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Pakistan's energy crisis: causes, consequences and possible remedies

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Executive summary

The energy crisis is the largest single drain on Pakistan's economy. This crisis stems from a fuel mix transformation initiated two decades ago, when power generation came to rely more on imported furnace oil than hydropower. The resultant increased power generation costs, coupled with the high proportion of line losses, have led to the need to increase tariffs, while causing losses to power generation, transmission and distribution companies. This in turn has given rise to the phenomenon of circular debt in the energy sector, whereby slippages in the payment of bills (particularly on the part of public institutions) trigger a chain of delayed payments for imported furnace oil, natural gas or other inputs to the thermal generation system, which in turn hamper the operation of the power plants and result in less than optimum capacity usage. In addition, the energy crisis is a significant drain on the government's resources, with energy subsidies taking up a substantial part of the federal budget. Under an International Monetary Fund agreement of September 2013 the government is committed to clearing the circular debt, adjusting tariffs to improve resource allocation and encourage conservation, and implementing fuel policies aimed at ensuring natural gas supplies to power plants.

Introduction

According to the Ministry of Finance, the energy crisis is the largest single drain on Pakistan's economy, shaving off up to 2 percentage points from annual gross domestic product growth in the country (see EAW, 2013: "Overview"). The current energy crisis began to manifest itself in earnest by late 2007. Although the causes of the crisis are structural, the immediate trigger was the 2007 global commodity price boom, when oil prices almost tripled over an 18-month period.[1] The unprecedented fuel inflation was a key factor in the 36% increase in Pakistan's import bill in fiscal year 2008 (see EAW, 2013: "Statistical appendix", Table 8.3), and the consequences of an energy generation policy that relies heavily on oil-fired thermal generation became all too clear.

This expert analysis briefly discusses the key issues affecting the energy sector, and then analyses how energy issues are having an impact on growth and development in Pakistan. It focuses particularly on the new energy policy issued by the government that came to power in May 2013.

The following sections delineate the origins of the energy crisis and some of the key issues that the government is currently grappling with. The expert analysis then goes on to look at the solutions that the government is trying to implement and assesses whether these will indeed prove to be effective in reducing energy shortages and reviving growth.

Origins of the crisis

While 2007 is considered the starting point of the ongoing energy crisis, the issue has its roots in policy decisions taken two decades ago. In 1994, when only 40% of the population had access to electricity, Pakistan was facing power shortages of about 2,000 MW during peak load times (Pakistan, 1994). The government of the day assessed that the average annual increase in power demand would be

1 Global fuel prices averaged $50 per barrel at the beginning of 2007 and peaked at $147 per barrel in July 2008.

about 8% in the short to medium term, and generation capacity of the order of 960-1,300 MW would have to be added to the system annually from the mid-1990s onwards to meet the demands of a growing economy. The scale of investment required was deemed to be well beyond what the public sector could muster.

A power policy was thus issued in 1994 that offered an attractive package of incentives to foreign investors, including a tariff ceiling that resulted in returns on investment of 15-18%, a minimum required equity investment of just 20%, and a host of fiscal and security incentives (for details, see Pakistan, 1994). More importantly, the policy effectively transformed the fuel mix for energy generation in the country. In the 1980s a little over 60% of Pakistan's power was generated from hydropower. The 1994 power policy, on the other hand, was designed to encourage the quick installation of thermal power plants, the bulk of which were fuel oil based. The government of the time considered this strategy to be the optimal one, not only because of the relative ease with which thermal power plants could be added to the generation mix compared to hydropower resources, which would take much longer, but also because key proposed hydropower projects, for which feasibility studies had been prepared, were controversial for political reasons.[2] By 2013, however, the proportion of power generation from hydro and nuclear sources was about 36%, while the proportion of generation from furnace oil-fired sources was almost equal at 35% (EAW, 2013: Table 14.6). Gas-fired plants accounted for 29% of power generation, while coal-fired plants accounted for a minuscule 0.1% of generation. Thus, in less than two decades the fuel mix for power generation underwent a significant transformation.

Current issues

The key fiscal issues around the energy crisis currently being experienced by the Pakistani economy are discussed below.

Fuel mix: cost implications

The fuel mix transformation described earlier has cost implications, because power generation from imported furnace oil is significantly more expensive than from hydro sources – approximately Rs. 12-17 per unit of oil power generation, compared to hydro generation, which costs about Rs. 1 per unit (see Pakistan, 2013).[3] Generation from diesel-fired power plants is even more expensive at about Rs. 23 per unit of power generated.

The increased generation cost, coupled with the high proportion of line losses (estimated in the National Power Policy 2013 at 23-25%; see Pakistan, 2013) ensures that power supply costs are close to Rs. 16 per unit (or about $0.15) in Pakistan, compared to about $0.08 for the Asia-Pacific region as a whole (see OECD, 2010).

Circular debt

The increased dependence on expensive, thermal oil power generation has also given rise to the phenomenon of circular debt in the energy sector, in terms of which slippages in bill payments (particularly on the part of public institutions) trigger off a chain of delayed payments for imported furnace oil, natural gas or other inputs to the thermal generation system, which in turn hamper the operation of the power plants and result in less than optimum capacity usage. As of the end of July 2013 the circular debt had increased to almost $5 billion, and was being cited as a significant drag on the power sector and a key factor impeding the efficient operation of independent power producers (IPPs).

The new government that came to power in June 2013 cited the retirement of the circular debt as a priority, and within five weeks of taking office announced that it had taken measures to deal with the issue. The debt was cleared by paying Rs. 161 billion in cash to IPPs, issuing Pakistan investment bonds to public sector entities responsible for oil and gas exploration and the marketing of petroleum products, and making "non-cash payments" to the Water and Power Development Authority (WAPDA – the country's largest power supply utility) and the National Transmission and Distribution Company (NTDC).[4] Questions were raised regarding the government's ability to raise funds for the payments to IPPs in particular (as these were cash payments), but the finance minister claimed that the monies were put together through cuts in non-salary expenditure in some sectors, by raising money from national savings schemes and by taking loans from domestic banks.

Until more detailed economic data is available, it will not be clear what the government did to raise money for the retirement of the debt. But each of the measures cited by the minister has longer-term implications – from an increase in the domestic debt burden to the curtailment of essential expenditure on services. Nevertheless, there is little doubt that the previous government's inaction on the debt was costing the economy dearly, and the issue had to be tackled head on. The government now needs to start looking at the larger structural problem, i.e. that on average power costs about Rs. 12 per unit to generate, while end users pay Rs. 9. Unless this fundamental issue of energy bills not covering costs is addressed, the debt will rear its head again, and sooner rather than later. Indeed, it has already done so – by the end of September 2013, in a statement to the National Assembly, the Treasury admitted that circular debt of Rs. 100 billion (or nearly $1 billion) had once again accumulated in the power sector (*Daily Business Recorder*, 2013).

2 The most obvious example is the proposed Kalabagh Dam, which is opposed by stakeholders in the provinces of Khyber Pakhtunkhwa and Sindh for a variety of technical and administrative reasons.
3 The U.S. dollar/rupee exchange rate is roughly 107 rupees to the dollar.
4 These consisted of adjustment of payables against receivables – essentially book adjustments.

Subsidies

Energy subsidies constituted 95% of the subsidies that the government provided in the budget for the last fiscal year (2012-13),[5] amounting to 13.5% of current expenditure. According to data released at the end of the last fiscal year, the subsidy bill in total was significantly higher than the amount the government spent on running the civil government (Rs. 367.5 billion, compared to Rs. 251.2 billion, respectively).[6]

This was still an improvement on the year before, i.e. fiscal year 2011-12, when the subsidy bill amounted to Rs. 512.3 billion, or almost $5 billion – higher than the defence budget for that year (which amounted to Rs. 510 billion). In other words, in 2011-12 the two main power utilities, WAPDA and the Karachi Electric Supply Corporation (KESC), cost the government almost as much to run as the Pakistan armed forces.

Although the government has optimistically budgeted subsidies at just Rs. 240 billion for the ongoing fiscal year (2013-14), actual expenditure will almost certainly be greater, in the absence of any structural reforms. The bulk of the energy subsidy (94% and 99% of the subsidy to WAPDA and KESC, respectively) is a tariff differential subsidy, or a payment that the government makes to the utility to enable it to charge tariffs at an average rate stipulated by the power sector regulator, without taking into account the operational costs of each distribution company. As such, the subsidy ensures that each individual distribution company has little incentive to cut costs or improve efficiency, because the companies are aware that their operational expenses will be covered, whatever the sums involved.

Implications for growth

The three issues delineated above do not by any means constitute a comprehensive picture of the problems that beset the energy sector in Pakistan. In particular, the technical and operational problems that plague the transmission and distribution system, fuel adulteration issues, supply chain blockages that prevent efficient generation, and the poor governance that enables the widespread theft of electricity and the non-payment of bills are issues that require more detailed analysis than it is possible to incorporate in this discussion.

Nevertheless, the three issues described go a long way in explaining how Pakistan's economy has been crippled by the energy crisis. To summarise, the fuel mix transformation of the mid-1990s effectively rendered the generation of power about ten times more expensive than it had been when hydropower was the key form of generation. The increase in generation costs precipitated increases in tariffs, which in turn triggered a round of payment defaults and delays on the part of a significant number of mainly public sector entities, in addition to households. These instances of non-payment of dues have reverberated right through the supply chain, causing IPPs to operate at less than optimum capacity, thus precipitating a power crisis. With power shutdowns of 12-18 hours a day during summer months in major cities and smaller industrial towns, production processes have been badly disrupted and/or production costs increased as manufacturing enterprises and service outlets either reduce shifts and hours of operation or invest in expensive alternate power supply systems.

The disruption of power supplies is one side of the picture. In addition, the energy crisis is a significant drain on the government's resources, with energy subsidies taking up a substantial portion of the federal budget. The government's attempts to bail out the leading power sector utilities and ensure minimal return on equity to distribution companies is bleeding the exchequer and nullifying any reform initiatives that these entities may have in mind. Power sector utilities suffer from the "too big to fail" syndrome in terms of which they are justified in believing that the government will always step in to pay their deficits because they are providing an essential resource. While it is true that the sector cannot be allowed to fail, the federal government cannot delay the reform of these entities and has to allow them to take the fall for decisions that lead to technical and financial losses.

The IMF's recommendations for the energy sector

The energy crisis has become one of the key impediments to growth in Pakistan and as such has prompted international financial institutions to renew their interest in the energy sector. In terms of policy reform, the key document that will guide Pakistan's policy agenda in the short to medium term is the government's agreement with the International Monetary Fund (IMF) reached in September 2013, according to which a $6.7 billion loan has been extended to Pakistan under the IMF's Extended Fund Facility. The agreement includes a number of clauses that specifically deal with the energy sector. In the document, IMF staff argued that the key to reform is to make the energy sector financially viable (see IMF, 2013: para. 38). The measures suggested to do this included clearance of the circular debt, tariff adjustments aimed at improving resource allocation and encouraging conservation, and fuel policies aimed at ensuring the supply of natural gas to power plants to facilitate a switch from furnace oil to a cheaper indigenous fuel.

Details of the measures to be taken under the terms of the agreement are as follows.

Energy subsidies: Tariff differential subsidies are to be phased out over the programme period (i.e. three years) and tariffs are to be brought to cost recovery levels. The

5 The fiscal year in Pakistan runs from July 1st to June 30th.
6 See the "Budget in brief" document issued by the Ministry of Finance.

government is encouraged to reduce generation, transmission and distribution costs by checking technical and financial losses, and improving governance in the sector.

Fuel allocation: The government has pledged to review its natural gas allocation policy to divert the resource towards uses with higher economic value (mainly power generation, as opposed to domestic consumption). In addition, the tariff-setting regime is to take into account the relative economic value of the various uses of gas and set tariffs such that prices alone dictate natural gas allocation in the future. In addition, the government is to make arrangements for the import of natural gas and increasing incentives for domestic exploration.

While the above measures were included in the programme document as future actions, the programme required the government to undertake a series of actions prior to loan approval to signal its preparedness. These measures included the notification of new electricity tariffs for industrial, commercial and bulk consumers that incorporated a 50% increase in terms of weighted averages. A similar increase was notified for residents of the region Azad Jammu and Kashmir, who had enjoyed highly subsidised tariffs thus far. A further 30% increase in weighted average tariffs for a second group of consumers was to be notified by October 1st 2013.

Progress on the implementation of conditions

The tariff adjustment process was delayed due to procedural issues, when the government's October 1st notification of a 30% increase in the electricity tariff was questioned by the Supreme Court, which pointed out that tariff notification was the business of the regulator, the National Electric Power Regulatory Authority (NEPRA), and not the federal government. Just four days after issuing the notification, the government withdrew it and acknowledged the court's stance. A week later NEPRA proceeded to issue a notification almost identical to the one issued earlier by the federal government, raising tariffs by the requisite 30% in terms of weighted average. This in turn caused the court to question NEPRA's independence, and the regulator was asked to appear before the court to explain how tariff determination takes place. As of mid-December 2013 the tariffs have been notified, but NEPRA's interaction with the court is likely to continue in the short to medium term.

In terms of other conditions that the government has to meet before the end of 2013, these include hiring a firm of auditors to assess the stock and flow of payables in the energy sector and making a Central Power Purchasing Agency (CPPA) operational as an entity distinct from the NTDC. The government is to hire staff for the proposed agency, issue rules and guidelines for its governance, and initiate a payment and settlement system that would enable the CPPA to start purchasing power from IPPs under terms and conditions acceptable to both sides.

Conclusion

Pakistan's energy sector has become a major drain on the economy and is impeding growth, both because of power shortages (which have affected small manufacturing enterprises and services in particular) and because of the budgetary impacts of energy subsidies, which divert much-needed resources from more productive sectors.

The energy sector has become a focus of public policy in recent years and has garnered the attention of international financial institutions, including the IMF. Pressure for reform of the sector as a whole, and the power generation, transmission and distribution regime in particular, has grown substantially. The government is obliged to carry out tariff adjustments, remove subsidies and ensure a level playing field for all private sector entities active in power generation, in addition to other policy and governance reforms. The process has got off to a rocky start, with the judiciary calling into question the power sector regulator's authority and competence. How the government handles this delicate situation in the face of scepticism from state organs and hostility from consumers remains to be seen.

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