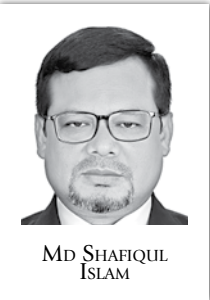


In search of safe, affordable and clean electricity



FOLLOWING the 2011 nuclear disaster in Japan's Fukushima, nuclear power's share in global electricity-generation saw a staggering decline from 13 percent to 10 percent. Should the trend continue, will nuclear power be of any consequence in the global energy mix of the future? If not, how will the world's electricity demand be met with nuclear power out of the picture? Can Germany, Italy, Japan and South Korea become partners in building the proverbial green "utopia" based on renewable energy?

As of today, a total of 443 reactors—including a Generation-1, 405 Generation-2, 36 Generation-3/3+ and one Generation-4—are operational in 32 countries. Another 46 Generation-3/3+ reactors are under construction in 17 countries. Plus, a total of 406 Generation-1 and Generation-2 reactors will reach redundancy between 2030 and 2040. On the other hand, Germany currently has eight reactors in operation, all of which will be shut down by 2022. Twenty-six reactors are already in their decommissioning stage. By phasing out its reactors, Germany will revert to the stage Italy is currently in. Japan and South Korea seem to be following suit. The United States saw the largest commissioning of reactors in the 1970s and has built a total of 104 reactors since. At present, the country has 94 reactors in operation. Only two reactors are currently under construction in the United States. If this situation continues, they, too, are likely to be dropped out of the list of nuclear power-producing countries by 2040 or 2050.

Russia, China, India, Hungary, and

some newcomers like Turkey, UAE, Belarus, Bangladesh and Egypt are now building several reactors. But to increase power generation from nuclear fission, it is necessary to build more reactors to replace the reactors that will be shut down, which is not happening at the moment. Assuming no change in current trends, the production of electricity from nuclear power will decrease at an unprecedented rate between 2030 and 2040.

The cost of generating electricity from oil, gas and coal is soaring. Their stock is not inexhaustible. These fossil fuels are playing a major role in global warming. Research has found that nuclear power generation is far more economical and environmentally-friendly than other fuel sources. Due to the lack of public support and the risk of another accident (like the Fukushima 2011 one), developed countries involved in nuclear technology are not taking the initiative to build new reactors. The reactors that malfunctioned in the past were designed in the 1970s, with poor safety and of medium and large sizes (such as the Generation-2 reactors). But at present, large (and small) reactors with Generation-3+ and Generation-4 technologies are being built. The International Atomic Energy Agency (IAEA) has termed the reactors with a maximum capacity of 300 MWe as small modular reactors (SMRs). SMRs have improved safety features compared to large reactors. They have a natural heat dissipation system in the event of an accident, so the fuel will not be damaged and there will be no need for an emergency shelter. Other advantages include lower investment costs, a smaller volume of nuclear waste, reduced construction time, streamlined fuel cycle, simpler licensing and commissioning, power supply without long transmission lines in remote off-grid areas and cost reduction due to off-site factory integration and modular



The cost of generating electricity from oil, gas and coal is soaring, and their stock is not inexhaustible.

COLLAGE: SUSHMITA S PREETHA

construction. There is no chance of accidents such as those in Chernobyl or Fukushima occurring. SMRs can be used to generate electricity as well as to produce hydrogen from wasted heat, or purify seawater and run heavy industries.

The concept of the SMR was introduced in 1954 with the launch of the US nuclear submarine, USS Nautilus. SMRs are attached to nuclear submarines. They were not produced commercially due to their smaller capacity to meet large energy demands. Reactors which are even smaller than SMRs are known as microreactors, with a maximum capacity of two to 10 MWe. These are now under development in the United States, the United Kingdom and Japan. Their use in the military-civilian field will be more attractive. Currently in operation are two SMRs in

China, one in Russia and one in Japan, while another is under construction in Argentina. In the future, these reactors could be used as proven technology and reference plants. The design of many SMRs is in the approval stage in the United States, Canada, and even Germany, Italy and South Korea. Large and small entities have a vested interest to build SMRs and microreactors in 15 countries. Overall, the SMR market in the international arena is quite promising for almost all countries. However, to make the use of SMR more profitable, vertically-integrated mass production is required. For this, big international power utility companies have to come forward.

It is expected that multiple SMRs will be commissioned in many countries by 2040. The suitable place for these is in places where

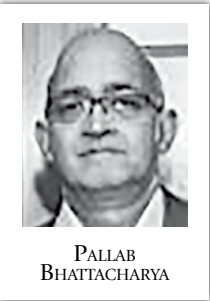
there are no power transmission lines. SMR is a very suitable technology for Bangladesh. It is necessary to include the SMR technology in the energy and power system master plan, and in the national nuclear power action plan. There is also a need to build a pilot plot of 10 MWe SMR with the participation of the Atomic Energy Commission, concerned universities, and power-related organisations. The purpose of this project would be to determine how to commercialise SMRs safely and sustainably.

If SMRs are successfully commercialised, we will no longer need coal-fired power plants. Even the 210 MWe steam cycle power plants—which are constantly being shut down due to lack of natural gas—can be replaced by SMRs. To this end, the suitability for setting up SMRs at these power plant sites can be verified. In addition, the Bangladesh Atomic Energy Regulatory Authority may seek the assistance of the IAEA to prepare the necessary regulations regarding the availability of their site licenses. At the same time, the relevant organisations may be instructed to take appropriate action regarding the nuclear fuel cycle. The recent COP26 conference has emphasised choosing SMR as a source of clean energy. My personal opinion is that two more large reactors similar to the VVER-1200 model could be set up at the Rooppur Nuclear Power Plant site without earmarking a construction site for large reactors in the southern part of the country. It will then be an easier, faster and more cost-effective project. Now, it is necessary to formulate a roadmap for setting up SMRs and microreactors nationwide and implement it accordingly. Only then will it be possible to supply reliable, uninterrupted, affordable and clean electricity for all.

Dr Md Shafiqul Islam is a researcher and writer, and a professor at the Department of Nuclear Engineering in Dhaka University.

No country for reforms?

Indian PM Modi's withdrawal of farm laws comes just before assembly polls in several states



IT is not very often that one sees the prime minister of a country publicly tendering an apology for a job they failed to push through. But that was what Indian Prime Minister Narendra Modi did when he addressed the nation on television on the morning of November 19 to announce the decision to withdraw the three controversial farm laws.

Modi had dourly defended the three laws passed by parliament in its monsoon session 2020, and repeatedly advertised them as a major agricultural sector reform that reflect his government's appetite for pushing through hard economic decisions. The Modi-led Bharatiya Janata Party (BJP) had also derided the farmers protesting against the three laws as *andolanjeevi* (habitual agitators).

and Goa in less than six months. Secondly, as a section of the Indian media reported, the government was worried about the possible impact of the protracted agitation by Punjabi farmers, most of whom are Sikhs, in the state of Punjab, which borders Pakistan, as Sikh separatists abroad could tap into their resentment and once again foment terrorism in the state. The question that arises is: Did the government not realise this at the initial stage of the farmers' protest before it snowballed?

The decision to take back the three laws, particularly for the "benefit" of a majority (80 percent) of poor farmers with less than two hectares of landholding, was the second instance of the Modi government capitulating on an issue related to farmers. In 2015, a year after Modi was swept to power, he had to revoke the land acquisition ordinance after sustained pushbacks against it.

India is witnessing a clash of two contrasting politico-economic philosophies. Should the country continue to believe in the politics of freebies, doles and subsidies for its

of subsidies cannot empower the farmers, isn't it time to revisit them? Agreed that farmers are *annadata* of the country and consist of the largest segment of India's electorate. But the subsidies have a cost because they are being met by the *kardata* through their taxes and duties paid by the minority sections of the society. The danger is against getting into the binary of *annadata* and *kardata*. It is not a case of one versus the other, but a balance between the two.

Modi desperately needs to win the battle for Uttar Pradesh, Punjab and the other smaller states in the first half of 2022, whose results would be a key marker as to which direction the wind is blowing in the run-up to the 2024 Lok Sabha election. Of particular significance is UP. It is often said that the road to power over India passes through UP, electorally the most crucial state which has the highest number of 80 seats. The traction the farmers' agitation gained in the last one year has made BJP leadership worried by the party's dimming prospects in the western part of Uttar Pradesh, which accounts for nearly 130 of the 400-odd seats in the state assembly.

power sector. The insatiable hunger for political power triggers expediency and makes it tempting to give up on convictions. That is where the political slide begins. After being in power for a decade, the BJP could well see its unravelling with the withdrawal of the three farm laws. That Modi sought apology while deciding to withdraw the three laws shows how much he is ready to bend for electoral gains, which are non-existent yet.

The report card of the government's handling of the economy has been far from encouraging ever since the

high GDP growth of 8.3 percent in 2016-17. The growth rate fell in the subsequent three years, and the decline began even before the country was battered by Covid-19.

There is no guarantee that the repeal of the three laws will help the BJP achieve its electoral objectives of checkmating the ruling Congress in Punjab or countering the rivals in UP. There is no reason to assume that public memory is short, and the four to five months before the next round of assembly elections is a long time in politics. Those five months

are numerically—if not politically—shorter than the last one year when the BJP was seen going the whole hog, championing the three farm sector laws as part of big-ticket economic reforms. What will happen to Modi's much-vaunted development agenda if GDP continues to stutter? Some analysts apprehend that failure on the economic front may even prompt the ruling party to increasingly turn to a divisive agenda in elections.

Pallab Bhattacharya is a special correspondent for The Daily Star. He writes from New Delhi, India.



PHOTO: REUTERS

Farmers in New Delhi, who have been protesting the new farm sector laws for more than a year, celebrate after hearing Indian Prime Minister Narendra Modi's announcement to repeal the laws on November 19, 2021.

Some party leaders even went to the extent of alleging anti-national links of the agitating farmers, and questioned the inflow of funds to fuel the year-long stir.

Why did Modi decide to repeal the three laws at a time when the sagging farm sector in India is crying for huge investments, technology, cold storage networks, a seamless market, and new marketing techniques to make agriculture a remunerative vocation and prevent the exodus of farm labourers? Most political pundits in India would have us believe that this was due to the forthcoming fresh assembly polls in Uttar Pradesh, India's most populous state, Punjab, Himachal Pradesh, Uttarakhand

poor, or opt for empowering them through a calibrated journey on the path of reforms, which at times impose temporary hardships to adjust to the new regime? Doles and freebies don't allow the poor to come out of the rigmorole of dependence on handouts. But the other side of the challenge is how to make the reforms result-oriented and less painful so that it does not deform.

For decades, successive governments have been subsidising the poor farmers by providing cheaper electricity, diesel, fertilisers, insurance, and credit. The question is how long this process will go on. Most of the farmers, rich or poor, are exempted from income tax. If an array

of the three laws by the government has emboldened the agitating farmers to shift the goalposts in return for calling off the agitation. The agitators have now further upped the ante on the issue of Minimum Support Price (MSP), which emerged as the main sticking point. There was an apprehension among the farmers that allowing outside-APMC (Agricultural Produce Market Committee) trade of farm produce would lead to lesser buying by government procurement agencies in the approved *mandis*. The protesting farmers say the new laws would thus make the MSP system irrelevant, and they would not have any assured income from their farming.

The rollback of the three farm laws has also raised speculations about the future of reforms in other areas like labour laws, privatisation of loss-making public sector units, and the

Government of the People's Republic of Bangladesh

Office of the Project Director

Enhancement of Training Capacity of BPATC

BPATC, Savar, Dhaka

Eol Ref No. 05.01.2672.248.99.068.20.110

Date: 22.11.2021

Re-Request for Expression of Interest (Eol) for

Selection of Consulting Firm

Bangladesh Public Administration and Training Center has been allocated public funds from the Government of the People's Republic of Bangladesh (GoB) for Carrying out Services of Architectural Working Drawing, 3D View and Animation of Lake Beautification of BPATC by engaging consulting firm (National) during the year 2021-22 (Package No. SD-05).

The Project Director of "Enhancement of Training Capacity of BPATC" Project now invites Expression of Interest (Eol) from reputed consulting firm or firms in joint venture/association for short-listing the consulting services.

The services include:

The services include for Architectural Working Drawing, 3D View and Animation. These services shall be completed within one (01) month from the date of commencement.

The experience, resources and delivery capacity required:

Submitted Eols will be evaluated based on the following:

1. Brochures & registration of the firm(s);

2. Legal establishment of the firm(s) (TIN, VAT registration, trade license etc);

3. General and overall experience of the firm(s) (limited to three pages);

4. Experience of the firm(s) in similar works the last 05 (five) years including cost and duration; (Limited to three pages);

5. Average annual turnover of the firm(s) during the last 03 (three) years; and

6. Summary of permanent professional employees with key qualifications (including academic qualification and experience adequacy to perform the assignment).

Interested consulting firms are invited to submit Eol enclosing only the required information mentioned above.

Consulting firm will be selected using the Least Cost Selection (LCS) procurement method in accordance with the Public Procurement Rules 2008 and procurement procedures by the Government of Bangladesh.

Eol shall be submitted on or before **Thursday, 09 December 2021 by 12.00pm** in sealed envelope to the Project Director, Enhancement of Training Capacity of BPATC and be clearly market **"Request for Expressions of Interest for Selection of Consulting Firm for Services of Architectural Working Drawing, 3D View, Animation of Lake Beautification of BPATC (Package No. SD-05)"**

The procuring entity reserves the right to accept or reject any or all the Eols without assigning any reason whatsoever.

N.B: The firms who have applied previously no need to apply again.

22.11.2021

Project Director

Enhancement of Training Capacity of BPATC

BPATC, Savar, Dhaka

GD-2136