Hong Kong Climate Change Forum

PRESENTATION TO LEGISLATIVE COUNCIL PANEL ON ENVIRONMENTAL AFFAIRS
SPECIAL MEETING ON 29 APRIL, 2011

Impacts on the Development of Nuclear Energy for Local Power Generation on Hong Kong

It has been proven with no reasonable doubt that human activities affects the environment, most notably on climate change, due to burning of fossil fuels to power the development of world's economies.

Historical data showed that carbon dioxide in the atmosphere had gone up from 280 ppm of pre-industrial to 390 ppm of the present. According to IPCC, if we carry on business as usual, it would go up to some 550 ppm by the mid of the century which would raise the average atmospheric temperature on earth by more than two degrees centigrade with increase in frequency and intensity of extreme weathers. Its impact will be disastrous to the well being of plant and animal species and to the world economy.

As a responsible member of the world community, Hong Kong has to find ways and means to reduce our carbon emission. Apart from dealing with the problem on the demand side which is to improve on energy efficiency and energy conservation, actions would be needed on the supply side to use less fossil fuels, to migrate to low carbon energy sources (such as natural gas instead of oil and coal), and to use more non carbon energy sources such as renewables and nuclear fuels.

Human behavior is hard to change. It has been demonstrated in the developed economies that there are limits to improvements in energy efficiency and energy conservation. There are also limits as to how much renewable energy we can utilize due to geological and physical constraints. With growing population and peoples aspiring to enjoy higher standards of living, particularly in the developing and under developed countries, it can be expected that the total energy use will continue to rise in the decades to come.

To ensure the earth's atmospheric temperature will not rise by more than two degrees centigrade in the coming decades and based on available technologies, the only way to contain the problem is to use energy from nuclear fission as a substitution for gas and coal.

Unfortunately as in Chernobyl, Seven Miles and more recently in the Japan, nuclear energy can be very dangerous. Fortunately these plants were designed and built almost half a century ago and the newer generations of nuclear plants are a lot safer. This has also been demonstrated in the large number of newer plants offering many years of safe and reliable service in many countries.

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However for any new nuclear power plant to be built, we must be very vigilant in :

- exceptionally high safety factors and most stringent quality standards to be used in the design of the container shell and in the cooling systems;
- double or even triple redundancy on the safety control systems and standby power supply;
- site selection to ensure the plant is not located near any fault line and unstable ground conditions;
- stronger resilience must be built in to stand against natural disasters such as extreme weathers, earth quakes and tsunamis, terrorist attacks and even wars;
- each nuclear power plant must be provided with in situ and fail safe treatment and storage facilities for its spent nuclear fuel rods;
- a very stringent EIA must be carried out with transparent and open consultation with its local and neighboring communities before commencement of construction;
- based on the experience of the three incidents, more demanding international standards are to be set up and enforced for any new plants anywhere on the globe;
- a robust decommissioning plan at the end of the useful life of the plant must be prepared before commencement of construction;
- no non-essential private and public facilities should be built within 5 KM of the plant;
- effective early warning system and evacuation infrastructure are to be provided within 25 KM of the site.

We human civilization is at a crossroad. The reality is that we have to make a choice between catastrophic climate changes that damage our food supply, displace communities or destroy the livelihood of millions, and the controllable risks of nuclear accidents. It is the choice of the lesser of two evils, and nuclear energy is the lesser of the two which can play a very important role in our future energy strategy.

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