

Post-Fukushima, I write to suggest that HK's focus should be on a major campaign to reduce Hong Kong's energy use – particularly its buildings – combined with a concentrated effort to apply renewable energy and energy recapture. I identify my reasoning below:

1.0. Factors arising from Japan's Fukushima nuclear plant Level 7 event & radiation alert (11.03.2011)

1.1. Unknown future events:

Higher attention to safety in the Design, Construction & Operation of any new nuclear development is likely to be required as a result of Fukushima. Any new design process will be required to be even more stringently reviewed

1.2. Cost rise + delayed generation:

Extra safety concerns are likely to lead to slower pace of construction & higher cost resulting in any new facility being operational later ie delayed operational start and availability of 'clean' energy from the facility (10 years plus?)

1.3. Liability Insurance:

CLP(1) advised that the Mainland is ready to assist on site acquisition + appropriate Liability Insurance. This highlights concerns that normal market restraints that affect risky enterprises (usually increased investment costs) might be obscured by Mainland Government participation. Legco and 'watch-dogs' of HK peoples' interest need to be involved in that review. Transparency of both the budget & decision-making processes need to be maintained.

1.4. Waste storage:

Safe disposal of nuclear waste needs to be resolved to be able to claim that nuclear generated electricity is truly 'sustainable' and in the community's long-term interest.

Outcome: Availability of nuclear energy considerably delayed and costs significantly increased.

2.0. Single Energy Authority:

2.1.0. The set-up of a single energy authority in HK to oversee all gas, electricity, renewable energy (large and small-scale), nuclear generation and distributed generation possibilities is needed to better co-ordinate all parties' interests, operate a successful stringent demand-side & supply-side generation policy including liaison with the PRC/PRD liberalized market that will ensure appropriate solutions for short and long-term.

The potential for on-site generation with piped gas, including bio-gas, supply needs to be initiated as well as much greater application of building integrated photovoltaics, solar air-conditioning and small-scale, building-related wind. A single authority is required to investigate and advise - independently of the current utilities - the best strategy for HK,

2.2.0. Schemes of Control:

The existing Scheme of Control agreement between HK Government and each power utility needs to be modified to better align with the PRC's liberalized energy market structure and open access grid. Specifically grid feed of renewable energy (RE) generated electricity should be encouraged with confirmed purchase rates (Feed-in Tariff). Incentives should replace the present administrative and non-technical hurdles to grid connection.

2.3.0. Smart Grid:

Smart Grid allows 2-way flow of electricity + information that encourages a) demand-side management of electricity use and b) diverse clean and renewable energy generated electricity to be fed into the grid.

It is suggested that HK Government accelerates plans, testing and demonstration of Smart Grid projects, co-operating with the mainland and overseas organizations, joining in an international effort to advance Smart Grid infrastructure and application. A major benefit is expected to be better integration of renewable energy, more local (small-scale) RE generation, and greater awareness of energy efficiency and carbon reductions through the opportunities for RE generation including income production.

2.3.1. Smart Grid infrastructure in place for 2020:

There is an international trend (including PRC, EU, USA [some power utilities/states], Japan, Korea & Singapore and others) to promote development of Smart Grid to better manage electricity generation, distribution and storage through advanced monitoring & planning procedures and advanced distribution technology. International agreement on harmonization of standards is underway, linking through to the control systems of electricity-consuming appliances & buildings.

The Smart Grid is the future for jobs and the economy with 'smart' technology linking Smart Buildings, Smart Appliances and Smart Transport (EVs), HK must not get 'left-behind' in this next technological development.

Outcome: HK inter-connected to the PRC/PRD by infrastructure and technology to the 'smart' future

3.0. Alternative Actions - Supply-side & Demand-side Energy Strategies

3.1.1. Urgent Action - Buildings Retrofit Policy & Programme

HK buildings consumed 89% of HK's electricity in 2008 – and similarly high proportion in 2009. Researchers & practitioners have identified the big electricity savings' potential from upgrading HK's existing buildings. Commercial buildings are the main focus as HK's highest electricity-consuming sector. 50% (and more) reduction is easily achievable; the major proportion simply by improved management of controls and standards (2). Swire Properties Limited has reported 39% savings on retrofitting a shopping mall achieved with commercially acceptable payback terms (3). Originally completed around 2004/5, that development is relatively young. The implication for Hong Kong's much older stock of building indicates even higher savings potential.

It is irresponsible to consume energy at the present rate when the equipment, systems and technologies are already available to halve consumption and all within acceptable commercial terms. Their deployment should be accelerated and the appropriate policies devised to provide the incentives, the timeframe and even penalties for non-action. Mandatory Building Energy Codes (effective mid-2012) do not presently provide the incentive to motivate existing (frequently multiple) owners to upgrade buildings. Much greater assistance with their organization and administration needs to be set-up. See next item.

3.1.2. Government co-ordinated policy:

An organizing agency /statutory body to oversee the buildings' Retrofit Programme (refer to Berlin City & EU examples) needs to be set-up together with the following actions

- a) Funding sources and terms established eg Government + Bank + Power utilities (+ Pension Funds?)
- b) Training the necessary personnel and operational teams
- c) Set-up the Retrofits Programme & Standards including procurement policies

3.1.3. BAT Team:

Co-ordination of a TEAM to identify Best Available Technologies (BAT) to suit upgrading the majority of HK buildings and development specification. Team set up from Government, Academic, Business and Industry.

3.1.4. Long-term R&D:

Ongoing & long-term R&D, Demonstration and Deployment to maintain HK buildings as low-energy and low-carbon consumers again with broad input from Government, Academic, Business and Industry through set-up of research establishment or agency.

Outcome: Target building energy consumption halved by 2020 (based on 2005 energy end-use data)

The strategies of Demand-side and Supply-side energy management, on-site RE generation and Smart Grid focus the alternatives to increased dependency on nuclear power generation.

Diverting the considerable investment away from nuclear and into energy efficiency and RE generation accelerates those technologies deployment, lowering their costs, while expanding the related jobs and services valuable to HK's economy.

Josie Close / 19 April 2011 / End

Footnotes:

1. WWF Forum at City University of Hong Kong with CLP's Richard Lancaster + others including LEGCO's Tanya Chan, Cyd Ho – November 2010.

2. Schneider Electric website and CCBF website ref Every Building a PowerHouse Research project.

3. Swire Properties' selected air-conditioning & lighting system equipment upgrade at Festival Walk Shopping Mall realized savings with payback periods not exceeding 4years.