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(Translation)

21 January 2011

Clerk to LegCo Panel on Environmental Affairs
Legislative Council Secretariat
3/F., Citibank Tower.
3 Garden Road.
Hong Kong.
(Attn: Miss Becky YU)

Dear Miss YU,

Consultancy Report – A Study of Climate Change in Hong Kong

Thank you for forwarding the letter of 13 December 2010 submitted to the Panel by Greenpeace, Friends of the Earth and WWF. Our responses to the questions raised in their letter are set out below.

Assessment of Energy Demand

The Environmental Protection Department (EPD) commissioned a consultancy study (the study) in 2008 to assess the impacts of climate change on Hong Kong. Based on the findings of the study, the Government had drawn up proposals as presented in the Consultation Document on Hong Kong's Climate Change Strategy and Action Agenda (the Consultation Document).

Electricity generation is the largest source of local greenhouse gas (GHG) emissions, accounting for 67% of the total emissions. In assessing our future GHG emission trend and the likely impact of proposed emission reduction measures, the study consultants had projected the future energy/electricity demand of Hong Kong.

Following international practices, the consultants modeled Hong Kong's energy system and projected its future performance on the basis of available past data and information, including energy supply, energy consumption for various applications, size of the economy, population, number of vehicles and building space, etc. up to the base year of 2005. In making the projection, the consultants had taken into account factors such as the future growth of local population and the economy as well as past situation and trends. The projected growth in energy consumption as depicted during the study period is mainly attributable to projected growth in local socio-economic activities, and hence the resultant increase in future electricity use as projected in the study should not be mistaken as a prescribed study parameter. The

historical performance of Hong Kong's energy system and the consultants' projection are summarised below:

	1990 – 2005 (Historical data)	2005 – 2020 (Consultant's projection)
Population	+19%	+13%
Gross Domestic Product (GDP)	+80%	+63%
Local electricity consumption	+68%	+39%

Relationship between Carbon Emissions and Local Electricity Consumption Levels

Authors of the referred letter asked about the reason for the inverse relationship between carbon emissions and energy consumption. We would like to point that there are a number of factors that affect the level of GHG emissions, and the level of local electricity consumption is only one of them. According to the analyses in the Fourth Assessment Report of the United Nations Intergovernmental Panel on Climate Change, GHG emissions associated with energy uses are determined by four major factors: namely population size, affluence of the community (generally expressed in GDP per capita), energy efficiency (generally expressed as energy intensity- the amount of energy used per unit of GDP) and the carbon content of energy (generally expressed in terms of carbon emissions per unit of energy used).

Different economies adopt different measures or combinations of measures to reduce their carbon emissions to befit their specific local circumstances. For instance, many places have sought to reduce carbon emissions through revamping their fuel mix for electricity generation in order to reduce the energy carbon content, whilst at the same time implementing electricity/energy conservation and efficiency enhancement measures to further mitigate carbon emissions. Taken together, such measures may not, however, necessarily lead to a drop in electricity consumption. In the case of the European Union (EU), its GHG emissions were reduced by about 7% between 1990 and 2005, but its electricity generation had in fact increased by about 28% over the same period. Looking into the future, the EU estimates that by 2020, its GHG emissions level will be reduced by 20% from the 1990 level. On the other hand, its electricity generation is expected to increase by about 45% over the period.

Emission Reduction Scenarios and Projections in the Study

The referred letter also seeks an explanation on raising the proportion of nuclear power to 50% when drawing up the different emission reduction scenarios. It should be noted that apart from modeling a "business as usual" scenario (i.e. no additional measures are to be introduced after 2005), the consultants had developed three technically feasible scenarios. Two of them focus on energy efficiency as the primary means to reduce emissions without a substantial change in the fuel mix before 2020 (i.e. Scenario 1 and Scenario 2), whilst the other "Aggressive Scenario" seeks to reduce emissions through enhancing energy efficiency as well as a major revamp of the fuel mix (i.e. Scenario 3). So contrary to the assertions made in the letter, raising the proportion of nuclear power by up to 50% is clearly not a pre-determined basis for assessing these scenarios. The letter also mentioned the ratio between local electricity consumption and the sale of electricity to outside of Hong Kong. We would like to clarify that

all the study scenarios considered only the fuel mix options for meeting local electricity demand, without exporting electricity from Hong Kong. The adopted approach is similar to studies conducted elsewhere.

The study findings indicate that by 2020, neither of the first two above- mentioned scenarios (i.e. Scenario 1 and Scenario 2) would be able to reduce GHG emissions in real terms. In order to achieve a substantial reduction in Hong Kong's GHG emissions, the consultants recommended the adoption of measures suggested under Scenario 3. Given these considerations, the Government therefore did not include details of the first two scenarios in the Consultation Document.

The projected emission reduction levels of the various scenarios covered by the study and their implications for the overall economy in 2020 are set out below:

Scenarios	Projections (2005-2020)		
	Reduction in carbon intensity	Change in total GHG emissions	GDP growth
Base Case ("Business as usual" Scenario)	-33%	+10%	+63.3%
"AQO Scenario" (Scenario 1)	-37%	+2%	+63.6%
"Accelerated Scenario" (Scenario 2)	-39%	0%	+63.7%
"Aggressive Scenario" (Scenario 3, i.e. the Government proposal)	-57%	-30%	+64.1%

The emission reduction measures and projections under the various scenarios were uploaded onto EPD's website for public information. Copies of CD-ROMs with the full study report were delivered to your Secretariat on 9 December 2010 for circulation to Members.

Proposed Fuel Mix for Electricity Generation

In considering how to take forward the proposed fuel mix for electricity generation, we will first take stock of the comments and suggestions received during the consultation exercise before embarking on any detailed planning. The details and specific arrangements, including the scale, location and technologies of the energy infrastructure required etc., will be worked out along the general direction when ready. The public consultation exercise on Hong Kong's Climate Change Strategy and Action Agenda had provided a useful platform for all sectors of the community to discuss Hong Kong's strategy for combating climate change and work out a comprehensive and balanced action agenda that encompasses measures on changing fuel mix, energy efficiency, transport, turning waste into energy etc, in the light of the energy policy

objectives in ensuring reliability, safety, cost effectiveness and environmental performance of electricity generation. The proposal to revamp fuel mix for electricity generation, together with other measures proposed in the Consultation Document, are key components of our overall strategy to combat climate change. We consider it, therefore, not appropriate to single out any individual parts of the proposed Action Agenda for repeated consultation.

Yours sincerely,

(David T. W. WONG)
for Director of Environmental Protection