB Act and converted it to an statutory organization under the umbrella of MoWP, and the AEDB Act imparted its authority and responsibility for growing ARE (AEDB, 2018).

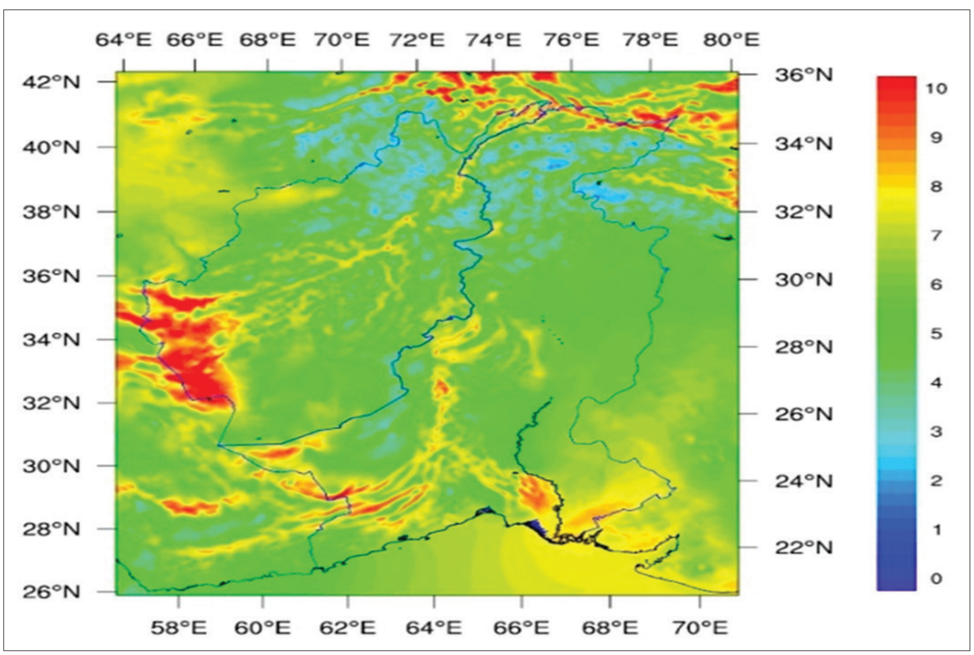
Apart from other tasks, AEDB under Energy Security Action plan 2006 has to ensure that by the year 2030 there is capability for generating electricity from ARE technologies up to 5% of the total national power generation capacity. Pakistan is rich in natural resources and AEDB is working on all mediums of ARE including wind, solar, biogas, small hydro projects (up

Table 2: List of completed projects under PPIB domain

Project name	Gross/installed capacity (MW)	Net/dependable capacity (MW)
Prior to 1994 power policy		
Hub power project	1292	1200
Under 1995 hydropower policy		
New bong escape hydropower project	84	
Under 1994 power policy (project with gross and net capacity)		
Lalpir Limited 362, 350; Pak Gen. (Pvt.) Limited 365, 350; Altern Energy Limited 29, 29; Fauji Kabirwala Power Company 157, 151; Gul Ahmed Energy Ltd. 136, 125; Habibullah Coastal Power (Pvt.) Co. 140, 126; Japan Power Generation (Pvt.) Limited 135,120; Kohinoor Energy Limited 131, 126; Liberty Power Project 235, 211; Rousch (Pakistan) Power Limited 450, 395; Saba Power Company Limited 125, 125; Southern Electric Power Company Limited 136, 119; Tapal Energy Limited 126, 120; Uch Power Limited 586, 551; Davis Energen Power Project 10, 10		
Under 2002 power policy (project with gross and net capacity)		
Attock Gen Limited 165, 156; Atlas Power Limited 225, 214, Engro Energy Limited 227, 217; Foundation Power Company (Daharki) Limited 185, 177; Halmore Power Generation Company Limited 225, 209; Hub Power Project - Narowal 220, 214; Liberty Power Tech 200, 196; Nishat Power Limited 200, 195; Nishat Chunian Limited 200,195; Orient Power Company Limited 229, 213; Saif Power Limited 229, 209; Sapphire Electric Company Limited 225, 212; Uch-II Power Project 404, 375		
Total	7433	6890
KAPCO initially KAPCO was a public-sector power project; however, through its strategic sale by the privatization commission, it was converted into IPP through privatization	1638	1386
Grand total (for 31 companies)	9071 MW	8276 MW

Source: Private Power Infrastructure Board (2016). KAPCO: Kot Addu Power Company Limited

Figure 2: Pakistan map - available wind speed for the period from 2001 to 2010



Source: Alternative Energy Development Board (2016)

to 50 MW, while above that capacity projects fall under PPIB scope) - AEDB announced first-ever RE policy in 2006 offering financial incentives, production incentives, and securities and risk cover to private investors including FDI. RE Policy 2016 explicates various incentives: Wind risk (risk of erraticism of wind speed in the wind corridor); guaranteed electricity purchase by NTDC i.e., bulk power purchaser; grid provision is the responsibility of the NTDC; protection against political risk; appealing tariff with two options; cost plus with 17% return on equity with periodic indexation mechanism to adjust inflation and exchange rate variation (of Pak Rupee in terms of US Dollar); upfront tariff that NEPRA announces periodically with periodic indexation mechanism to adjust inflation and exchange rate variation; excess production benefit on subsidized tariff; Euro/Dollar parity permissible; carbon credits available with benefit sharing basis; exemption from payment of import duties and federal sales tax on equipment and temporary construction machinery; exemption from payment of advance income tax at import stage; exemption from payment of income tax on power generation income; exemption from withholding of income tax and sales tax on sales receipt from NTDC; subject to SBP regulation, freely allowed repatriation of equity and dividends; permission to issue corporate registered bonds, etc. (AEDB, 2006; NEPRA, 2015).

AEDB has proposed collaboration areas for attracting investors especially FDI in Pakistan in ARE power projects to take benefit of FDI. They include: (a) GoP shall provide full facilitation through AEDB to companies in development of ARE power projects through FDI; (b) Banks and financial institutions may lend to the commercial ARE power projects through debt and equity sharing; (c) GoP may give export credit to its Original Equipment Manufacturers (OEMs); (d) Collaboration of Pakistani engineering sector with ARE technology and equipment manufacturer for local manufacturing and assembling of ARE equipment and components in Pakistan; (e) Assisting in capacity building and technical support to other public entities of GoP in the area of ARE (AEDB, 2018).

Pakistan has been blessed with vast wind resource that Figure 2 illustrates. The color scale on the right side of the Figure displays the wind speed in m/s (i.e., nautical-miles per hour), and the color on map shows the availability of corresponding wind speed in that respective part of Pakistan. The RE policy also states that exploitable wind resources available in Pakistan particularly in southern Sindh and coastal Baluchistan with monthly-average wind speeds over 7~8 m/s at some sites, whereas the wind speed above that level can be seen in the Figures within some locations. This wind corridor has potential for generating fifty thousand (50,000) megawatt electricity with average wind speed above 7 m/s (AEDB, 2016).

The Figure 3 on the next page shows the mapping of solar resource of Pakistan. AEDB with the help and fund of World Bank is implementing renewable resource energy mapping for Pakistan. Nine sites have been identified all over Pakistan for installing equipment and measurement stations: (1) Bahawalpur, Quaid-e-Azan Solar Park; (2) Islamabad, National University of Science and Technology; (3) Kala Shah Kaku (KSK), KSK Campus of University of Engineering and Technology (UET) Lahore; (4) Multan, MNS Campus of UET Lahore; (5) Peshawar, UET; (6) Karachi, NED UET (7) Jamshoro, Mehran University; (8) Quetta, Balochistan University of Information Technology; and (9) Khuzdar, Balochistan Univeristy of Engineering and Technology (alternative energy development board, 2018).

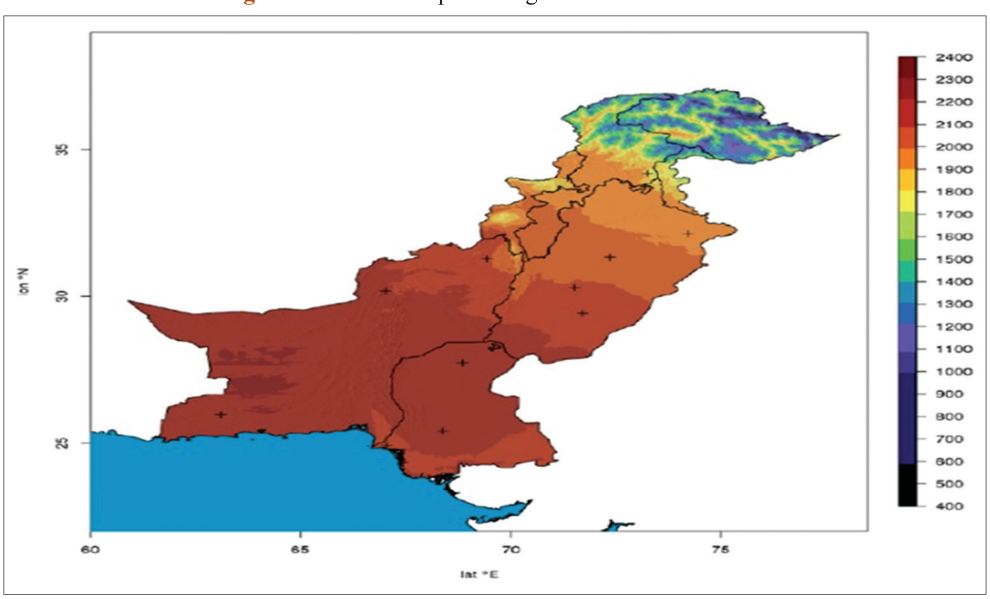
The scale of Figure 3 displays the mean for the period from 2002 to 2012 of annual global horizontal irradiance for Pakistan in kilowatt-hour per square meterm. The progress on solar projects is slow in Pakistan; so far, twenty-eight sponsors have obtained "letter of intent" (LOI) from AEDB to install solar powered projects with total installed capacity to 956.8 MW. The expected

Table 3: List of future projects to be completed falling under PPIB domain

Year end	Number of projects expected to complete	Capacity (MW)
2017	2	1467
2018	1	1320
2019	6	4885
2020	2	1010
2021	2	850
2022	2	2582
2023	1	1100
2024	6	2650
	22	15864

Source: PPIB (2016). PPIB: Private Power Infrastructure Board

Figure 3: Pakistan map showing available solar resource



Source: Alternative Energy Development Board (2016) timeline for completion of those projects are shown in Table 4 underneath.

As per RE policy 2016, private sector investors have been given two ways to invest into ARE power projects (i) unsolicited and (ii) solicited. So far, six companies have achieved commercial operations date (COD), out of which 2 were funded by FDI and four were funded by local investors (equity), which are portrayed on the next page in Table 5.

A study on Power System Statistics Report by NTDC limited (2015) mentions various statistics: All the projects appoint engineering, procurement and construction (EPC) contractor to commission project of turn-key basis. The project company and NTDC appoint independent engineers to review EPC contractor performance and to ensure project is safe to connect to national grid. The lenders appoint some consultants at the cost of the project for reviewing project from technical, commercial, financial and legal perspective. The equity and loan tranches are usually injected on need or milestone basis and same amounts are consumed for project related payment. The model remains same irrespective of local investment or FDI.

The Table 6 beneath and Figures 4 and 5 on the next page display wind power projects in Pakistan that appear in the development phase, in which local companies exceed in number than companies with FDI. It depicts that wind power contribution is 1% of the entire installed capacity of Pakistan, which has the capacity of 255.4 MW (gross). Out of which, 106 MW (gross) was installed with the help of FDI contribution, and the credit of the rest or 149.4 MW (gross) goes to local investors. Moreover, Pakistan produces most of its energy via thermal power, then hydro, nuclear, and wind power sources respectively. However, the potential of the wind energy is underpinned by various international energy associations (Economics of Wind Energy, 2018; European Wind Energy Association, 2018; Global Wind Energy Association, 2018).

Table 4: Solar power projects realization plan

Year	Cumulative capacity (MW)
2015	100
2016	400
2017	730
2018	1556

Source: Alternative Energy Development Board (2016)

2.3. Energy Projects under China-Pakistan Economic Corridor (CPEC)

Pakistan has also addressed energy crises in CPEC agreement. Under this agreement, fourteen power projects have been identified as prioritized projects to install wind and solar plants of 1200 MW by 2017–2018 and hydro and coal-fired plants of 9200 MW by 2020. The total installed capacity of these 14 projects is 10,400 MW. There are seven more projects termed as actively promoted projects of 6645 MW installed capacity on which both parties have preliminary consensus to work for further technical and commercial conditions. Out of 07 actively promoted projects, one project is related to RE with total installed capacity to 100 MW – more specifically, two wind farms each of 50 MW. Pakistan has agreed to finance some projects where Chinese financial institution will support projects on market-principal specially where Chinese engineering, EPC contractor is involved. Pakistan will adopt Chinese standards subject to prior approval from respective Pakistan regulator and NTDC. This may create an openness to enhance present standards set duly exercised by Pakistani regulators and NTDC (Federal Board of Revenue, 2014).

2.4. Recent Trends of FDI Inflows and Outflows in Pakistan

FDI increases foreign currency reserves that bring positive impact on economy subject to that portfolio investment (i.e., foreign investment in stock market). Due to misconceived and inconsistent policies, and governance issues, Pakistan has not taken benefit of this tool as other countries have taken. Table 7 beneath and Table 5 on the next page present Pakistan FDI inflow and outflow

Table 5: List of operationalized wind powered projects

Name	Capacity MW	Location	Tariff Regime	COD
FFC energy limited	49.50	Jhimpir	Cost Plus	16-May-2013
Zorlu Enerji Pakistan Limited (FDI)	56.40	Jhimpir	Cost Plus	26-Jul-2013
Three Gorges Pakistan First Wind Farm (Pvt.) Limited (FDI)	49.5	Jhimpir	Cost Plus	25-Nov-2014
Foundation Wind Energy II (Pvt.) Limited	50	Gharo	Cost Plus	10-Dec-2014
Foundation Wind Energy –I Limited	50	Gharo	Cost Plus	11-Apr-2015
Sapphire Wind Power Company Limited	52.80	Jhimpir	Upfront	21-Nov-2015
Total commissioned project capacity	308.2			

Source: Alternative Energy Development Board (2016). COD: Commercial operations date

Table 6: Pakistan energy statistics at glance - public and private

Fiscal year ending 30th June	2010	2011	2012	2013	2014	2015
Installed capacity (MW)						
WAPDA hydro	6,444	6,516	6,516	6,733	6,902	6,902
Thermal (Pub)	6,784	6,650	7,222	7,182	7,880	7,663
IPP hydro	111	111	111	195	195	213
IPP thermal	7,456	9,103	8,666	8,670	9,021	9,085
Nuclear (PAEC)	462	787	787	787	787	787
Wind	-	-	-	50	106	256
	21,257	23,167	23,302	23,617	24,891	24,906

Source: National transmission and Dispatch Company Limited (2015). WAPDA: Water and power development authority. PAEC: Pakistan atomic energy commission statistics from 2013 till 2016 - the movement is not stable and reflects various fluctuating trends.

In case of power projects including wind power projects, they are allowed to have offshore foreign currency bank accounts, so foreign currency does not come to Pakistan practically. Those brings FDI in Pakistan, makes negligible impact on foreign currency reserves as equity and debt portion is injected on need basis in trenches, and the same is consumed for project payments in short span of time for purchase of plant, equipment, spares, tools, services, principal debt payment, interest, etc. Subsequently a tranche of foreign currencies goes out on account of repatriation of equity and dividend that brings negative impact on economy – due to outflow of foreign currency and additionally due to change in exchange rates. Every economy tries to maintain its balance of payment by way of increasing exports and reducing imports. FDI is good if it is contributing in producing goods and services to exports (Li and Liu, 2005; Liu et al., 2002). Wind power projects under construction phase and in pipe line are illustrated in Annexure's Tables 1 and 2).

3. RESEARCH METHODOLOGY

Christensen et al. (2011) explain that research paradigm is also termed as research philosophy. Saunders et al. (2011) explicates that interpretivism research philosophy is the subjective interpretation and is based on insights and theory creation. The nature of this probe requires applying interpretivism with inductive or bottom up approach. It helps in developing new theories (Zikmund et al., 2013), which aids in development of knowledge (Denzin, 2008). Fetters et al. (2013) define that on the basis of the data collected; the researcher is able to find answers to the research questions. Qualitative research method is capitalized to explore the rich insights, perceptions and perspectives of the samples. The protocol, in the form of questionnaire employs semi-structured and open-ended questions, which was crafted by consulting with few academicians and industry experts, and it was pretested as well. The population is wind power projects companies which have at least obtained LOI from AEDB for development of wind power projects. So far, twenty nine companies have such permits, out of which 6 companies have achieved COD and are in operations phase. Purposive sampling method was used to collect data from five relevant professionals. For data analysis, constant comparison and contrast method is availed for identifying emergent themes from the participants (Bashir et al., 2017; Neuman, 2003).

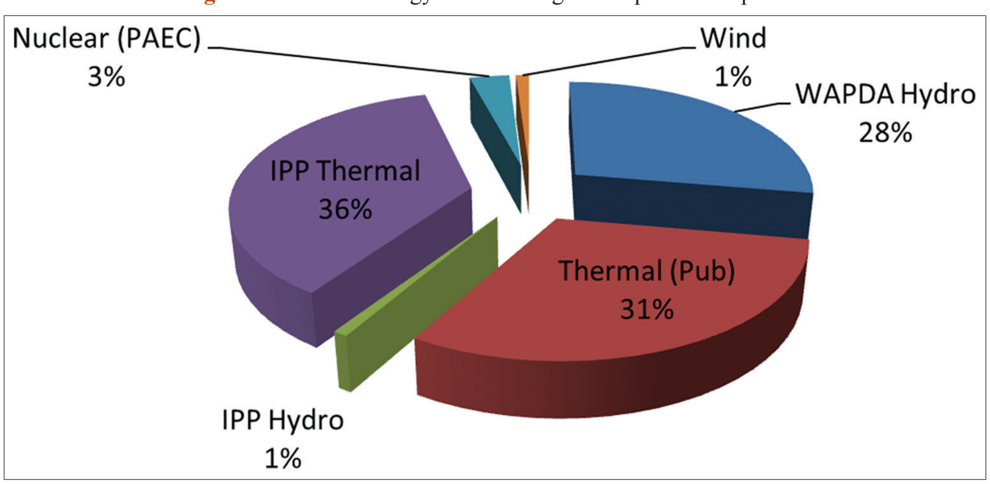
4. DATA ANALYSIS AND FINDINGS

Based on the participants' responses, various themes were identified and their sub-themes or factors were categorized for better comprehension of their perspectives.

4.1. Theme 1: GoP Priorities

The respondents identified different parameters to gauge GoP priorities. They used different key words to reflect such priorities. Few respondents did not find any issue on the part of government, since it seems supportive to private sector for raising investment for power generation, in a bid to fulfill the growing demand of energy deficit and outage in the country. But most of the respondents expressed concerns on GoP priorities on account of security, political instability, environment, law and order, transparency, governance and quality of execution. They added that uncertainty in policy shakes the confidence of the investor. They opined that capital market needs to be developed for easy access to capital and for availability of funds in the forms of investment and financing. Arranging land for any such

Figure 4: Pakistan energy statistics at glance - public and private



Source: National Transmission and Dispatch Company Limited (2015)

Table 7: FDI inflow and outflow in Pakistan (USD million)

Million USD	FY13	FY14	FY15	FY16 (estimated)
Inflow	2,665.3	2,847.4	2,732.0	2,761.1
Outflow	1,208.9	1,148.8	1,809.1	859.9
Net Direct Investment	1,456.5	1,698.6	922.9	1,901.2

Source: State Bank of Pakistan (2016)

project appears very challenging and one-window facility is not available for investors. Non-availability of tariff on regular basis and continuous reduction in tariff turn extremely serious issues. Non-availability of local manufacturers of power generation equipment poses problems for them, while GoP needs to focus on developing vendor industry. One respondent identified the need to review the extensive and strict requirements of the regulators in nexus with establishment of any energy generation project, so that business friendly-policies can be framed. He added that circular debt also turns a serious issue, since if the central power purchasing agency is unable to pay the outstanding amount to power producers, they will not be able to pay off their fuel bills to oil refineries and other raw material vendors. In case electricity supplying entities do not pay on time or various subsidiaries of government commit default, or a huge number of power consumers turn defaulter then, it all leads to break in electricity supply chain, dearth of power generation and electricity load shedding crises. The same is also apprised and emphasized by the World Bank Pakistan advisor on energy (Spencer, 2015). In nutshell, the pertinent sub-factors identified by the participants include: Appropriate and consistent policies of the government, effective governance, development of capital market, development of vendor industry, attractive tariff, law and order to security, and minimizing circular debt, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI.

4.2. Theme 2: Infrastructure

The respondents used different key words to reflect factors for infrastructure. Except one respondent, all the other respondents identified un-availability of grid to be provided by NTDC as a common infrastructure issue. They identified that poor road infrastructure creates difficulties in logistics of equipment. Public transport facility also lacks in the wind corridor area that creates trouble for local staff to travel and reach at a particular destination, which increases the cost of the projects. They pointed out that turbines, cranes and other parts' manufacturers are not available in Pakistan. Here again, there is a role of public and private sectors for the development of appropriate infrastructure. In nutshell, the pertinent sub-factors identified by the participants include: Non-availability of grid, poor road infrastructure to public transport, and lack of vendor industry, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI.

4.3. Theme 3: Professional Expertise

Few respondents felt no concern on this theme; however, the others particularly identified low expertise in public sector institutions, lack of operations and maintenance expertise in the local market to dearth of experts and consultants in Pakistan to steer new comers or investors cum entrepreneurs toward the technicalities, nitty gritty and project cost-benefit analysis in the power generation sector. They emphasized the need to reduce incremental cost resulting in shortage of skilled manpower and experts with reference to wind power sector. One respondent identified lack of understanding among all the stakeholders including public and private sector stakeholders (including communities). In nutshell, the pertinent sub-factors identified by the participants include: Non-availability of professional expertise in public sector, and skilled manpower, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI.

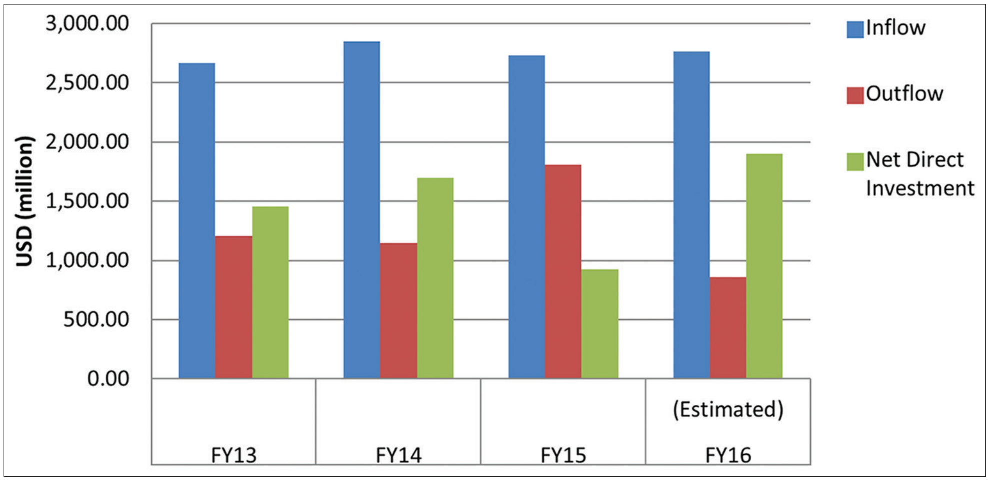
4.4. Theme 4: Contribution of FDI versus Local Investment

The majority of the respondents found that (i) FDI has not played any role in the development of this sector, (ii) local investors cum entrepreneurs are now already into this business, and (iii) local investors are contributing in reducing dependency on FDI. But few of them believe that FDI has established success story and has played a vital role in the development of energy production, transmission, and distribution, which eventually pave the way for the overall economic development. They added that FDI has built confidence of local investors and lenders, which made the wind power sector attractive for local investors cum entrepreneurs too. A lot of medium-size enterprises to large-scale enterprises of the corporate sector have also business interests in the wind power sector to overall energy sector. One respondent highlighted that lack of research on RE projects in Pakistan has led FDI to play vital role, since the domestic investors or entrepreneurs have no explicit idea about the project feasibility, its potential and overall returns. Few respondents identified that it is an opportunity for local investor to come forward into ARE business, as GoP has given good financial incentives to investors. However, they also recognized that the existing challenges and difficulties are thwarting local investors to come forward. In nutshell, the pertinent sub-factors identified by the participants include: FDI's crucial role in the development of this sector, local investors cum entrepreneurs involvement into this business and their contribution in reducing dependency on FDI, lack of domestic-level research on RE projects, and the government's incentives, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI.

4.5. Theme 5: Self-reliance

All the respondents found that despite lack of government intervention or GoP priorities, infrastructure and professional expertise, the energy sector and particularly, wind power sector tends to provide lucrative opportunity to invest into innovative and technological ideas to promote policy of self-reliance instead of waiting for FDI. Few respondents opined to attract FDI for new technologies and later on, consider moving towards self-reliance or working in parallel on the both dimensions. The bottom line is that it is not very cumbersome and daunting task now to establish wind power projects and it can be done with the help of domestic investment, which will substantially benefit local entrepreneurs. Moreover, it will generate new jobs, income and employment, and will aid the technical skills cum competencies or expertise of the local populace. In nutshell, the pertinent sub-factors identified by the participants include: Local investors cum entrepreneurs' ability to establish energy projects and particularly wind power sector, lucrative opportunity to invest into innovative technologies, belief in self-reliance (for developing the native economy) instead of waiting for FDI, and simultaneously welcoming FDI into this sector, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI.

Figure 5: FDI Inflow and outflow in Pakistan (USD million)



Source: State Bank of Pakistan (2016)

5. DISCUSSION AND CONCLUSION

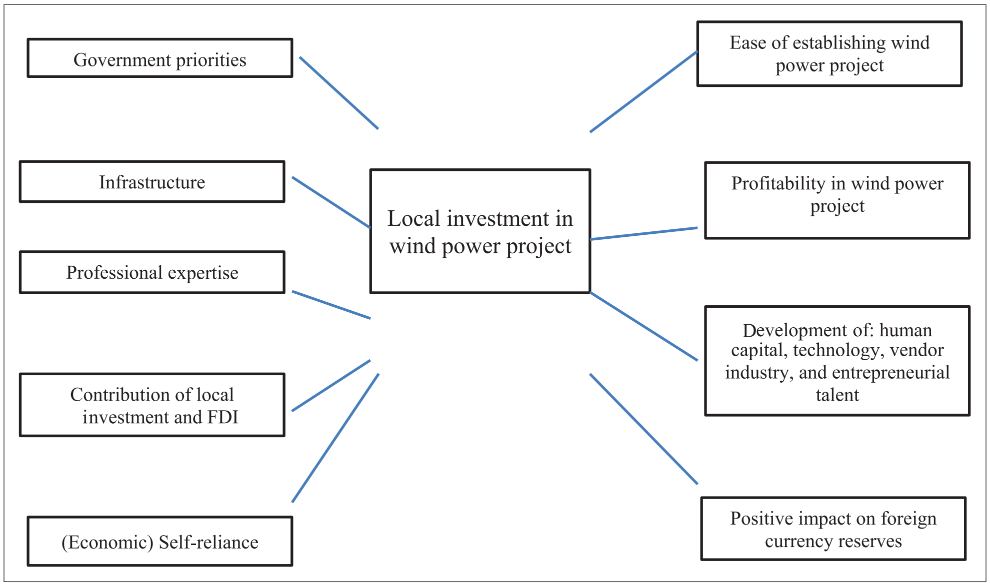
This qualitative study inquired about seeking solutions for chronic energy deficiency and turmoil of electricity outage via bringing FDI or attracting domestic investment from indigenous entrepreneurs, especially in the wind power energy generation sector, which can lead to self-reliance rather than solely relying on FDI. It ascertained about the potential and viability of such projects, technological requirements, availability of skilled human resources or expertise, and the facilities cum support system provided by the government to such sort of companies.

All the FDI benefits, i.e., employment, income generation, skill development, technology spillover, productivity, import, export, economic growth, infrastructure development, poverty reduction, etc., have no substantial effects in case of ARE projects, since wind energy generation in Pakistan constitutes only one percent of the total domestic production of energy. The argument about benefits from inflow of foreign currency that has positive impact of foreign currency reserve is not valid in case of wind power industry. As per FEM of SBP (2016), the power sector is entitled to open offshore foreign currency bank accounts, so practically foreign currency does not inflow to Pakistan's central bank account. If some project opens onshore foreign currency bank account instead of offshore account, then in this case, the equity and loan inflows come in tranches, and material amount outflows on account of equipment payment, international services payment, dividends and profits repatriation, etc. put a minor impact on foreign currency reserves.

The results of this qualitative enquiry match with the findings of several studies that FDI appears beneficial (Antanaviciene, 2014; Li and Liu, 2005; Liu et al., 2002), provided proper support of the government and institutional support framework are ensured (Buckley et al., 2007; 2009; Busse and Groizard, 2008; Busse and Hefeker, 2007; Gorg and Greenaway, 2004; Li and Resnick, 2003). The findings also correspond to those of Konings (2001) that FDI is not the only solution since in several cases, the indigenous entrepreneurs outperformed than those companies with FDI. As there have been several studies, especially in the domestic context of exploitation by foreign firms and MNCs to local communities and developing countries (Dawn, 2010; The Balochistan Point, 2013), this study tried to explore the dimensions of domestic production of wind energy by indigenous entrepreneurs to overcome the chronic problems of electricity deficiency to outage, leading to avoidance of FDI and a step toward self-reliance. It discovered five most essential factors: Government (of Pakistan) priorities, infrastructure, professional expertise, contribution of FDI versus local investment, and self-reliance. In terms of government priorities, it should entertain: Appropriate and consistent policies, effective governance, development of capital market, development of vendor industry, attractive tariff, law and order to security, and minimizing circular debt, which appear mandatory for all the projects irrespective of commencing them with local investment or FDI. In infrastructure development, non-availability of grid, poor road infrastructure to public transport, and lack of vendor industry appear mandatory. In professional expertise, non-availability of professional expertise in public sector, and skilled manpower appear mandatory. Regarding contribution of FDI versus local investment, local investors cum entrepreneurs' involvement into this business and their contribution in reducing dependency on FDI, lack of domestic-level research on RE projects, and the government's incentives appear mandatory. In self-reliance, FDI's crucial role in the development of this sector, local investors cum entrepreneurs involvement into this business and their contribution in reducing dependency on FDI, lack of domestic-level research on RE projects, and the government's incentives appear mandatory. In self-reliance, local investors cum entrepreneurs' ability to establish energy projects and particularly wind power sector, lucrative opportunity to invest into innovative technologies, belief in self-reliance (for developing the native economy) instead of waiting for FDI, and simultaneously welcoming FDI into this sector appear mandatory.

The bottom line is that adopting self-reliance policy will not only benefit overall socio-economic development but provide opportunity to the government for concentrating on the sectors where FDI really matters a lot. Whereas wind power generation can be undertaken by employing indigenous resources and local investment by domestic entrepreneurs, for which the government just needs to comprehend their issues and design an effective support mechanism.

Figure 6: Alternative conceptual model suggested for future empirical study



5.1. Recommendations and Implications

Based on the research problem and context, it is recommended to policy makers or government to review FDI policies toward wind power generation sector, as more incentives should be offered to local investors cum entrepreneurs to attract them toward raising domestic investment into wind power projects. This step will motivate them to invest into such technological businesses. It will also help government to focus on areas where FDI is seriously required and that can make technology transfer possible.

5.2. Caveat and Areas of Further Research

This investigation appears limited in terms of an exploratory cum qualitative study with a small sample size, and focused on only one sub-sector of energy production. Based on its findings, a conceptual framework (as portrayed in Figure 6) is devised that may be tested later through a quantitative empirical study with a bigger sample from any other population/sector and developing country. It may be ascertained to measure confidence level of local investors cum entrepreneurs and their future plans towards investing in wind power generation projects.

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ANNEXURES

Annexure Table 1: Wind power projects under construction phase

S. No.	Name	Capacity MW	Location	Tariff regime	Expected COD
1	Yunus Energy Limited	50	Jhimpir	Upfront	August 2016
2	Sachal Energy Development Pvt. Limited	49.50	Jhimpir	Cost plus	June 2017
3	Metro Power Company Limited	50	Jhimpir	Cost plus	August 2016
4	Tapal Wind Energy Pvt. Limited	30	Jhimpir	Upfront	June 2016
5	UEP Wind Power (Pvt.) Limited	99	Jhimpir	Upfront	September 2016
6	Hydro China Dawood Power Pvt. Limited	49.50	Gharo	Upfornt	September 2016
7	Master Wind Energy Limited	49.50	Jhimpir	Upfront	September 2016
8	Tenega Generasi Limited	49.50	Gharo	Upfront	September 2016
9	Gul Ahmed Wind Power Ltd	50	Jhimpir	Upfront	September 2016
Total Under construction Project capacity		477			

Source: Alternative Energy Development Board (2016)

There are fourteen wind power projects of 663 (gross) MW installed capacity that are under pipeline, Annexure Table 2 mention the complete list of those pipeline projects.

Annexure Table 2: Wind power projects in pipeline

S. No.	Name	Capacity MW	Location	Tariff regime	Expected COD
1	M/s Jhampir Wind Power Limited	50	Jhimpir	Upfront	Expected COD in 1st QTR of 2018
2	M/s Hawa Energy Pvt. Limited	50	Jhimpir	Upfront	Expected COD in 1st QTR of 2018
3	M/s Hartford Alternative Energy Pvt. Limited	50	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
4	M/s Three Gorges Second Wind Farm Pakistan Limited	49.5	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
5	M/s Three Gorges Third Wind Farm Pakistan (Pvt.) Limited	49.5	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
6	M/s Tricon Boston Consulting Corporation Pvt. Limited (A)	50	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
7	M/s Tricon Boston Consulting Corporation Pvt. Limited (B)	50	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
8	M/s Tricon Boston Consulting Corporation Pvt. Limited (C)	50	Jhimpir	Upfront	Expected COD in 2nd QTR 2018
9	M/s Zephyr Power Pvt. Limited	50	Gharo	Upfront	Expected COD in 4th QTR 2018
10	M/s Western Energy Pvt. Ltd	50	Jhimpir	Upfront	Expected COD in 1st QTR 2019
11	M/s China Sunec Energy Pvt. Limited	50	Nooriabad	Upfront	Expected COD in 1st QTR 2019
12	M/s Burj Wind Energy Pvt. Limitd	14	Gajju	Cost Plus	Expected COD in 1st QTR 2019
13	Trans Atlantic Energy (Pvt.) Limited	50	Jhimpir	N/A	N/A
14	M/s Shaheen Foundation PAF	50	Jhimpir	N/A	N/A
Total Projects in Pipeline Capacity		663			

Source: Alternative Energy Development Board (2016). COD: Commercial operations date