

Pakistan's energy future

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THE rental power plants are, at best, a quick and dirty fix. A quicker and cleaner one might have been if last winter, the turbine blades in the government's own generation plants had been replaced with modern, aerodynamic designs.

That action alone would have added a few percentage points in efficiency to plants like Guddu, Shahdara and Kotri and to KESC's at Bin Qasim.

Today the result would have been a few hundred extra megawatts in capacity-gained without burning a single gallon of furnace oil and higher approval ratings for the PPP government. Arguably the cost could have been financed through raising debt against future receivables from the additional output and through a carbon credits programme as the increased efficiency would reduce greenhouse gas emissions.

The Government of Pakistan is now expected to be writing a plan on how it proposes to overcome the power shortage. Meanwhile, a US team arranged by the Obama administration's point man in Pakistan, Richard Holbrooke, is also presently in Pakistan to make its own assessments.

If this arrangement works well, the Holbrooke team will also provide inputs into the GoP's plan, then carry out a final review and make recommendations. If the GoP accepts those recommendations, the US administration will use its influence to get this plan funded.

In writing this plan, a good start-

ing point for the government would be to define plan objectives that have measurable benchmarks. For instance, the planners may want to lay down 'promotion of socio-economic development (and justice)' and 'the sharpening of

Whilst Pakistan's energy mix is skewed towards oil and natural gas, still, and rather remarkably, three quarters of energy needs are met by domestic resources. Indigenous oil and gas reserves, however, are depleting faster than new discoveries are being made. Accordingly, this ratio is fast falling.

As another objective, the plan

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Pakistan's competitive advantage in agriculture and certain industrial sectors' as the energy plan's objectives. Lowering the cost of energy is akin to raising GDP per capita as it leaves more purchasing power in the hands of households. It also drives down the cost of doing businesses.

Other objectives could include energy security, the development of indigenous resources and saving of foreign exchange.

could aim to redress or reverse this trend.

The 14-year delay in developing the Thar coal reserves has brought home two lessons. One, fuel and electricity need to be dealt with in an integrated way. Two, Islamabad must not play tug-of-war with the provinces.

The power sector can be best optimised if the brief is expanded to include transport fuels, renewable energy, conservation initia-

tives and the carbon trading mechanism. At present, these are scattered across the ministries of petroleum, communications, agriculture and environment, while others are with the Planning Commission and still others with the provincial (in some cases even city) governments.

If upgrading four turbines can take so long one can imagine the

ciencies and costs may instead be shifted or imposed elsewhere.

To preclude these, the planners need to be given a larger sandbox in which to play. The energy sector needs to be dealt with in an integrated way.

Natural gas is an exhaustible resource. Coal-given the size of Thar's reserve-is not. For this reason it is central to Pakistan's energy solution.

Half of the world's electricity is generated from coal. The Thar coal seam lies 130-250m under the desert and for the most part, sandwiched between water tables above and below the coal seam. This poses a mining challenge.

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Together these challenges limit the options. Not long ago coal was a dirty fuel. Today, there are clean technologies; a popular one is underground gasification in which the coal never sees the sky. Instead, compressed air is piped down into the coal seam in a way to change its molecular structure and turn it into gas which is then recovered as it gushes out from beneath the surface.

The process involves costs but saves on mining, handling, transportation and cleaning the coal.

The resulting gas-syngas-can be used as a fuel in its own right or further converted to natural gas. It can be used for power generation, as transportation fuel and for the production of fertilisers and chem-

icals.

The technology is nothing new. However, the process is capital-intensive and requires know-how. This is where Holbrooke's team and Pakistan's allies are needed most.

Coal gasification also offers a halfway house where environmentalists and 'developmentalists' coming as they do from opposite directions, can meet and shake hands.

Pakistan's total energy requirement works out to a little over 100m tons of coal equivalent (mtce) each year. In addition another 50 mtce is provided by burning firewood, dung and crop residues in the rural sector.

This uncharted opportunity for biofuels and natural fertilisers is at present outside the mandate of the planners.

Farm waste augmented by jatropha grown on marginal lands can be converted to biofuels, and their residues to organic fertilisers. These together with local wind and solar energy solutions can meet the entire energy requirement of the rural sector.

Such programmes have shown to raise rural incomes and alleviate poverty in Latin America and sub-Saharan Africa and must be included in the terms of reference for this plan.

The Kalabagh experience taught us that power cannot be dealt with separately from the water issue. The real world often requires us to handle more complex things than changing a light bulb; even if to an energy saver, or, for that matter, changing four-turbine blades. But first, let's get the big picture right.

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