

## Nuke answer to power

Govt firm on building N-plant to end electricity crisis, minister tells roundtable

NUCLEAR HIGHLIGHTS	
PROBLEM	SOLUTION
Nuclear fuel is available only from a small club of suppliers who are driven by geopolitics as well as cost.	Bangladesh should organise multi-country consortium of nuclear power plant operators to buy and reprocess fuel
To have a single 1000 mw plant, the grid capacity needs to be at least 10,000 mw to avoid national grid failure	Bangladesh can interconnect power grid with India or Myanmar to make the grid capacity even higher
Dumping nuclear waste is risky and complicated	The waste can be sent back to the nuclear fuel supplier or dumped by packing the waste in glass material down to subsoil hard rock layer in designated parts of the country

Staff Correspondent

Previous governments may not have kept the promise to build a nuclear power plant for the last 40 years but this Awami League government is committed to make it happen during its tenure, said State Minister for Science and ICT Yeafesh Osman yesterday.

"We mean business," he said at a discussion titled "Prospects of nuclear power in Bangladesh", adding, "The Awami League has pledged to build the Rooppur Nuclear Power Plant. We are clear about this. We have no option but to go for nuclear power for future energy security."

The discussion, jointly organised by Buet Alumni Association (Buetaa) and The Daily Star at The Daily Star conference room, overwhelmingly advocated immediate steps to build a 1,000-megawatt (MW) nuclear power plant at a staggered cost of \$2 billion.

The discussants felt that the country's gas and coal resources are simply not enough to meet the future demands while nuclear power provides emission-free energy.

President of Buetaa Jamilur Reza Chowdhury moderated the discussion in which Energy Adviser to the Prime Minister Towfiq-e-Elahi Chowdhury and former adviser to a caretaker government CS Karim also participated.

While Yeafesh Osman did not shed light on the expected memorandum of understanding with Russia later this month for two 1,000MW power plants, he said, "Whomever we sign our deals

with, it will be win-win for both. We do not want charity. We want to win and we want the other country to win as well."

Such a plant can be built over a period of five years to 14 years at most with a life cycle of 40 to 50 years. Such plants are costly mainly because safety needs to be ensured.

The Rooppur Nuclear Power Project was conceived in early 60s and 260 acres of land was acquired for it close to the Padma since nuclear plants need huge amount of water for its cooling system. Experts reviewed the site in 2001 for a 600MW plant and had certified it as suitable.

The nation should prepare its manpower to run such plants, introduce education to create such manpower in the future and set up a new body to implement and run the project, said speakers who represented Bangladesh Atomic Energy Commission (BAEC), Bangladesh University of Engineering and Technology (Buet), the private sector and International Finance Corporation (IFC).

A plant cannot be so large that it generates more than 10 percent of the total peak supply to the national grid. Otherwise, such a plant may cause the whole grid to fail. It means that the national grid should have a peak supply of 10,000MW to have a single unit 1,000MW nuclear plant. The speakers said if the country goes for nuclear power now, the national demand would hit around 10,000MW anyway by 2016.

Towfiq-e-Elahi picked a suggestion from another discussant to address this issue. "If our grid is connected to the regional [India or Myanmar] grid, then the 10 percent issue can be addressed. We would like to extend our grid to the regional network during our government's tenure."

He pointed out that even if the country had enough gas, the energy sources should be diversified. Nuclear power should be one of the choices.

"We are open to new ideas. We are committed to nuclear power. It is sad that our engineers went to other countries to build nuclear power plants while we sat for decades. But let us start now," Towfiq-e-Elahi said.

In addition to ensuring highest level of safety, the government needs to address one of the main impediments to nuclear power, ensuring purchase of nuclear fuel. This can be a geopolitical issue as only a few countries produce and sell uranium, the fuel that needs to be replenished every 18 to 24 months.

The other constraint is dumping the radioactive nuclear waste, which is still a globally debated issue. While it does not emit harmful gases, nuclear waste is an environmental issue. Most plants preserve the nuclear waste at the plant site, while some waste is dumped underground in deserts. A speaker suggested that Bangladesh should strike a deal with the fuel supplier to take back the waste.

A 1,000MW nuclear plant running at 80 percent factor for one year generates waste of 78 cubic feet, the roundtable was told.

Presenting a paper, Abdul Matin, former chief nuclear engineer of BAEC, said currently there are 436 nuclear reactors in the world generating 372,000MW power. Forty-four reactors with 38,848MW capacity are under construction. By 2030 there will be 862 reactors in the world generating more than 800,000MW.

He said nuclear electricity generation cost is cheaper than coal or gas fired power in most countries. The cost of power from nuclear energy in France is 3.93 cents per kilowatt while it is 4.42 cents for coal power and 4.30 cents for gas power. In Japan the cost of nuclear-, coal- and gas-generated electricity are 6.86 cents, 6.91 cents and 6.38 cents respectively. In the USA nuclear power costs 4.65 cents, coal 3.65 and gas 4.90 cents.

Matin explained why there was a renewed interest in nuclear power worldwide. "World's fossil fuel reserves are limited and depleting fast. There is growing concern about emission of greenhouse gases from the combustion of fossil fuels and the consequent global warming and climate change. At the same time, nuclear power provides a safe, environmentally clean and economically viable alternative source of power generation," he said.

He noted that if 50 percent of our 13.5 trillion cubic feet of gas is dedicated to electricity, it will provide 3200MW for 30 years. If 90 percent of 1,000 million tonnes of the country's coal is dedicated to power generation, it will produce 15,750MW power for 30 years.

The country's power demand will shoot to 5,720MW next year, 9,211MW in 2015, 14,172MW in 2020 and 20,823MW in 2025. Presently the country can supply up to 4,162MW of power.

In the short term, Bangladesh may import electricity from neighbouring countries, improve plant efficiency, import Liquefied Natural Gas and take up conservation measures. In medium term, the country may go for coal and gas exploration, interconnect the national grid with neighbouring countries, go for two 1,000MW nuclear power plants in Rooppur, to be in commission in 2016 and 17.

In the long term, the country should use coal on a large scale for power and take up four 1,000MW nuclear plants for base load in Chittagong and Khulna to be in commission between 2022 and 2026.