Mediscope The Journal of GMC

EDITORIAL

Nuclear power plant in Bangladesh: concern over health and safety issues

In Bangladesh, industry is growing from under 20% in the 1980s to over 30% currently and the generation of electricity will be linearly related to the national gross domestic product. On the other hand, about 40% to 48% of the total population have access to electricity. The per capita consumption of 218-230 kWh and the availability is the lower among any developing country in the world. So, the government announced plans to build a nuclear power plant (NPP) to meet electricity shortages and has inked an agreement with Russia for constructing a NPP of Russia's VVER-1200 model third-generation technology reactor with a total capacity of 2400 megawatt (MW) (from two units of 1200 MW capacity each) in Rooppur in the western part of Bangladesh (Fig. 1, Fig. 2).[1-4] Russia will provide all assistance for setting up the plant, including providing the fuel and taking back the used fuel. The Rooppur NPP will go into operation of the first unit by 2021 and the second unit by 2025.[5] Bangladesh also has decided to build a second NPP in an island in southern part of the country.[6]

Fig. 1. Rooppur Nuclear Power Plant.[3]

Fig. 2. Location of the plant.[4]

Currently, around 88% of energy used for power generation is from natural gas sources and 4% from coal, 6% from oil and just 2% from hydro-based power plants in Chittagong. Renewable energy sources are totally excluded from any contributions. By 2021, the target plans to reduce gas use to 30%, while raising coal contributions to 53%. This will have disastrous effects. By 2030, renewable energy contributions would by increased to a mere 6%, while nuclear power increased to around 30%.[7] There are obvious arguments in favor of nuclear energy when compared to the use of coal.[7] However, a unit ton of nuclear waste is far more dangerous than the same amount of coal-fired plant waste, if not managed properly and at the same time, dealing with nuclear wastes is more expensive which might be of great concern for developing nation like Bangladesh.

As of June 01, 2015 in 31 countries 438 NPP units with an installed electric net capacity of about 379 Gigawatt (GW) are in operation and 67 plants with an installed capacity of 65

GW are in 16 countries under construction. As of end 2011 the total electricity production since 1951 amounts to 69760 billion kWh (Fig. 3, Fig. 4).[8] Accidents at NPPs are not uncommon. The three significant accidents in the 50-year history of civil nuclear power generation: Three Mile Island (USA 1979), Chernobyl (Ukraine

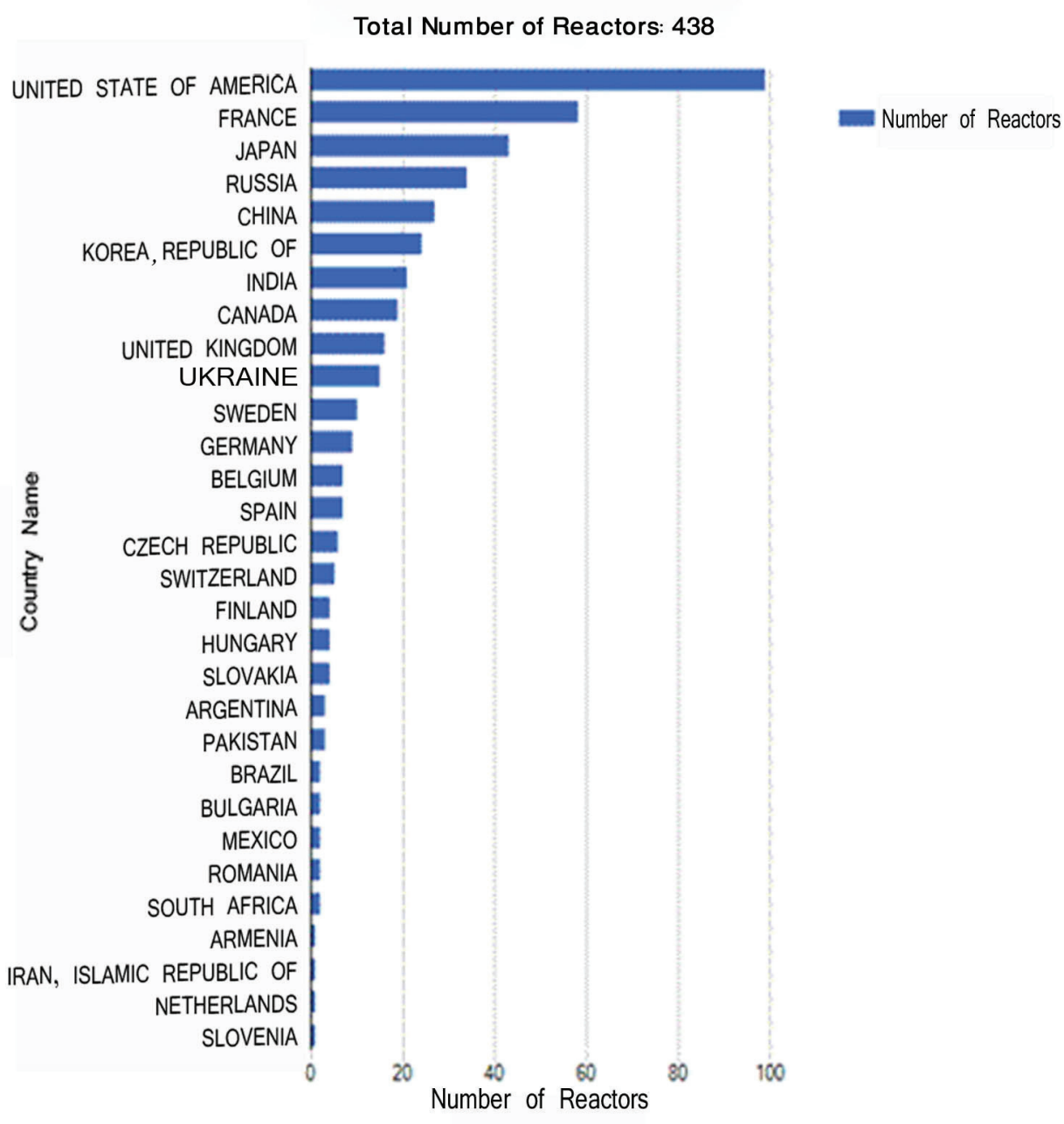

Fig. 3. Number of reactors in operation, worldwide. Source: IAEA 2015.

1986) and Fukushima (Japan 2011) where significant health and environmental consequences are remarkable to warrant long-term concerns.[9]

In their series paper on nuclear disasters and health: lessons learned, challenges, and proposals, Ohtsuru and colleagues describe that due to the NPP accident, many people at Fukushima, Japan continue to experience multiple losses, both tangible and intangible, at the individual, family, and community levels with multiple social, psychological, economic, and political consequences.[10-12]

There are some profound concern over the safety of the plants in Bangladesh: the unsuitability of the site, the obsolescence of the VVER model NPP, questionable financing arrangements, nuclear waste disposal, terrorist attacks, high population density and natural calamity including earthquake and climate change which would be of concern. Therefore, Bangladesh needs to rise concern over safety issues and be prepared for any nuclear disaster although unexpected.

I declare no competing interests.

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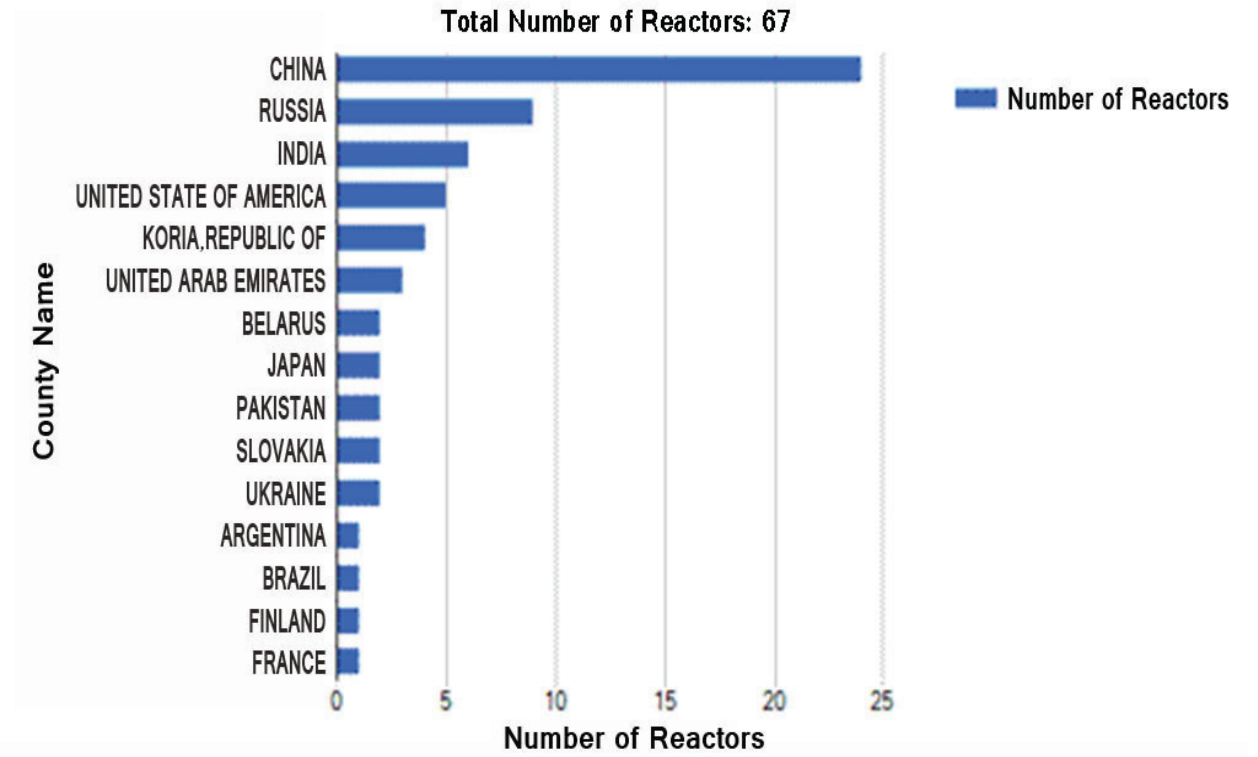

Fig. 4. Number of reactors under construction. Source: IAEA 2015.

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Suggestion for citation of the above:

Laskar MS. Nuclear power plant in Bangladesh: concern over health and safety issues. Mediscope 2015;2(2):1-4. (Editorial).