

## **Restructuring of WAPDA: A Reality or a Myth**

ZAINAB KHALID and MUHAMMAD IFTIKHAR-UL-HUSNAIN

Serious financial crisis in Pakistan energy sector, mainly due to poor governance, rising fuel prices and rampant corruption, led to the decision of corporatisation of Water and Power Development Authority (WAPDA) in 1992. However, this decision has been highly debated in the context of its socio economic benefits as the energy crises continues unabated. This study, by using semi-structured interview from energy experts in the power sector, attempts to find the factors that withheld the positive effects of this decision. The objective is to provide useful input to frame future energy policy to overcome critical energy crises in Pakistan.

The study concludes that the decision of corporatisation of WAPDA was a forced decision without proper homework recommended by the International Monetary Fund (IMF) which worked as an obstacle to achieve required targets in context of energy crises. However, expert opinion shows that unbundling of WAPDA if managed adequately in line with the ground realities would help bring in the competition in market and support the neoliberal theory which calls for deregulation of businesses and privatisation of publicly owned assets, thus minimising the state intervention. Therefore, the only choice for the government is to move forward with the reforms to frame efficient and effective power policy. Chile, with successful power reforms, is the example quoted by the experts to be followed by Pakistan to overcome load shedding and black outs.

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### **1. INTRODUCTION**

Energy supports economy in multi dimension always and provides vital features which play a fundamental role in the social, commercial, industrial and economic sector development [Ghosh (2000)]. The claim of neoclassical theory that land, capital and technology are the only major economic factors, and the energy from sources like oil, coal, hydro and Sun comes as intermediate input in the economy, doesn't justify the role energy plays in the economic production [Alam (2006)]. The neoliberal theory believed in "free market economy" and voiced for free individual choice with minimum state intervention. The theory called for deregulation of businesses and privatisation of publicly owned assets thus minimising the role of a welfare state [Kotz (2000)].

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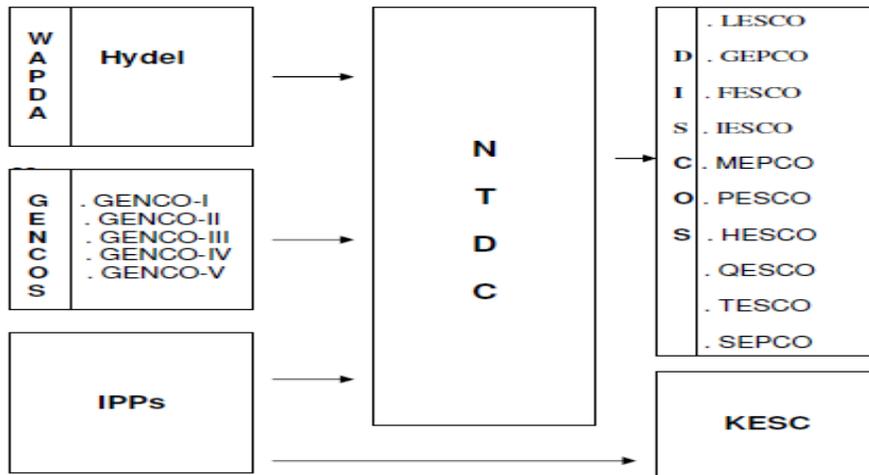
A deregulation trend of electric utilities was observed in many countries including the United States and European and Asian countries in 1990s [Goto and Sueyoshi (2010). Chang (2007) state that deregulation of a vertically integrated utility into its components like distribution, transmission and generation is expected to bring competition and remove the ambiguity in the regulation sector which will enable the investors to take the production and investment decisions efficiently but Sioshansi (2006) and Woo, *et al.* (2003) state that the outcomes of deregulation seen in the energy market are mixed. India and Pakistan, the evolving countries, also adopted the deregulation of electricity sector the reasons being the burden of price subsidies, low service quality, inadequate revenue collection, high network losses, and poor customer service [Saleem (2002)]. Furthermore, the United States also influenced the third world countries, directly or indirectly via donor agencies to adopt the neoliberal policies [Kotz (2000)].

Serious financial crisis in Pakistan energy sector, mainly due to poor governance, rising fuel prices and rampant corruption, led to the decision of corporatisation of WAPDA in 1992 that has not been completed yet. To unbundle WAPDA was based on the expectation of higher investment by National Transmission and Dispatch Company and distribution companies (DISCOs) would improve the decaying system of transmission and distribution which never materialised thus making the decision highly debated in the context of its socio economic benefits as the energy crises continues unabated. This study, by using semi-structured interview from energy experts in the power sector, attempts to find the factors that withheld the positive effects of this decision. The objective is to critically view the decision of corporatisation of the public entity (WAPDA) and provide useful input to frame future energy policy to overcome critical energy crises in Pakistan.

## 2. WATER AND POWER DEVELOPMENT AUTHORITY, PAKISTAN

WAPDA was created in 1958 as a semi autonomous statutory body to regulate the power and hydel development in the country [Kessides (2013)]. Its main purpose was to look after, expand and channelise the power sector it in one direction [Javaid, *et al.* (2011)]. In 1992, this arrangement was reconsidered due to the economic burden, inefficiency of WAPDA, customer dissatisfaction, problems with financiers [Amjad and Baloch (2012)]. However, the United States also influenced the third world countries, directly or indirectly via donor agencies to adopt the neoliberal policies [Kotz (2000)]. The government decided to corporatise the power wing of WAPDA, the plan involved un-bundling the power sector in to several power generation, transmission and distribution companies and eventually privatise them. In addition an independent institution, a regulatory authority, National Electric Power Regulatory Authority (NEPRA) with the major task to regulate the sector was created in 1997 and Pakistan Electric Power Supply Company (PEPCO) was also established to oversee the corporatisation and privatisation of power sector in 1998 [Arshad and Usman (2007)]. In 2007, the monolithic utility of WAPDA was split into WAPDA and Pakistan Electric Power Company (PEPCO). The Board of Directors of PEPCO approved its dissolution in 2012 and the its functions were first transferred to National Transmission and Dispatch Company (NTDC) and later to Centre for Power Purchase Agency (CPPA) [Kessides (2013)].

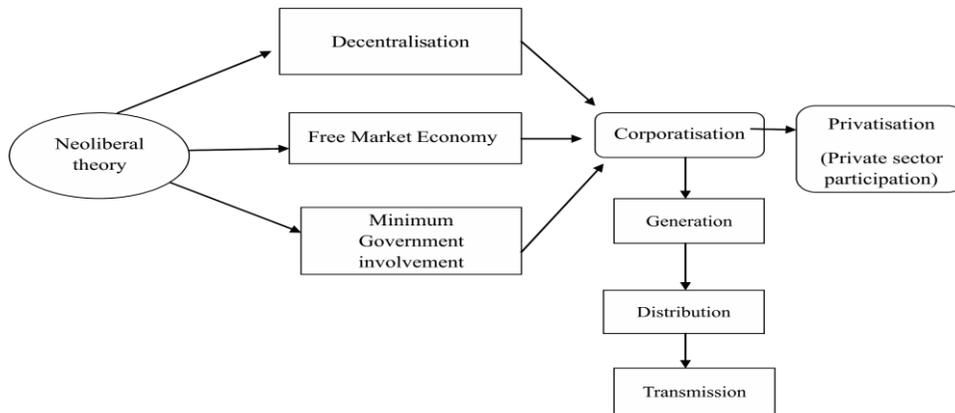
**Fig. Restructured Power Sector of Pakistan**



Source: Report by Islamabad Chamber of Commerce and Industry (2011).

### 3. ANALYTICAL FRAMEWORK

According to Botterud (2003) the classical theory was revived as ‘Theory of neoliberalism’. The theory believed in the ‘free market economy’ which would bring in competition, reduce the government involvement and regulation and thus lower the prices. This study revolves around the theory of neoliberalism which leads to restructuring and corporatisation of the state led power utilities along with involvement of public utilities in the form of privatisation. Many developing countries adopted the neoliberal theory but according to studies [William and Ghanadan (2006); Jamasb (2006); Reddy (2001)] very few of them have shown positive results. Majority of the nations stalled in some stage of corporatisation. According to Yi-chong (2006), the World Bank sold its reform template without taking into account the different economic, social and developmental stages of the different countries. Many studies [Wamukonya (2006); among others] also suggest that privatisation of the electricity sector might not be a necessary approach.



Source: Self.

#### **4. METHODOLOGY**

Purposeful and criterion based selection was used for sampling. The informants who were targeted through these methods were the people who had served or were still serving in the key positions/departments that were directly related to the process of restructuring of WAPDA into autonomous utilities. 18 informants were identified who belonged to the government offices: PPIB (Public Private Infrastructure Board), Planning Commission of Pakistan, NTDC (National Transmission and Dispatch Company), IESCO (Islamabad Electric Supply Company), PESCO (Peshawar Electric Supply Company), NEPRA and USAID. Semi structured interviews were the prime source of data collection. Open ended questions were designed in simple language and elaborated in some cases to obtain the relevant information. The questions were carefully designed to not lead the informants. The interviewees were given the autonomy to disclose any information which at times led to a new dimension of discussion. The interviews were conducted till a point of saturation and similar information was coming from the informants. An observation diary was kept during the data collection in which important notes and personal observations were noted.

#### **5. RESULT AND DISCUSSION**

##### **5.1. Inclination Towards Restructuring**

For 33 years (1958-1992) the power sector of Pakistan (generation, transmission, and distribution) worked under the 'vertically integrated' utility WAPDA which was termed "The White Elephant" because of the variables such as centralisation, corruption, dissatisfied customers, low performance and inability to meet the growing demands of electricity throughout the country. The decision of restructuring was taken to put an end to the above mentioned problems. The public owned utility was not only unable to meet the demand of energy but also it was unable to generate the revenues despite government's continuous investment. Wamukonya (2003) stated that many developing countries adopted the restructuring with a notion that it would be efficient and effective way to help a country meet its goals of sustainable development. The informants pointed out that the huge system of WAPDA was unorganised and poorly managed in. The power generated by the WAPDA was sold to the consumers but within the system, the loopholes were proving to be the hindrance in its efficiency. Even though WAPDA did see the time of surplus energy but many factors contributed to that including low economic growth and less demand along with the newly constructed hydel facilities that were generating enough rather surplus energy for the country. The increased budget did not help the situation because it was not the monetary problem that the utility was facing rather a managerial problem. The mismanaged utility was unable to allocate the funds properly to the distribution, generation and transmission sections thus resulting in heavy load shedding. The provincial autonomy of Punjab cannot be neglected here as Punjab, from beginning was the most powerful province and had a strong hold on national bureaucracy and politics. All the orders concerning electricity were released from WAPDA headquarter Lahore. All the information regarding energy sector from all over Pakistan was accumulated in Lahore. It was the centralised system. For a huge country like Pakistan having a lot of assets, this centralised system accounted for decreased speed of

the work, less efficiency and low performance of the organisation. One WAPDA office to deal with the diverse energy resources, the work load was exceptional on the staff and the top management which resulted in arbitrary decisions due to lack of time, thus compromising on the growth of the country. The process was slow, time consuming, ill managed and had created a lot of room for factors like corruption, nepotism, favouritism and negligence. These factors resulted in inept performance of WAPDA which was evident in shape of load shedding and ultimately customer dissatisfaction. The situation got worse in the mid 1980s. WAPDA became a weighted inconvenience burden on already financially weakened government. The government of Pakistan under Nawaz Sharif's rule in 1992 decided on the advice of loan lending agencies like IMF and World Bank which was to follow the new world order based on neoliberal theory of decentralisation and distribution of power for easy access and speedy outcomes. William and Ghanadan (2006) mentioned that the reforms were presented to the developing economies with the extensive references from the developed economies like US, Norway, England and Wales without matching them with the expectations and capabilities of the reforming countries. The government went ahead with decentralisation, breaking up the monolithic structure into 14 entities including Generation and Distribution Companies and one Transmission Company. According to the informants, the major players from Pakistan's side were the Energy wing of Planning Commission of Pakistan, Ministry of Water and Power and WAPDA authorities along with international donors (IMF, ADB, and WB). The involvement of foreign donors evoked a lot of resistance from within the system. There were people within the system who looked at the idea of corporatising WAPDA as a foreign idea and thought that Pakistan was pressurised into taking this decision by the money lenders. Pakistan wasn't prepared to handle the process of corporatisation and there were no solid grounds prepared for corporatisation.

Within WAPDA there are people who still consider WAPDA the ultimate organisation that has the potential to run the energy sector smoothly. They opposed this decision because in their personal capacity, they called WAPDA 'the backbone of the nation's economy' and the unbundling strategy 'a conspiracy'. They believed that in WAPDA, people got polished as they moved up the hierarchy unlike in the decentralisation where outsiders are hired directly on high posts as CEO, CFO or board of governors.

The people who oppose the restructuring of WAPDA also argue that the donor agencies had hidden agendas on which they work and lend financial assistance to the developing and undeveloped nations. In popular public opinion, the donor agencies like IMF, WB and ADB lend money to the developing countries put sanctions on them and control their policies and economic growth. World Bank (1994) stated that the purpose for reforms was to seek better performance in the power sector along with financial performance and supply—demand side performance.

In 1992 when the donor agencies approved the financial grant to Pakistan their agenda was to invest in sectors that could generate revenues and unfortunately WAPDA wasn't meeting the criteria. Due to its monolithic structure and mismanagement WAPDA was unable to provide satisfactory customer service and also had high losses and corruption. These factors also contributed in donor agencies' lack of investment in this public utility.

If the situation is analysed holistically it reveals that decentralisation and distribution of power to the grass root level is the ultimate way to success as the discourses of bottom up approaches are more sustainable. It also gives the employees a sense of ownership. As one unit WAPDA may be assembled as of numerous assets but the matter at hand was that how to use of those assets and skills effectively. The top management was overburdened with so much work that it was humanly impossible for the 4 members and one chairman to deal with any one of the problem or resource with undivided attention. They were required to do a lot of work in a lesser time; consequently they squeezed everything hastily in their schedule, compromising on the quality of the work and productivity of the decisions taken. Having all the authority under one command as in case of WAPDA would mean that the bureaucratic procedures would prevail, the authorities would be doctorial, they would sit in Lahore and the management would not have real and unfiltered information. The management would be overloaded as only 4 members are there to take all decisions and it would be politically very lucrative to get hold of WAPDA. The developed nations like USA, England, Korea, Malaysia, and Chile have successfully followed the new world but Pakistan is a developing nation unlike many of the mentioned countries which has created a difference in circumstances. William and Ghanadan (2006) mentioned that the reforms were presented to the developing economies with the extensive references from the developed economies like US, Norway, England and Wales without matching them with the expectations and capabilities of the reforming countries. Holistic analysis show that the Neoliberal theory is not applicable on the emerging capitalist states like Pakistan 100 percent because a vial portion of people live below the poverty line and it is government's duty to safeguard the interests of those people. Kotz (2000) stated that the theory of neoliberal negatively affects the macroeconomics of a country, shrinking its welfare programmes. To cater this arising issue, the Strategic Plan 1992 includes a section based on the subsidies for the poor population.

The situation analysis reveals that the national bureaucracy who was in charge of smooth unbundling of government utility sensed the incompetency of the political leaders and acted against the national benefits, earning themselves benefits in the unlikely situation.

According to the informants, the decision of restructuring may be a foreign dictation but it was also a very good decision which was well suited with Pakistan's conditions. According to Jamasb (2006), the developing and transitional economies adopted the new reforms when the international experiences with these reforms were limited; therefore, the decision of restructuring taken by many developing countries met with varied difficulties and problems. The results of a successful restructuring would have taken Pakistan from being an under developed to a developed nation. A separate board of governors for distribution companies is working to improve the efficiency of the companies. Although, it is impossible to remove T&D losses completely but unbundling has helped isolate the affected areas where T & D losses are highest. This has made it easier to establish an action plan for loss minimisation.

## **5.2. The Need for Change**

In 1970s, the theory of neoliberalism was revived and with that restructuring of public utilities became a common practice when many countries like Korea, US, UK, Japan, Malaysia adopted the theory of neoliberalism and ran it across the electricity

utilities [APEC (2000)]. Wamukonya (2003) mentioned that in 1970s only a handful and later in 1990s many countries adopted the new power sector reforms including approximately 30 countries in the last 15 years. Experts carry a difference of opinion about the time when the decision of 'corporatisation' of the electricity sector of Pakistan was taken i.e., 1992. Some informants<sup>2</sup> say that the right moment had come as the culture of corruption and failure trended in, demand was on the rise and to keep pace with the growing demand, WAPDA had to increase efficiency which was not happening. Any further delay in this regard would have been disastrous. Contrary to this, another set of informants are of opinion that this decision was a hasty decision taken by government under the pressure of donor agencies. Their point of argument is that the Government of Pakistan (GOP) should have considered capacity building<sup>3</sup> prior to restructuring. Wamukonya (2003) mentioned in his study that there are evidences that while the power sector reforms considered financial and economic growth, it did not give due attention towards social and environmental concerns. The best way to proceed with the strategic plan would have been to take into confidence the different level of employees regarding the corporatisation plan. In Pakistan during 1980-90s, there was a 'myth' about the private jobs. People preferred government jobs over private jobs because in their opinions government job provided security while the private jobs do not yield any kind of security. With this mass mindset there was no corporate culture in Pakistan to begin with. The government should have established a corporate culture and worked to nullify the myth regarding the private sector jobs before proceeding with the Strategic plan, 1992.

According to the studies of the World Bank (1995); Bacon (1995a); Bouille, *et al.* 2001, the greater involvement of the private sector would result in the better performance of the utility. For the first time, the facilities of generation, transmission and distribution were operated separately; there should have been staff trainings and briefings. The unprecedented amount of resistance induced by the defensive employees of WAPDA made a smooth start, impossible. Had there been a campaign to familiarise the process of corporatisation with the corporation of WAPDA and its employees, the result could have been a lot finer. Although, the 'Strategic plan of WAPDA's privatisation 1992' did include capacity building, but ill execution cost Pakistan two decades of delay to start this process.

A small group of informants also believed that the timing of the decision to restructure WAPDA was late as the idea had emerged years earlier. The interviewees have passed on a small amount of blame to the political turmoil in the country the major reason remains the unwillingness of authorities within WAPDA and other government offices, vested interests of people who held important positions in the energy sector and internal resistance and political interference that sabotaged the process of corporatisation. The study conducted by Wamukonya (2003) show that the reform template issued by the World Bank ignored the political, social and developmental stage of the country adopting the reforms.

Analyses show that the strategic plan formulated in 1992 to split WAPDA lacked social sector involvement. Marking the unbundling time period to 3-4 years was an

<sup>2</sup>Board Member PESCO, Senior Project Manager PPIB, Engineer NTDC.

<sup>3</sup>Capacity building refers to the development of skill in the technical and non-technical staff of an organisation.

overestimation of the situation. Although, according to Chang (2007) with the deregulation of the vertically integrated utility, competition would have been encouraged but Stern (2000) stated that the electricity reforms in developing countries proved to be more complicated than they were initially anticipated. Along with that, many developing countries lacked necessary regulatory framework, experience and human resource to compliment the reforms undertaken by the countries. With WAPDA being the sole owner of all the assets of energy sector, the length of bureaucratic and political interference in the affairs of the utility and the clear opposition of WAPDA officials towards the unbundling, the strategic plan should have been more realistic. Analyses also reveal that the time of the decision was not the issue. The process wasn't properly propagated. Even though the WAPDA authorities weren't in favour of this decision, it was not in their power to stop the decision of restructuring. The main reason of opposition was that WAPDA had enjoyed being all in all and was inclined towards personal benefits rather than national stability and growth. After the decision had been made the government should have disseminated the information to the lower staff and prepared the employees for the change in the nature of their jobs. The employees had many concerns regarding the reforms and many of them arose because they didnot have proper information.

The employees should also have been given job security during the process of corporatisation, protecting employee interests along with merit based selection. Also the labour unions, which are one of the major blocks of the system, should have been taken into confidence. Government should have got in touch with the labour unions before restricting to win their confidence and support. These measures would have speed up the process.

### **5.3. Privatisation: The Ultimate Solution? Arguments and Explanations**

The theory of neoliberalism supports privatisation which liberates the government from every responsibility. The strategic plan of disintegrating WAPDA 1992, talks about the privatisation of the corporatised entities. The questions that arises here is whether privatisation is the ultimate solution of Pakistan's energy crisis? 100 percent informants agreed that the energy sector of Pakistan should further move towards privatisation after the system has been corporatised. The private sector investment is not only secure but also they would bring in new technological advancement which would boost the competition among the distribution, generation and transmission companies. The competitive open market would solve Pakistan's energy crisis. An ex-employee of Planning Commission, though discarded the current system as being corporatised, he favoured privatisation. In his view, private sector would bring in business and their serious attitude towards business and profit making would also help Pakistan overcome its current managerial problems like non recovery of revenues, theft, corruption, vested interest etc, in the energy sector. The concept of 'free market economy' does not cater to the needs of unprivileged class as per Kotz (2000). However, according to an informant:

If privatisation of the utilities takes place, there will not be any need of subsidy. The culture of privatisation would bring competition in the market which would lower the prices by itself hence demolishing the need of subsidy in an economy.

In the current system, the government is subsidising the corruption. The cost of production according to NEPRA is 9 Rs/ KW and according to WAPDA its 11Rs/ KW. The difference of 2 Rs is being subsidised by the government. The private sector entry and removal of government intervention will eradicate any need of subsidy. However, the study of the strategic plan of unbundling of WAPDA 1992 shows that the objectives set by the government included subsidy to the unprivileged class of the economy. *“Rationalise Prices and Social Subsidies, while maintaining certain socially desirable policies such as rural electrification and low income lifeline rates.”* Kotz (2000) criticizes on the neoliberalism theory that it creates instability in the macroeconomic scenario by relinquishing the state taxation policies, compromising on the social welfare programs and loosing the government control on financial sector.

Like any other empirical research this study also suffers some caveats. First the sample selected is relatively small that can be enlarged if time and money permits. Second, open ended questions though bring more detailed information yet are biased and non objective. Finally people have their political affiliations and as the same government, who initiated this process, is again ruling the country the results may be positively biased in favour of the decision. Therefore, government should empower a body to conduct a comprehensive survey with specific objectives to find out the reason that are responsible for the energy crises in Pakistan.

## 6. CONCLUSION

The main objective of this study was to find out myth and realities attached to restructuring decision of a public utility i.e WAPDA. Revamping was initiated in 1992 in the energy sector of Pakistan based on the information provided by the people who were directly or indirectly involved in this process. It is found that corruption, nepotism, centralised system and bad governance led to the inefficiency of the WAPDA, which forced the government to deregulate it to enhance its efficiency. Though the process of unbundling was beneficial for the electricity sector of Pakistan, yet it has been unable to achieve its stated objectives. Extensive study of the literature available on the neoliberal theory, which acted as a base for the decision of corporatisation of WAPDA in 1992, coupled with semi structured interviews with energy experts (on job and retired) show that the government of Pakistan underwent the decision of corporatisation due to the policy of the loan lending agencies who associated the reforms with loan. The reform template given by the World Bank was adopted, as it is without making necessary changes with respect to the ground realities of the country, which resulted in various problems especially related to the social sector. The government could not properly propagate its agenda of unbundling WAPDA, which faced resistance within the different sectors and among the masses that ultimately slowed this process and decreased its importance. Analysis shows that the strategic plan formulated in 1992 to split WAPDA lacked social sector involvement. Marking the unbundling time period to 3-4 years reveals over confidence of the government. To some extent the political turmoil in the country remains major reason of the unwillingness of authorities within WAPDA and other government offices, vested interests of people who held important positions in the energy sector, internal resistance and political interference that sabotaged the process of corporatisation. Bureaucracy that was in charge of smooth unbundling of government

utility sensed the incompetency of the political leaders, and acted against the national benefits, earning themselves benefits in the unlikely situation.

Expert opinion reflects that the partial privatisation of state-led public utility would help bring in the competition in market, and would free the government to focus on the matters of governance, despite the literature which shows that theory of neoliberal doesn't work well in the capitalist states as it compromises on the welfare programmes and promotes 'free market economy' which doesn't cater to the unprivileged class. Further, the upcoming energy policies would make a serious impact in shaping the future of the power sector of Pakistan, which may look gullible at the moment. The example of Chile with very successful power reforms is a source of inspiration for all the developing countries to proceed with the reforms. It is to be duly noted that the electricity reforms of Chile were the longest in the history. In concluding remarks, it can be stated that the restructuring of WAPDA in 1992 was an ambitious and forced decision on the part of government due to which it could not achieve its objective, however, in its nature it was a right decision and need to be continued as will check the financial haemorrhaging and supposedly improve efficiencies and competitiveness in the sector and in the economy which will raise the service delivery a much needed goal of the government. However, there are enough reasons to be less sanguine that privatisation of WAPDA will provide affordable electricity to all Pakistanis.

#### REFERENCES

- Alam, M. S. (2006) *Economic Growth with Energy*. North eastern University, Boston.
- Amjad, M. and Q. Baloch (2012) Performance and Productivity of WAPDA before and after Restructuring: A Case Study of Khyber Pakhtunkhwa. *Sarhad Journal Agriculture* 28:4.
- Botterud, A. (2003) Long Term Planning in Structured Power Systems. Dynamic Modeling of Investments in New Power Generation under Uncertainty. (Thesis). The Norwegian University of Science and Technology.
- Chang, Y. (2007) The New Electricity Market of Singapore: Regulatory Framework, Market Power and Competition. *Energy Policy* 35, 403–412.
- Ghosh, S. (2000) Electricity Consumption and Economic Growth in India. *Energy Policy* 30: 2, 125–129.
- Jamasb, T. (2006) Between the State and the Market: Electricity Sector Reform in Developing Countries. *Utility Policies* 14, 14–30.
- Javaid, M. A., S. Hussain, A. Maqsood, Z. Arshad, M. A. Arshad, and M. Idrees (2011) Electrical Energy Crisis in Pakistan and their Possible Solutions. *International Journal of Basic and Applied Sciences* 11: 5.
- Kessides, I. N. (2013) Chaos in Power: Pakistan's Electricity Crisis. *Journal of Energy Policy* 55, 271–285.
- Khan, M. A. and U. Ahmed (2008) Energy Demand in Pakistan: A Disaggregates Analysis. *The Pakistan Development Review* 47: 4, 437–455.
- Kotz, D. M. (2000) Globalisation and Neoliberalism. *Rethinking Marxism* 12: 2, 64–79.
- Reddy, A. K. N. (2002) Towards a New Paradigm for Power Sector Reform in India. *Energy for Sustainable Development* 4:4.

- Saleem, M. (2002) Technical Efficiency in Electricity Generation Sector of Pakistan—The Impact of Private and Public Ownership.
- Sioshansi, F. P. (2006) Electricity Market Reform: An International Perspective. Oxford: Elsevier.
- Sueyoshi, T., M. Goto and T. Ueno (2010) Performance Analysis of US Coal-fired Power Plants by Measuring Three DEA Efficiencies. *Energy Policy* 38:4, 1675–1688.
- Wamukonya, N. (2003) Power Sector Reforms in Developing Countries: Mismatched Agendas. *Energy Policy* 31, 1273–1289.
- Williams, J. H. and R. Ghanadan (2006) Energy Reforms in Developing and Transitional Countries: A Reappraisal. *Energy Policy* 31, 815–844.
- Woo, *et al.* (2003) Electricity Market Reform Failures: UK, Norway, Alberta and California. *Energy Policy* 31, 1103–1115.
- Yi-chong, X. (2006) The Myth of Single Solution: Electricity Reforms and the World Bank. *Energy Policy* 31, 802–814.