

ASPIRATIONS FOR THE NEXT 50 YEARS

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Energy security and our future



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Energy security is a difficult thing to analyse for a country because it is dependent on many factors. To assist in the analysis, researchers have identified four components of energy security: i) Availability; ii) Sustainability; iii) Affordability; and iv) Accessibility. To get an idea of how energy secure a country is, the country's situation with respect to the above four components need to be analysed.

AVAILABILITY

In terms of availability, Bangladesh's energy security may be rated as moderate. Availability has two aspects: i) Domestic Resources; and ii) Fuels supply infrastructure and management. In terms of domestic resources, Bangladesh's energy security position has always been poor. This is because compared to its large population, its fossil fuel resources were always very small. Nevertheless, how well the limited resources are utilised is a key issue for energy security.

To tackle gas shortage opting for the easy solution of importing LNG and

the government seems to have given up on finding gas. Even though we are hearing of programmes to gear up exploration, very little activity is evident. The government is very short of funds, and therefore, is averse to the idea of putting money into high-risk ventures, but the government must realise that gas exploration is a long-term investment. We have been enjoying a success ratio of 1:3 for a long time. The days of high success rate with gas exploration are gone. Gone also are the days of finding large reserves. We have to aim for small reserves that are difficult to find. Thus, we have to look for stratigraphic traps because all the prospective anticline traps have probably all been drilled.



To find gas in Bangladesh we have to be prepared now for a success ratio of 1:10. This means that out of ten (10) exploratory wells, nine (9) will be dry.

Our high-quality coal has the potential of supplying at least 10,000 MW of electricity for 20 years. Yet we have left it underground. Vague objections from environmentalists and other vested quarters have prevented us from mining our coal. Using imported coal certainly results in lowering of energy security. Not only will the cost of electricity generated be high, but also the logistical challenges of importing large quantities of coal may prove to be in some cases insurmountable.

Until recently, energy security was



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shirking responsibility of finding new gas is not in the best interest of the country. Petroleum geologists and engineers, who have good knowledge of the basins in Bangladesh, are emphatically reiterating that more gas can be found. In the last 10 years, land-based exploration has been minimal and deep-sea exploration has been practically non-existent. After an initial spurt of exploration activities, tied to a country's reserves of oil, gas and coal—more the reserves of fossil fuels, the more energy secure was the country. That notion is beginning to change rapidly as more and more countries begin to realise the potential of renewable energy. The sharp decline in the cost of renewable energy is making many countries—both developed and developing—self-reliant in electricity. Even a decade back the high cost of renewable energy meant that only rich nations could afford the luxury of using electricity generated from renewable energy. In the last decade, China and India have made great strides in renewable electricity generation. In India, the price of utility scale solar electricity has come down below 4 cents per kWh—that is comparable to nuclear, hydro or coal. Such drastic reduction in price has been possible due to innovative ideas incorporated into the solar PV implementation models. Similarly, China has achieved tremendous success in harnessing wind energy. Wind energy in many countries has become cheaper than all forms of conventional energy. These developments have brought

renewable energy into the mainstream, and therefore, can be considered as a form of energy that provides energy security. The question naturally arises—how does Bangladesh fare with respect to renewable energy? In a straightforward conventional evaluation, the prospect does not look bright. The principal reason for this is the non-availability and price of land. Despite government efforts, less than 50 MW of grid-tied solar power plants have been set up. In India at tariffs of 6-7 cents per kWh, thousands of megawatts of solar power plants can be built. In Bangladesh, even offers of 12-14 cents per kWh have failed to induce private sector to build solar power plants.

One of the main barriers to developing solar PV electricity to a meaningful extent is the restriction that no agricultural land can be used for solar energy projects. While this is an excellent measure linked to food security, it severely limits utility scale solar PV projects because land holdings are small, and to get a contiguous tract of land becomes nearly impossible. Projects proponents are facing difficulties in

setting up even 50 MW solar parks. If the government allows a small percentage of land, say 20 percent, in a project to be agricultural land, this limitation can be overcome. The effect on food security even if 10,000 MW of solar PV parks are developed will be minimal. Moreover, the financial and energy security benefits will be at least five times greater. In a globalised world, food security is not a dominant issue.

For Bangladesh to develop renewable energy, innovative thinking is required. Since land is expensive, systems have to be devised such that the land can have multiple uses. New technologies are close to commercialisation where agriculture is possibly below the solar panels. Solar cells to produce electricity use a narrow band of the electromagnetic spectrum. The rest of the spectrum is dissipated as heat and thus wasted. The unused part of the spectrum is precisely what plants need. The traditional solar panels completely block sunlight creating a shade underneath, where plants cannot grow or thrive. The novel transparent type panels allow the electromagnetic spectrum to be used by plants to pass through. The other innovative way to harness solar electricity is to use the wetlands. Panels mounted on stilts can harness solar energy leaving the wetland underneath undisturbed. Bangladesh may be short of land but being a riverine country, there is no shortage of water bodies. To harness solar energy using PV panels in Bangladesh it is better to focus on small units rather than utility scale units. There is an abundance of fallow land and "chars" that can be utilised for this purpose. Most of these strips of land cannot support utility scale solar power plants of 100+ MW, but units of 10-20 MW size can easily be built.

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“SUCCESS CONSISTS OF GOING FROM FAILURE TO FAILURE WITHOUT LOSS OF ENTHUSIASM”

Winston Churchill