Conflicts Between Environmental Concerns and Power Prices: The Case of Expanded Use of Natural Gas in Hong Kong

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Hong Kong, essentially one large city, does not, for practical purposes, produce any energy. In 2011, coal, natural gas and nuclear power contributed 53%, 41% and 5% to total primary energy requirements, respectively. However, 73% of the coal, natural gas and oil products was used for electricity generation.

Recently the Hong Kong SAR Government released a consultation document regarding emission control of GHGs for the period up to 2020. It aims at trimming total emissions from 42 million tons in 2005 to 28-34 million tons by 2020, i.e. a reduction of 19-33%. Per capita emission would be pared from 6.2 tons to 3.6-4.5 tons, i.e. by 27-42%.

Given that 67% of the GHG emissions in 2008 was caused by electricity generation (18% by transport and 7% by end-use of other fuels), it is clear that the power sector would be the primary focus of action in the next decade.

The Government stipulates that the fuel mix of power generation would be drastically altered: The role of coal would be slashed from 54% in 2009 to under 10% in 2020; the share of natural gas to be upped from 23% to 40%, that of nuclear power to soar from 23% to 50% while renewable energy would account for 3-4% by 2020.

At present, the natural gas that Hong Kong uses is imported from the offshore Yacheng gas-field of Hainan Province and the Dapeng LNG terminal of Guangdong. However, the Yacheng field will be depleted within the next few years. To replace that lost source and enlarge overall supply, Hong Kong will start importing natural

gas from the central Asian republics via the second phase of the West to East Pipeline project in 2013. Because the new gas will be transported over a distance of 8,000 km and the current price of natural gas is much higher than the Yacheng agreement, signed in the early 1990s, the new gas is estimated to be thrice the price of the depleted gas.

The power utilities of Hong Kong is regulated by a scheme of control under which the permitted return is calculated at 9.9% of net fixed assets, and the costs of fuel input are borne by the consumers, meaning that any additional costs can be passed on to the consumers. In line with the rise in international prices of coal and natural gas since 2005, the fuel adjustment clause of the power bill has gone up tremendously in the past years, which stirred a loud outcry among the consumers.

The use of the expensive new gas will aggravate the problem. This study examines the intricate relationship between environmental concerns and the price of power in a small open economy such as Hong Kong, which puts a premium on the security of supply, hence adopting a rate of return type of regulation, and is increasingly environmental conscious in the past decade on the one hand, while the setting of power prices has become a political issue because the legislators are getting more and more vocal.

The study is of a descriptive-analytical nature, tying many factors together. Consequently, it is difficult to present the abstract in the format demanded by the IAEE. But it will definitely form an interesting case study.

Keywords: GHG emission, power price, natural gas, Hong Kong

(Because of the descriptive-analytical nature of the paper, it is difficult to present the abstract according to the format required. Hope the Korean committee will adopt an understanding attitude; thanks.)