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Introduction of Competition and Environmental Regulation in the Electricity Sector in Hong Kong

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This article explores both the competition and the environmental aspects of the electricity sector in Hong Kong, and a possible linkage between them. There has been considerable public pressure to liberalize the electricity sector in Hong Kong due to longstanding discontent with the persistently high profit of the sector and a regulatory structure that is widely perceived to be ineffective. In light of the government's seeming reluctance to pursue liberalization, this article examines an alternative approach – litigation under the recently adopted Competition Ordinance. It assesses the likelihood of success of the strategy and its potential shortfalls. The article proceeds to analyse whether competition can be used as a tool to improve the environmental performance of the sector. It concludes that the effect of the introduction of competition is ambiguous if not adverse and therefore proactive regulatory intervention will be needed to ensure that environmental performance does not deteriorate following the introduction of competition. Competition will not be an effective tool to improve the environmental performance of the sector.

1 INTRODUCTION

Hong Kong's electricity sector has been under significant public scrutiny in recent times. The convergence of a number of forces has driven this agenda: First, there has been growing public dissatisfaction with the current Scheme of Control regulatory regime. Academics, political parties, and civil society have issued calls for regulatory reform to introduce competition in order to improve efficiency and bring down electricity tariffs. Second, air pollution has been a pressing

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environmental and health concern in Hong Kong.¹ Since mid-2000s, due to efforts by the media and environmental non-governmental organizations (NGOs) to educate the public, there is increasing public awareness of the causes and effects of the serious air pollution problem in the city. Electricity generation constitutes the largest source of air pollution in Hong Kong, accounting for 92% of total emissions of sulphur dioxide, and about 50% of nitrogen oxide emissions and respirable suspended particulates (RSPs). As such, discussions about tackling Hong Kong's air pollution problem have had to address the electricity market. Third, despite reluctance to proactively address climate change because of competitiveness and 'first mover disadvantage' concerns, the Hong Kong government has been compelled to make some commitments towards reducing the city's greenhouse gas emissions.² Given that electricity generation is a significant source of carbon dioxide (especially when it involves coal, as is the case in Hong Kong), the issue of climate change has focused attention on how Hong Kong produces and uses electricity.

In the public discourse about the future of Hong Kong's electricity sector, liberalization has been the buzzword. This is not surprising as market liberalization has been the dominant trend in energy policy in many parts of the world, notably in the United States and the European Union, over the past thirty years. However, it should be noted that most jurisdictions begin with state/public ownership of the electricity utilities and the opening up of the electricity sector usually involves privatization and the introduction of regulatory reform to create mechanisms of ordering the new electricity market.³ In Hong Kong, liberalization takes on a different meaning as the electricity sector has never been under majority public ownership. However, a dual monopolistic market structure (there are two regional monopolies serving different parts of Hong Kong) endures under the Scheme of Control regulatory framework. It has been argued that liberalization will benefit

¹ Hong Kong's air pollution problem has even received international media coverage. See, for example, *Hong Kong's poisonous air*, *The Economist* (29 Mar. 2007); *Dirty Air Becomes Divisive Issue in Hong Kong vote*, *The New York Times* (22 Mar. 2007). The attempt by the Clean Air Foundation to judicially challenge the government's air pollution control policy is an indication of the degree of public dissatisfaction; see *Clean Air Foundation Limited and Gordon David Oldham v. the Government of the HKSAR*, Constitutional and Administrative Law List No. 35 of 2007.

² Zhao Yuhong, *Responding to the Global Challenge of Climate Change – Hong Kong and 'One Country Two Systems'*, *Carbon & Climate L. Rev.* 70–81 (2011).

³ There is no standard definition of liberalization (the EC Directive 96/92/EC, for example, does not define liberalization), but most of the literature defines liberation according to the criteria of ownership, the diversity of actors competing, market access and the extent of 'unbundling' of generation, transmission, distribution and supply. A liberalized market is characterized by decentralized ownership, a pool of private actors in the market place, full market access and unbundling of generation, transmission and distribution; see A. Voss, *The Impact of Liberalisation on the Environmental Performance of the Electricity Sector in Germany*, Country Report, Institute of Energy Economics and the Rational Use of Energy, 2, http://www.dii.uchile.cl/progea/proyectos/grenelem/first/wp1_germany.pdf (accessed 1 May 2013).

Hong Kong society: consumers will pay lower electricity tariffs, the incumbent electricity generation companies and their shareholders will cease to enjoy monopolistic profits at the expense of taxpayers, and liberalization may even deliver environmental benefits when electricity generation companies practice fuel economy and energy saving to minimize production costs. Despite these potential benefits, the government is perceived to be paying lip service to the liberalization agenda.

This situation poses some interesting questions. First, if liberalization is a desirable policy objective that enjoys broad support across society, how the liberalization agenda can be advanced in the face of governmental inertia is a pressing question. In this regard, the promulgation of the Competition Ordinance in June 2012 offers an interesting option. Proponents can attempt to compel the two incumbent electricity companies to interconnect by bringing a refusal to deal or an essential facility claim against them. This litigation-based strategy is not without precedent. The European Commission made use of EU competition law to open the transport sector in the 1990s.⁴ Interconnection between the power grids of the two companies would be a prerequisite for full liberalization of the Hong Kong energy sector. This would allow the two electricity companies to compete with each other for customers in their currently monopolized territories. If independent power providers were to emerge in the market, or if electricity companies from the China Southern Grid were to enter the Hong Kong market, which would introduce further competition into the market, these new entrants would need access to the power grids of the two incumbents, which they could conceivably obtain under a refusal to deal or essential facility claim against the two incumbent providers. This article will analyse the prospects of as well as the hurdles to the successful deployment of this strategy. It will be argued that, for a variety of reasons, liberalization driven by a suit under the Competition Ordinance is unlikely to succeed in achieving full liberalization of the electricity sector in Hong Kong but will go some way towards spurring the government into addressing the various liberalization-related issues that cannot be resolved by the Competition Tribunal. The Competition Ordinance is therefore a useful strategic tool for proponents of liberalization.

Second, just as competition law can serve as a strategic tool for proponents of market liberalization, can it also serve as a tool to improve the Hong Kong electricity sector's environmental performance? The '...and environment' literature has burgeoned as advocates of environmental protection have sought to create links or to leverage upon other areas of law such as human rights to achieve

⁴ Alison Jones & Brenda Sufrin, *EC Competition Law: Text, Cases, and Materials*, 542 (3d ed., Oxford 2008).

environmental protection goals.⁵ That environmental laws and policies can give rise to anticompetitive effects and thereby conflict with competition law is already the subject of an emerging body of literature. Less studied are the policy and legal consequences in the opposite direction, that is, the environmental effects of applying competition law or introducing competition in a market and the consequent conflict or complementarity between competition law and environmental law.⁶ Our review of publicly available resources leads to the conclusion that there is inconclusive evidence that lower electricity tariffs (possibly brought about by competition) will lead to increased demand for electricity, which triggers increased supply/generation of electricity (and higher levels of air pollution). There is some evidence that competition can lead to environmental improvements as electricity companies compete to provide energy services (including options for consumers to purchase renewable energy) rather than compete purely on price. There is, however, a relatively strong consensus in the literature that the environmental effects of liberalization in the electricity sector can be negative and regulatory intervention to address these environmental effects is essential. This article therefore argues for proactive and vigilant enforcement of environmental laws in the event of liberalization. Further, if liberalization results in increased cross-border sale of electricity, this effectively means that the environmental costs of electricity production are transferred from Hong Kong across the border. This raises a number of concerns that also need to be addressed.

Section 2 of this article sets out the current regulatory regime for the electricity sector in Hong Kong and, where it is deemed useful, the historical background which informs the unique characteristics of the existing regulatory framework. Section 3 analyses the use of a litigation-based strategy to propel the process of liberalization. This strategy has become a viable option only because of the promulgation of the Competition Ordinance in 2012. This article argues that a litigation-based strategy faces significant hurdles but can play an important role in advancing the process of liberalization to improve consumer welfare in Hong Kong in the face of governmental inertia. Section 4 argues that the environmental effects of liberalization of the electricity sector can be ambiguous and can exacerbate the territory's serious air pollution problem. There is a strong consensus in the literature that the liberalization of the electricity sector ought to be accompanied by decisive regulatory intervention to address the adverse

⁵ The formation of such 'strategic linkages' has been enabled by widespread recognition that the protection of the environment is a *sine qua non* for numerous human rights such as the right to life and the right to health: see, for example, Judge Weeramantry, separate opinion in *Case Concerning Gabčíkovo-Nagymaros Project* [1997] I.C.J. Rep. 7, 91–92; *MC Mehta v. Union of India* AIR 1988 SC 1037; *Vellore Citizens Welfare Forum v. Union of India* AIR 1996 SC 2715; *MC Mehta v. Kamal Nath* AIR 2000 SC 1997.

⁶ See discussion in s. 4 below.

environmental consequences that tend to result. Section 5 concludes that liberalization of Hong Kong's electricity sector is a laudable policy objective as liberalization can increase consumer welfare without compromising environmental quality in Hong Kong *as long as* a rigorous and well-designed regulatory framework is put in place.

2 DEVELOPMENT OF THE REGULATORY REGIME FOR THE ELECTRICITY SECTOR

For more than a century, China Light & Power (CLP) and Hong Kong Electric Company (HEC) have been supplying electricity to Hong Kong. And for the last two, three decades, they have been the sole suppliers in their respective territories. HEC supplies electricity to Hong Kong Island, Lamma Island, and Ap Lei Chau, while CLP covers the rest of the city, including Kowloon, New Territories, Lantau, and most of the outlying islands. Both companies are fully vertically integrated electricity suppliers, covering generation, transmission, distribution, and retail sale of electricity.⁷ This division of territory is only the result of historical development. There is, in fact, no government-granted franchise that gives these two companies exclusivity over the territories they serve.⁸ There is, legally speaking, no barrier to either company entering each other's territory or to a new entrant entering the Hong Kong electricity market at all. However, for a variety of reasons, such as the substantial sunk costs required for entry and the lack of land for power generation facilities, no new entrant has attempted to enter the electricity market in Hong Kong in recent years.⁹ The two companies effectively function as regional monopolies in their respective service areas.¹⁰ The Energy Advisory Committee, a government-convened committee that advises the government on energy policy, has acknowledged the market power of the two electricity companies.¹¹ On a citywide basis, CLP supplied electricity to about 2.2 million customers in 2005, while HEC supplied about 550,000 customers.¹² This gives CLP a roughly 80% market share and HEC 20% on a number of customer

⁷ Legislative Council Panel on Economic Services and Panel on Environmental Affairs, *Future Development of the Electricity Market in Hong Kong Stage I Consultation* (Stage I Consultation Paper), 3, <http://www.legco.gov.hk/yr04-05/english/panels/es/papers/escb1-829-1e.pdf> (accessed 15 Apr. 2013).

⁸ *Ibid.* at 5.

⁹ *Ibid.*

¹⁰ Tyler Wolf, *Hong Kong's Electricity Monopolies: Legislative Council Debates and the Liberal Party Position*, 2, <http://www.civic-exchange.org/wp/wp-content/uploads/2010/12/2004-TylerWolf.pdf> (accessed 15 Apr. 2013).

¹¹ Energy Advisory Committee, *Electricity Market Review: Market Power*, 4, http://www.enb.gov.hk/en/resources_publications/policy_consultation/files/Reference06.pdf (accessed 15 Apr. 2013).

¹² Legislative Council Secretariat, *Information Note: Electricity Market in Hong Kong*, 2, <http://www.legco.gov.hk/yr05-06/english/sec/library/0506in26e.pdf> (accessed 15 Apr. 2013).

basis. In terms of electricity sold, CLP sold 29,382 GWh, while HEC sold 10,755 GWh in 2005.¹³ This gives CLP roughly a 75% market share and HEC 25% on an electricity sold basis.

Hong Kong is probably one of the few jurisdictions in the world where the electricity companies were never under majority public ownership. HEC was the first electricity supplier in Hong Kong. It was incorporated in 1889 and began supplying electricity to Hong Kong Island in December 1890.¹⁴ CLP was incorporated in 1901 with a view to supplying electricity to Canton (now Guangzhou in China) and Kowloon.¹⁵ Its service area was later extended to New Territories and the outlying islands.

The current regulatory regime for the electricity sector in Hong Kong consists of the 'Scheme of Control' (SOC) agreements, which are bilateral, long-term contracts between the Hong Kong government and each of the two electricity companies. There is currently no legislation governing the economic regulation of the electricity sector. There is, however, legislation pertaining to the safety and technical aspects of the industry.¹⁶ This somewhat unusual contract-based regulatory system originated in the 1950s and 1960s, when it was recommended at one point that the government nationalize the two companies. This brief flirtation with nationalization occurred against the backdrop of massive public discontent with the performance and tariff levels of the two electricity companies. In the early 1950s, the two electricity companies introduced a fuel surcharge on top of the regular tariff to protect themselves from unstable fuel prices. In 1957, following the Suez Crisis, the surcharge was raised from 9% to 18%.¹⁷ This increase caused huge uproar from the local industrialists, which were heavily reliant on electricity, and led to calls for nationalization.¹⁸

Amid this public outcry, then-colonial governor Sir Robert Black set up a three-person commission, called the Electricity Supply Companies Commission, to examine the industry and offer suggestions to the government.¹⁹ The Commission eventually recommended that the government take over the two companies to 'permanently remove the competing interest between the shareholders and the public'.²⁰ The government, however, was reluctant to follow

¹³ Pun-Lee Lam, *The Scheme of Control on Electricity Companies* 24–25 (The Chinese U. Press 1996).

¹⁴ *Ibid.* at 3.

¹⁵ *Ibid.*

¹⁶ The safety and technical aspects of the industry are governed by the Electricity Ordinance, which is enforced by the Electrical and Mechanical Services Department. *Stage I Consultation Paper, supra* n. 7, at 5, 11.

¹⁷ Lam, *supra* n. 13, at 6.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ *Ibid.* at 7.

the recommendation due to its serious financial implications.²¹ Eventually, CLP, together with its new business partner Esso Eastern Inc. (the trade name for the overseas operations of Exxon), provided a solution to the conundrum by proposing a SOC for fifteen years, to which the government eventually agreed.²² As envisioned by CLP and Esso, the main purpose of the SOC was ‘to limit the disposable profits of the companies to a reasonable return on their equity capital while providing adequate incentives towards efficiency and expansion’.²³ Under the agreement, CLP promised to lower tariffs and set limits on dividends, which placated the government and the public.²⁴ CLP did make good on its promise and tariffs were lowered during the first SOC agreement.²⁵ Thus, emerged this somewhat peculiar regulatory arrangement between the Hong Kong government and the two electricity companies. The first SOC agreement between CLP and the Hong Kong government expired and was renewed in 1978. It was then that HEC entered into its first Scheme of Control agreement with the government.

Calls for reform of the regulatory regime surfaced when the SOC agreements were up for renewal in 1993 and in 2008. Suggestions have ranged from merger of the two companies in order to reap the economies of scale from transmission to full liberalization of the sector.²⁶ The SOC-based regulatory regime has been criticized throughout the years as favouring the electricity companies rather than protecting consumer interests. However, on both occasions, the government opted to extend the SOC arrangement with minor adjustments. There are signs, however, that things may be about to change upon expiration of the current SOC agreements. First, the term of the current SOC agreements has been reduced from fifteen years to ten years, with an option of an extension for another five years.²⁷ The government reduced the duration of the agreements despite opposition from the electricity companies. Second, the government has required the two electricity companies to acknowledge that it is free to revamp the current regulatory regime

²¹ *Ibid.*

²² *Ibid.* at 9.

²³ *Ibid.*

²⁴ *Ibid.*

²⁵ Pun-Lee Lam, *Regulatory effects on electricity prices in Hong Kong*, 21 *Energy Economics* 529, 544 (1999).

²⁶ Lam, *supra* n. 13, at 26–27, 85.

²⁷ The Scheme of Control Agreement entered into by the Government of the Hong Kong Special Administrative Region and the following companies: CLP Power Hong Kong Limited, ExxonMobil Energy Limited and Castle Peak Power Company Limited (CLP Scheme of Control), at 9; The Scheme of Control Agreement entered into by the Government of the Hong Kong Special Administrative Region and the following companies: The Hong Kong Electric Company, Limited and Hong Kong Electric Holdings Limited (HEC Scheme of Control), at 9.

in 2018.²⁸ Third, the government has made it clear that it will consider liberalizing the sector in 2018 if the conditions are suitable.²⁹

The current regulatory arrangement has its strengths and weaknesses. It has been said that '[a]lthough such a long-term regulatory contract can protect the regulated firm's investment against opportunistic behaviour of the regulator, it may fail to achieve efficient production decisions and may lower the incentive to reduce costs'.³⁰ This is attested to by the fact that labour productivity of the two companies has historically shown little gain.³¹ Under the SOC arrangement, the government recognizes that:

the Companies and their shareholders are entitled to earn a return which is reasonable in relation to the risks involved and the capital invested in and retained in their business, and in return, the Government has to be assured that service to the consuming public continues to be adequate to meet demand, to be efficient and of high quality, and is provided at the lowest cost which is reasonable in the light of financial and other considerations.³²

One of the key components of the SOC agreements is profit control. Under the previous SOC agreements that lasted from 1993 to 2008, the permitted maximum rate of return for equity capital was 15% while that for debts was 13.5%.³³ This differential treatment was designed to provide shareholders of the two companies incentives to invest in the companies. The net return to the shareholders is then calculated by making two deductions: (1) interest payable on long-term financing up to a maximum of 8% per annum; and (2) a charge of 8% per annum on the average balance of the Development Fund (renamed Tariff Stabilization Fund in the 2008 SOC agreements) to be credited to the rate reduction reserve, which is used to reduce tariff for consumers.³⁴ The local politicians and the general public have always been critical of what was perceived to be excessive returns to the electricity companies, especially when maximum permitted returns are de facto guaranteed returns, and when the two companies operate in a practically risk-free environment.³⁵

²⁸ CLP Scheme of Control, at 3; HEC Scheme of Control, at 3; Legislative Council Panel on Economic Development, *New Scheme of Control Agreements With the Two Power Companies* (New Scheme of Control Agreements), 2, <http://www.legco.gov.hk/yr07-08/english/panels/es/papers/edevcb1-546-1-e.pdf> (accessed 15 Apr. 2013).

²⁹ *New Scheme of Control Agreements*, *supra* n. 28, at 2.

³⁰ Pun-Lee Lam, *Competition in Energy* 36 (City U. Hong Kong Press 1997).

³¹ *Ibid.* at 55.

³² The Scheme of Control Agreement entered into by the Government of the Hong Kong Special Administrative Region and the following companies: CLP Power Hong Kong Limited, ExxonMobil Energy Limited and Castle Peak Power Company Limited, at 3.

³³ Legislative Council Secretariat, *supra* n. 12, at 4.

³⁴ *Ibid.* at 7.

³⁵ Wolf, *supra* n. 10, at 7.

These high permitted rates of return have translated into high tariffs. According to Lehman Brothers, Hong Kong has the third highest electricity tariffs in the world.³⁶ Academic opinions, however, diverge on whether these permitted rates of return were excessive.³⁷ By leveraging their positions and relying on debt capital, CLP and HEC in fact have achieved a higher rate of return on equity capital than the permitted rates of return.³⁸ The rates of return on equity capital have been calculated to be in excess of 20%,³⁹ and exceed the costs of equity capital.⁴⁰ The rates of return on equity capital have been found to compare very favourably with the utilities in other Asian countries.⁴¹ Another study found that the returns achieved by CLP and HEC are typically twice of those achieved by other utilities considered to be performing well elsewhere in the world, such as American Electric Power, British Energy, and Tokyo Electric Power.⁴²

When the SOC agreements were renewed in 2008, legislators and the local community put enormous pressure on the government to negotiate for a lower rate of return.⁴³ Eventually, the two electricity companies agreed to accept a 9.99% permitted rate of return on average net fixed assets and an 11% permitted rate of return on average renewable net fixed assets (fixed assets for generating renewable energy).⁴⁴ On the date of commencement of the new SOC agreements, CLP and HEC lowered their tariffs by 10% and 19% respectively.⁴⁵ Based on 2006 figures, the reduced rates of return were projected to cut the annual earnings of the two companies by HKD 5 billion.⁴⁶

³⁶ *Ibid.* at 8.

³⁷ Chi-Keung Woo, Ira Horowitz & Asher Tishler, *A Critical Assessment of the Hong Kong Government's Proposed Post-2008 Regulatory Regime for Local Electricity Utilities* 34 Energy Policy 1451, 1454–1455 (2006); Stephen Luk, *Electricity Tariffs in Hong Kong: What Went Wrong and What Can We Do About It?* 33 Energy Policy 1085, 1088–1089 (2005).

³⁸ Lam, *supra* n. 13, at 114, 120.

³⁹ Wolf, *supra* n. 10, at 3.

⁴⁰ Lam, *supra* n. 30, at 51.

⁴¹ *Ibid.* at 44.

⁴² Federation of Hong Kong Industries, *Restructuring Hong Kong's Post-2008 Electricity Market: A Proposal by the Federation of Hong Kong Industries*, 3, http://www.industryhk.org/english/news/news_sp/files/Electricity_Report.pdf (accessed 15 Apr. 2013).

⁴³ Wolf, *supra* n. 10, at 9, 15–16; Legislative Council Panel on Economic Services, *Future Development of the Electricity Market in Hong Kong: Views received during the Stage II Public Consultation* (Stage II Views Received), 3, http://www.enb.gov.hk/en/resources_publications/policy_consultation/files/es0529cb1-1567-1-e.pdf (accessed 15 Apr. 2013).

⁴⁴ CLP Scheme of Control, at 5–6; HEC Scheme of Control, at 6.

⁴⁵ Legislative Council, *Official Record of Proceedings (Wednesday, 10 Jun. 2009)*, 8799.

⁴⁶ *New Scheme of Control Agreements*, *supra* n. 288, at 4; Legislative Council Question, *LCQ14: Interim review of the Scheme of Control Agreements*, <http://www.info.gov.hk/gia/general/201210/17/P201210170217.htm> (accessed 15 Apr. 2013); Legislative Council Panel on Economic Development, *Minutes of special meeting held on Tuesday, 8 January 2008, at 4:30 pm in the Chamber of the Legislative Council Building* (LegCo Minutes), 4, <http://www.legco.gov.hk/yr07-08/english/panels/es/minutes/ev080108.pdf> (accessed 15 Apr. 2013).

The SOC agreements have been often criticized for the fact that because the rate of return is based on investment in net fixed assets, the two electricity companies have an incentive to over-invest in fixed assets and capacity to obtain a higher rate of return.⁴⁷ Moreover, the rate of return is fixed for the duration of the contract,⁴⁸ which is unusual when compared to other jurisdictions that have adopted rate-of-return regulation, such as some US jurisdictions, where the permitted rate of return is not fixed.⁴⁹ There is ample evidence to support the allegation of over-investment. First, it has been found that CLP and HEC maintain an excess capacity that is one of the highest in the world, and substantially higher than comparable jurisdictions.⁵⁰ From the 1970s to the 1990s, the excess capacity of the two companies consistently exceeded 40%, while the international norm is 25%.⁵¹ Second, it has been observed that the two companies have tended to announce large capital investment plans after the Schemes of Control have been renewed.⁵² Occasionally, there are questions about whether certain investment projects are justified. For instance, Legislative Council member Ka-ki Kwok questioned whether CLP's proposal to construct a Hong Kong Dollar (HKD)10.2 billion LPG receiving terminal was an attempt to inflate its fixed assets.⁵³ This is not to say that the over-investment has yielded no benefit to Hong Kong. The electricity system in Hong Kong enjoys 99.99% reliability, which is almost unparalleled in the world.⁵⁴ However, it has been said that this high degree of reliability has been achieved through wasteful spending: 'It is undoubtedly true that overinvestment produces higher reliability of supply up to a point, but it does so with diminishing returns as we squeeze the last decimal points out of reliability.'⁵⁵

Under the previous SOC agreements, once a capital investment plan has been approved by the government, the electricity company is entitled to raise the tariff to a level necessary to allow it to achieve the permitted rate of return. To justify their long-term capital investment plans, the two companies have tended to overestimate the growth in consumer demand for electricity. This overestimation is all the more unreasonable as the trajectory for electricity demand in Hong Kong

⁴⁷ Wolf, *supra* n. 10, at 2; Legislative Council Secretariat, *supra* n. 12, at 5.

⁴⁸ Legislative Council Secretariat, *supra* n. 12, at 5.

⁴⁹ Lam, *supra* n. 30, at 69–70.

⁵⁰ Luk, *supra* n. 377, at 1086–1088.

⁵¹ Lam, *supra* n. 30, at 55–56.

⁵² *Scheme of Control*, *supra* n. 13, at 74.

⁵³ LegCo Minutes, *supra* n. 46, at 9.

⁵⁴ *Stage 1 Consultation Paper*, *supra* n. 7, at 6; China Light & Power, *Annual Report 2011* (CLP 2011 Annual Report), 38, <https://www.clpgroup.com/ourcompany/aboutus/resourcecorner/investmentresources/Documents/2011/E108.pdf> (accessed 15 Apr. 2013).

⁵⁵ David Webb, *Hong Kong's Electricity Tax*, <http://webb-site.com/articles/electrictax.asp> (accessed 15 Apr. 2013).

has been stable since the early 1990s.⁵⁶ In recent years, the growth has been steadily around 2%.⁵⁷ In the case of CLP, it has an added incentive to overestimate demand to justify excess capacity because it can sell the extra electricity generated to China and retain 20% of the profit. The government has not imposed any meaningful *ex post facto* review of capital investment to determine whether it turned out to be excessive.⁵⁸ Although the current SOC agreements contain provisions which stipulate that only 50% of the costs incurred to install capacity that has been deemed to be excessive will be reimbursed by consumers,⁵⁹ there is no evidence that these provisions have been invoked to scrutinize and penalize the two companies for constructing unnecessary capacity. Furthermore, the environmental performance of the two electricity companies has been far from satisfactory. It has been said that CLP's Castle Peak Power Station was among the bottom three in the world in terms of carbon dioxide emissions, while HEC's emission performance was also below average.⁶⁰

Given the problems with the SOC agreements and the long-simmering public dissatisfaction with them, it is small surprise that there have been calls to discard the SOC agreement and to liberalize the industry altogether. There have been consistent calls from Legislative Council members and members of the local community for the government to liberalize the electricity market and to open it up to competition.⁶¹ The electricity companies, unsurprisingly, have expressed concerns about the benefits of liberalization.⁶² There were hopes of liberalization the last time the SOC agreements were renewed in 2008. The government opted for a cautious course of action and to maintain the status quo. However, as a compromise, the government made a public commitment to explore the possibility of liberalizing the industry when the current SOC agreements expire in 2018. The expectation is that if the government were serious about liberalization, it would have made relevant preparations by the time the agreements were up for mid-term review in 2013. However, relevant preparation has been conspicuously absent thus far. The government has been accused of dragging its feet. Given the time it takes to prepare and implement a full liberalization plan, the belief is that it is already too late to aim for liberalization in 2018. This has spawned speculation

⁵⁶ China Light & Power, *Annual Report 2009* (CLP 2009 Annual Report), 36, https://www.clpgroup.com/ourcompany/aboutus/resourcecorner/investmentresources/Documents/2009/CLP_AR_2009_Eng_Full.pdf (accessed 15 Apr. 2013).

⁵⁷ *Ibid.*

⁵⁸ Lam, *supra* n. 13, at 74.

⁵⁹ CLP Scheme of Control, at Sch. 7; HEC Scheme of Control, at Sch. 7.

⁶⁰ Legislative Council Panel on Economic Development, *Background brief on Scheme of Control Agreements with the power companies* (Background Brief), 6, <http://www.legco.gov.hk/yr12-13/english/panels/e/dev/papers/e/dev1126cb1-189-4-e.pdf> (accessed 15 Apr. 2013).

⁶¹ *Ibid.*

⁶² CLP 2009 Annual Report, *supra* n. 57, at 36.

that the government is not genuinely interested in pursuing liberalization and made that commitment in 2008 merely to placate detractors.

With the passage of the Competition Ordinance in Hong Kong on 14 June 2012, proponents of liberalization are presented with an alternative. It is possible to use the abuse of substantial degree of market power provision in the Ordinance to compel the two electricity companies to provide each other and other independent power generators access to their power grid. This would indeed be an audacious move. In the next Section, we will evaluate whether this is a viable strategy and the potential problems with such an approach.

3 USING COMPETITION LAW TO INTRODUCE LIBERALIZATION

3.1 A LITIGATION-BASED STRATEGY FOR LIBERALIZATION

If the Hong Kong government were to drag its feet with liberalization of the electricity sector, as seems to be the case, proponents of liberalization could conceivably resort to the recently passed Competition Ordinance to propel the process. In particular, proponents can attempt to compel the two electricity companies to interconnect by bringing a refusal to deal or an essential facility claim against them. Interconnection between the power grids of the two companies would be a prerequisite for full liberalization. This would allow the two electricity companies to compete with each other for customers in their currently monopolized territories. If independent power providers were to emerge in the market, or if electricity companies from the China Southern Grid were to enter the Hong Kong market, thereby introducing further competition into the market, these new entrants would need access to the power grids of the two incumbents, which they could conceivably obtain under a refusal to deal or essential facility claim against the two incumbent providers. There are, however, many hurdles to a successful deployment of this strategy. As the analysis below will show, for a variety of reasons, liberalization driven by a suit under the Competition Ordinance is unlikely to succeed in achieving full liberalization of the electricity sector in Hong Kong.

The relevant provision in the newly adopted Competition Ordinance is section 21, which is also known as the second conduct rule. It is the equivalent of section 2 of the Sherman Act and Article 102 of the Treaty on the Functioning of the European Union. Section 21(1) of the Competition Ordinance states that '[a]n undertaking that has a substantial degree of market power in a market must not abuse that power by engaging in conduct that has as its object or effect the

prevention, restriction or distortion of competition in Hong Kong'.⁶³ Section 21(2) proceeds to provide two examples of conduct that would be deemed to be an abuse under subsection (1), namely predatory behaviour towards competitors, and (2) 'limiting production, markets or technical development to the prejudice of consumers'.⁶⁴ Section 21(3) provides a list of factors to be considered in determining whether an undertaking wields a substantial degree of market power.

As suggested earlier, to achieve interconnection between the existing power grids and to allow potential new entrants to gain access to them, it would be necessary to bring a refusal to deal or essential facilities claim against the two electricity companies. Section 21(2) does not specify refusal to deal or to supply an essential facility as abuses of substantial market power. However, in the draft guidelines on the second conduct rule prepared by the Hong Kong Competition Commission for public consultation, refusal to deal was included as a potential abuse. There were also references to refusal to supply an essential input. The draft guidelines state that "refusal to deal" describes a situation where an undertaking with a substantial degree of market power refuses to supply an input to another undertaking, or is willing to supply that input only on objectively unreasonable terms'.⁶⁵ The guidelines further state that '[a] refusal to deal may harm competition in the downstream market by preventing the undertaking seeking access to the relevant input from: (a) operating in that market; or (b) operating in that market as an effective competitive constraint' and that '[c]oncerns may arise in particular when the refusal relates to an input that is indispensable for undertakings operating in the downstream market'.⁶⁶ Based on the foregoing, it is likely that the Commission will regard a refusal to deal or to supply an essential facility claim an abuse under the second conduct rule.

The first hurdle to the success of a litigation-based strategy for liberalization is that under the Competition Ordinance, there is no stand-alone private right of action. Only the Commission may initiate proceedings against an infringing party in the Competition Tribunal. Private parties may lodge complaints to the Commission regarding potential infringements of the Ordinance under section 37. However, the Commission is under no obligation to investigate a complaint 'if it does not consider it reasonable to do so'.⁶⁷ This language gives the Commission considerable latitude to decide whether to initiate legal proceedings. If the Commission is minded to toe the government line against liberalization (should

⁶³ Competition Ordinance (Cap. 619), § 21.

⁶⁴ *Ibid.*

⁶⁵ Hong Kong Competition Commission, *Draft Guideline on The Second Conduct Rule—2014*, 30, http://www.compcomm.hk/en/draft_guidelines_2014.html (accessed 15 Oct. 2014).

⁶⁶ *Ibid.*

⁶⁷ Competition Ordinance (Cap. 619), § 37.

this be an official government policy), the Commission may refuse to investigate the complaints lodged by the relevant parties. In that case, the litigation-based strategy is doomed from the outset. This hopefully will not happen as the Commission is meant to be an independent enforcement body free from government influence.

Even if the Commission were to accept the complaints, in order for there to be a valid refusal to deal or to supply an essential facility claim, there must first be a request to deal or for supply of essential facility and a refusal to entertain the request. The transmission networks of CLP and HEC have been interconnected since the 1980s for the purpose of mutual support in the event of an emergency.⁶⁸ They are currently connected by a submarine cable with a 720-MVA capacity.⁶⁹ It has been argued that a capacity to transfer up to 1000 MW regularly would be sufficient to allow competition between CLP and HEC.⁷⁰ Local politicians have long been in favour of increasing interconnection between the two networks. Fred Li, a legislator, has argued forcefully that the costs of interconnection would be much lower than the costs of constructing a new plant.⁷¹ Therefore, it is possible to achieve interconnection between these two power grids by compelling the two companies to provide access to their respective power grids to each other. This would allow them to sell to each other's existing customers, which would introduce a modicum of competition to the electricity sector. However, there is no guarantee that the two electricity companies would request access to each other's grid. In fact, given their aforementioned reservations about liberalization, one may argue that it is unlikely that they will request access. Without a request for access, there would be no refusal to deal or supply an essential facility claim.

Yet it would, in fact, make economic sense for the firm with the lower tariffs, which currently is CLP, to request access to the other's grid. CLP currently enjoys lower costs of production due to its larger scale and sells its electricity at a considerably lower (30% lower) price than does HEC. If CLP can interconnect with HEC and sell to HEC's customers, it could undercut HEC's prices and take customers from HEC. And CLP possesses sufficient excess capacity to supply HEC's customers. Therefore, it is still possible that CLP may request access to HEC's grid, which HEC will most definitely refuse.

Not only may CLP want to interconnect with HEC, potential new entrants into the electricity market will also need access to the two companies' power grids in order to reach the customers. There are two sources of potential market entrants. One is the electricity companies in Guangdong province. The other is

⁶⁸ Lam, *supra* n. 30, at 84.

⁶⁹ Lam, *supra* n. 30, at 92.

⁷⁰ Federation of Hong Kong Industries, *supra* n. 42, at 3.

⁷¹ Wolf, *supra* n. 10, at 4.

potential new local power providers. Regarding interconnection between Hong Kong and the Mainland, the transmission network of CLP is interconnected with the Guangdong power system for transmitting contracted power purchase from the nuclear power plant at Daya Bay and the Guangzhou Pumped Storage Power Station in Conghua to CLP, and for selling CLP's electricity to Guangdong.⁷² The interconnection between Hong Kong and the Mainland would be sufficient to allow cross-border competition as it has a capacity in excess of 30% of total Hong Kong demand.⁷³ Therefore, it is theoretically possible for the Guangdong electricity companies to sell to CLP's customers if they have access to CLP's power grid. Once they have gained access to CLP's power grid, they can further reach HEC's customers by requesting access to HEC's power grid (CLP's grid lies between Guangdong and HEC's grid). As for new local power providers, they simply need to make sure that their generation facilities are connected with either incumbent's power grid. These potential new entrants will have the incentive to request access, which, when denied, will give rise to a refusal to deal or to supply an essential facility claim. In fact, because potential new entrants will eventually request for access to HEC's grid based on the above reasoning (and there are good reasons that they will given the higher potential profit to be made in HEC-serviced area),⁷⁴ the two incumbents' reluctance to request for access to each other's network is arguably not a significant concern.

Once there is an actual refusal to deal or supply and the Commission has decided to bring a case in the Tribunal, it will be up to the Tribunal to decide whether access should be granted. The Commission can formulate its claim as either a general refusal to deal by a firm with substantial market power claim or a refusal to supply an essential facility claim. The Tribunal is yet to accept and decide any case. Therefore, there is no indication of how the Tribunal would rule on such a claim. However, as is true of many emerging jurisdictions, the Tribunal is likely to refer to the jurisprudential approaches of the leading jurisdictions. In fact, the Competition Ordinance is said to be modelled after the EU regime.⁷⁵ In light of Hong Kong's historical lineage with the UK in terms of legal traditions, the Tribunal is likely to look to UK, and by extension EU, case law for guidance. Given the importance of US jurisprudence in international competition law, the

⁷² *Stage I Consultation Paper*, *supra* n. 7, at 20.

⁷³ Federation of Hong Kong Industries, *supra* n. 42, at 3.

⁷⁴ One may argue that in light of recent experience, it is highly unlikely that there will be potential local entrants into the market. However, it is likely that potential entrants have been deterred from entering the market due to the lack of a local grid and the possible need to construct one from scratch. With the assistance of the Competition Ordinance, this need may be alleviated if not averted altogether and potential entrants may be more likely to appear as a result.

⁷⁵ Tanna Chong, *Small businesses say competition bill lacks clarity*, South China Morning Post (23 May 2012), <http://www.scmp.com/article/734008/small-businesses-say-competition-bill-lacks-clarity> (accessed 24 Apr. 2013).

Tribunal may consider the US approach as well. What follows is an analysis of how a refusal to deal and a refusal to supply an essential facility claim brought by the Commission would be analysed under US and EU law.

Before one can determine whether the refusal to interconnect constitutes an abuse of dominance under EU law or conduct sufficient for the purpose of monopolization under US law, one needs to define the relevant market and establish dominance or monopoly power of the two electricity companies. The relevant threshold in the Hong Kong law is substantial market power, which is a lower requirement for market power than either dominance or monopoly power.⁷⁶ The relevant product market is clearly that of the supply of electricity. In that market, CLP and HEC are the only two participants in the market in Hong Kong. The more difficult question is geographic market definition. There are two alternatives. One is to define the geographic market as covering the entire Hong Kong, in which case CLP would have a market share of between 70% and 80% and HEC between 20% and 30%. Given the extremely high entry barriers to this market and the lack of countervailing buyer power, CLP's market share would be sufficient to constitute dominance under EU law and monopoly power under US law. Meanwhile, HEC would clearly not be dominant in the overall Hong Kong electricity market.

The second alternative is to define the relevant geographic markets as the respective service areas of the two companies: Hong Kong, Ap Lei Chau and Lamma Island on the one hand and Kowloon, New Territories and the outlying islands on the other hand. Under this geographic market definition, both companies would be monopolists in their respective markets. Given the lack of cross-selling between the two companies' service areas, the argument for treating Hong Kong as one integrated geographic market is weak. The market is partitioned into two isolated service areas; entry into one gives one no access to the other. Therefore, the better view is that there are in fact two geographic markets for electricity supply in Hong Kong with two monopolists operating in their respective service areas. These two companies clearly possess substantial market power in their respective geographic markets.

As mentioned earlier, the refusal to interconnect, both between CLP and HEC and between the two of them and any potential new entrants, can be formulated as a general unilateral refusal to deal claim or an essential facility claim. The analysis of the two claims shares some similarities but is nonetheless distinct. Under US antitrust law, the two leading unilateral refusal to deal cases are *Aspen*

⁷⁶ Legislative Council Bills Committee on Competition Bill, *Responses to outstanding issues from previous meetings*, 1, <http://www.legco.gov.hk/yr09-10/english/bc/bc12/papers/bc120410cb1-1506-2-e.pdf> (accessed 24 Apr. 2013).

*Skiing v. Aspen Highlands Skiing*⁷⁷ and *Verizon Communications v. Trinko*.⁷⁸ In *Aspen Skiing*, the US Supreme Court affirmed that even a monopolist has no general duty to deal with its rivals.⁷⁹ However, the Court proceeded to clarify that the right to refuse to deal with other firms is not unqualified,⁸⁰ and to hold Aspen Skiing's refusal to continue to offer the four-mountain pass with Highlands a violation of the Sherman Act.

The Court based its holding on a number of key facts in the case. First, there was a pre-existing relationship between Aspen Skiing and Highlands; the two had been offering the four-mountain pass together for years until Aspen Skiing terminated it. Second, the unilateral refusal to deal harmed consumers as well as the plaintiff. There was clear evidence that consumers preferred the four-mountain pass to the other offerings made by the two companies after the four-mountain pass was terminated. Third, there was no legitimate business justification for the refusal. The Court rejected all the reasons given by Aspen Skiing for refusing to deal with Highlands as pretextual. Lastly, the Court also placed much emphasis on the fact that Aspen Skiing refused to sell ski tickets to Highlands even at retail prices, which suggested a desire to sacrifice short-term profit for a long-term monopoly position. The facts which the Court emphasized are largely consistent with the draft guidelines produced by the Hong Kong Competition Commission, in which the Commission states that one of the factors to be considered in a refusal to deal claim is the past history of dealing between the undertakings.

Professor Herbert Hovenkamp has argued that *Aspen Skiing* only imposes a duty to deal on a monopolist if there was a prior course of dealing between the parties.⁸¹ This reading of the case is to some extent supported by *Eastman Kodak v. Image Technical Services*, a later US Supreme Court case in which the Court effectively imposed a duty on Kodak to supply patented and unpatented spare parts to its rival independent service organizations (ISOs) where Kodak had been supplying these parts to the ISOs previously, and by *Trinko*, in which the Court distinguished *Trinko* from *Aspen Skiing* on the grounds of lack of prior dealing between AT&T and Verizon and declared that 'the defendant's prior conduct sheds no light upon the motivation of its refusal to deal-upon whether its regulatory lapses were prompted not by competitive zeal but by anticompetitive malice'.⁸²

⁷⁷ 472 U.S. 585, 105 S. Ct. 2847 (1985).

⁷⁸ 540 U.S. 398, 124 S. Ct. 872 (2004).

⁷⁹ 472 U.S. at 600.

⁸⁰ 472 U.S. at 601.

⁸¹ Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and its Practice*, 299 (3d ed., Thomson-West 2005).

⁸² *Trinko*, *supra* n. 79.

In *Trinko*, the Supreme Court further narrowed the reach of *Aspen Skiing* by observing that the latter case was ‘at or near the outer boundary of § 2 liability’.⁸³ In distinguishing *Trinko* from *Aspen Skiing*, the Court stressed a number of key facts: (1) Aspen Skiing sacrificed profit by refusing to sell the ski tickets at retail prices, while Verizon was being compelled by the Telecommunications Act to sell the unbundled network elements at highly discounted prices; (2) Aspen Skiing was already voluntarily selling what Highlands sought to buy from it, whereas ‘[t]he unbundled elements offered pursuant to § 25(c)(3) exist only deep within the bowels of Verizon; they are brought out on compulsion of the 1996 Act and offered not to consumers but to rivals, and at considerable expense and effort’.⁸⁴ Lastly, the Court noted that compelling Verizon to deal entailed Verizon putting in place new systems, as opposed to a mere sharing of excess capacity.⁸⁵

Based on the legal principles summarized above, it would seem that the Commission cannot establish a valid unilateral refusal to deal claim under US antitrust law with respect to interconnection between CLP and HEC, and interconnection between potential new entrants and the two incumbents. First and foremost, there is no prior dealing between any of these parties in terms of interconnection of transmission network. If Professor Hovenkamp is correct that *Aspen Skiing* can only apply to situations in which there is prior course of dealing, then there will be no hope for a valid unilateral refusal to deal claim on behalf of any of the parties. Moreover, what is sought from the two incumbents is not something that is readily available and sold at retail. Our case is probably more akin to *Trinko*, where what the plaintiff sought is a part of the defendant’s network: in that case, unbundled network elements, in our case, the power grid and transmission facilities built by the two incumbents.

Regarding the remaining factors from *Aspen Skiing*, it is probable that the Commission would be able to demonstrate consumer harm by a refusal to deal. Interconnection would permit the introduction of competition, which may drive down electricity tariffs. Thus a refusal to deal may deny Hong Kong consumers the benefit of lower tariffs. As to legitimate business justifications for refusing to deal, it is difficult to predict what justifications the two incumbents would offer. One likely justification is technical difficulty in interconnection. Whether that justification would be accepted would depend on the Tribunal’s scrutiny of the technical requirements of interconnection. On balance, it is unlikely that the Commission’s unilateral refusal to deal claim against the two electricity companies would prevail under existing US antitrust jurisprudence.

⁸³ 540 U.S. at 399.

⁸⁴ 540 U.S. at 411.

⁸⁵ 540 U.S. at 410.

Aside from a general refusal to deal claim, the Commission may also pursue an essential facility claim against the two incumbents. The status of the essential facilities doctrine is shrouded in some mystery after *Trinko*, in which the Supreme Court refused either to affirm or repudiate it.⁸⁶ In fact, the authors of the leading US antitrust law treatise have stated that ‘the essential facility doctrine is both harmful and unnecessary and should be abandoned’.⁸⁷ Since the Supreme Court refused to repudiate it, the general presumption is that the doctrine continues to exist in US antitrust law. The most authoritative formulation of the doctrine comes from *MCI v. AT&T*, in which the Court of Appeal for the Seventh Circuit stated that the doctrine has four elements: (1) control of the essential facility by a monopolist; (2) a competitor’s inability practically or reasonably to duplicate the essential facility; (3) the denial of use of the facility to a competitor; and (4) the feasibility of providing the facility.⁸⁸

The first thing that needs to be established before applying the doctrine is that the defendant possesses an essential facility. The Seventh Circuit defines an essential facility as one that a competitor cannot practically or reasonably duplicate. Professors Areeda and Hovenkamp interpret essentiality as consisting of two elements: ‘First, the claimed input must be essential to the *plaintiff competitor’s* survival in the market. Second, the claimed input must not be available from another source or be capable of being duplicated by the plaintiff or others. (emphases in original)’⁸⁹ The facility at issue must be shown to be ‘not just helpful but vital to its competitive vitality’.⁹⁰ They further supplement this understanding of essentiality with the observation that ‘[e]ssentiality is not proven when actual or potential rivals other than the plaintiff are able to compete without the claimed facility, when alternative inputs might serve just as well as the claimed facility, or when access to the facility is already sufficient to guarantee competition’.⁹¹ In light of these various definitions of essentiality, it is quite obvious that CLP’s and HEC’s power grids constitute essential facilities. First of all, competitors cannot practically or reasonably duplicate the grids. That would have been prohibitively costly. Also, most residents of Hong Kong live in high-rise buildings. To install a new power grid would entail obtaining permission from the management of each of these buildings. In some buildings there may be no space to accommodate another grid network. Therefore, a new entrant into the electricity market would not be able to duplicate the facility practically or reasonably. Second, without

⁸⁶ 540 U.S. at 411.

⁸⁷ Philip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application*, para. 771c (3d ed., Wolters Kluwer 2008).

⁸⁸ *MCI Communications, Corp. v. AT&T*, 708 F.2d 1081, 1132–1133 (7th Cir 1983).

⁸⁹ Areeda & Hovenkamp, *supra* n. 88, at para. 773b.

⁹⁰ *Ibid.*

⁹¹ *Ibid.* at para. 773b3.

access to the power grid, potential new entrants would not be able to sell electricity to customers at all. The facility at issue is indispensable for the competitor's survival in the market. The power grid is not available from any other source. Nor can it be duplicated by the potential new entrants.

CLP and HEC clearly control their own power grids. Thus the first element under the *MCI* four-part test is met. Assuming that there is a request for access and that request is denied, the third element is met as well. As for the last element of feasibility of supply, this would depend on the technical aspect of interconnection. The two incumbents would probably claim that the submarine cable connecting their two systems is insufficient to allow full-scale interconnection between their systems. Available information suggests that this is probably true. However, it would still be possible for the two incumbents to provide access to their power grids subject to the capacity of the submarine cable. Of course the Tribunal could order the two incumbents to expand the capacity of their submarine connection. However, as Professors Areeda and Hovenkamp have noted, '[n]o case has suggested that the monopolist must build new capacity to satisfy a would-be sharer'.⁹² As for the interconnection between Hong Kong and the Mainland, there is no capacity constraint and it would be fully feasible for CLP to interconnect with the power grid of Guangdong province.

Therefore, if the two incumbents do not have a legitimate business justification for denying access to their power grids, it seems that the Commission would have a valid essential facility claim against the two incumbents if the Tribunal were to follow the prevailing US approach. In fact, application of the doctrine to our case is consistent with some of the admonitions of Professors Areeda and Hovenkamp regarding the doctrine. First, they have noted that there are only three situations to which the doctrine should apply, one of which is 'natural monopoly, where rivals can be accommodated without duplication of a facility, and duplication itself would be socially wasteful'.⁹³ This aptly describes the power grids of CLP and HEC. Second, they opined that the case for applying the doctrine is the strongest when the plaintiff seeks to be a rival of the monopolist. This again applies to our case. Although the plaintiff in our case is the Commission, the Commission is effectively bringing the case on behalf of potential new entrants. Third, they argued that '[n]o one should be forced to deal under the antitrust laws unless doing so is likely substantially to improve competition in the marketplace'.⁹⁴ Compelling interconnection would introduce competition to otherwise fully monopolized markets. Competition is likely to improve substantially.

⁹² *Ibid.* at para. 773e.

⁹³ *Ibid.* at para. 771c.

⁹⁴ *Ibid.* at para. 773a.

Under EU law, refusal to supply (not involving intellectual property) can be classified into two types of cases: (1) termination of an existing supply relationship, and (2) refusal to start supplying an input.⁹⁵ The first category of cases includes such seminal cases as *Commercial Solvents v. Commission*⁹⁶ and *United Brands v. Commission*.⁹⁷ These cases are somewhat analogous to the US general refusal to deal cases in that they are all premised on a pre-existing course of dealing. Because of this, these cases are inapt for our case. The relevant category of cases would thus be the second category. According to the European Commission's Discussion Paper, a refusal to start supplying an input would only be abusive if '(i) the behaviour can be properly characterized as a refusal to supply; (ii) the refusing undertaking is dominant; (iii) the input is indispensable; (iv) the refusal is likely to have a negative effect on competition; (v) the refusal is not objectively justified'.⁹⁸ It should be obvious that these criteria closely parallel the essential facility doctrine in the US

The leading EU case on the application of the essential facility doctrine to a physical facility is the *Oscar Bronner* case.⁹⁹ In paragraph 41 of the judgment in that case, the then-European Court of Justice lay down four criteria for establishing an essential facility claim: (1) the refusal would likely eliminate all competition in the downstream market from the person requesting access; (2) the refusal cannot be objectively justified; (3) the facility must be indispensable to carrying on that person's business; and (4) there is no actual or potential substitute for that facility. On what constitutes an essential facility, the European Commission has defined it as 'a facility or infrastructure without access to which competitors cannot provide services to their customers'.¹⁰⁰ In *European Night Services*, the then-Court of First Instance reiterated that for a facility to be considered essential, it must not merely confer an advantage on the undertaking possessing it; there must be no substitute for it.

Under the definition of an essential facility adopted by the European Commission and the Court of First Instance, it is clear that the power grids of the two electricity companies qualify as essential facilities. Competitors cannot provide electricity retail services without access to their power grids. And the power grids do not merely confer a competitive advantage; there are no substitutes for them.

⁹⁵ European Commission DG Competition, *Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses*, 62–66, <http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf> (Discussion Paper) (accessed 23 Apr. 2013).

⁹⁶ Cases 6/73 & 7/73 [1974] ECR 223, [1974] 1 CMLR 309.

⁹⁷ Case 27/76 [1978] ECR 207, [1978] 1 CMLR 429.

⁹⁸ *Discussion Paper*, *supra* n. 96, at 64.

⁹⁹ Case C-7/97, *Oscar Bronner GmbH & Co KG v. Mediaprint* [1998] ECR I-7791, [1999] 4 CMLR 112.

¹⁰⁰ *Sealink/B&I Holyhead: Interim Measures* [1992] 5 CMLR 255.

Applying the four criteria from *Oscar Bronner*, whether the Hong Kong Competition Commission will have a valid essential facility claim will depend on whether CLP and HEC can offer an objective justification for denial of access. As suggested earlier, CLP and HEC may argue technical infeasibility as a reason for refusing to provide access. Whether that is genuine will need to be determined by the Tribunal. The other three criteria should be met. First, refusal to interconnect by CLP and HEC would eliminate all competition in the downstream electricity retail market from the potential new entrants. Second, access to the power grids is indispensable to the potential new entrants' business, without which they cannot sell electricity to customers in Hong Kong. Third, as mentioned earlier, there is no actual or potential substitute for CLP's and HEC's power grids.

The analysis is largely similar under the five-part test laid down by the European Commission in the Discussion Paper. Assuming that there is a refusal to supply essential facility, we have established that the two electricity companies are dominant (or possess substantial market power) and that the power grids are indispensable to potential competitors. Denial of access to the power grids clearly has a negative impact on competition as it precludes all competition in the downstream electricity retail market. The only remaining question, again, is whether the refusal is objectively justified. Assuming that there is no legitimate objective justification for the refusal, the Hong Kong Competition Commission would have a valid essential facility claim under EU competition law.

3.2 DEFICIENCIES OF A LITIGATION-BASED STRATEGY

Despite the likelihood of success of a litigation-based strategy for liberalization, such a strategy is unlikely to succeed in introducing full-scale competition to the electricity sector in Hong Kong. There are a number of limitations to the strategy.

First, regarding the interconnection between CLP's and HEC's power grids, which would introduce competition between the two incumbents in their respective service areas, the likely beneficiaries, based on the current tariff structure, will be limited to the existing HEC customers. HEC currently is subject to higher costs of production and hence charges tariffs that are 30% higher than those of CLP.¹⁰¹ Allowing CLP to sell to HEC's customers would put pressure on HEC to lower tariffs to CLP's level. However, allowing HEC to compete in CLP's territory will exert no competitive pressure on CLP, as HEC is the higher-cost producer. Therefore, for the majority of electricity customers in Hong Kong, compelling interconnection between the two companies' transmission networks will result in few competitive benefits.

¹⁰¹ Legislative Council Question, *supra* n. 46.

Moreover, the government has to be watchful that the two electricity companies will use the introduction of competition as an excuse to demand greater fixed asset investments, which in turn justifies higher tariff. The two companies' generation capacity was determined based on the needs of customers in their respective service areas. With interconnection, either company could be potentially required to service the entire city's electricity needs, which would obviously necessitate greater generation capacity. Thankfully, both companies currently operate with considerable excess capacity. As mentioned in the last Section, their excess capacities exceed the international norm substantially. Therefore, the need for new investments is likely to be low. In fact, it has been argued that once the two transmission networks are fully interconnected and the two electricity companies can cross-sell into each other's territories, they would no longer need to build such large excess capacities for their own service areas. The need for new generation facilities would be reduced, which lowers the need for fixed asset investment, which in turn would lead to lower tariffs.¹⁰² In any case, given that HEC currently only services about one-quarter the number of customers as CLP, it would be unrealistic to expect HEC to expand its capacity sufficiently to service all of CLP's customers. When scrutinizing the two companies' investment plans, the government will need to take a holistic approach taking into account Hong Kong's overall electricity demand. Capacity can no longer be planned on the basis of individual service areas.

Another limitation of interconnection between CLP and HEC is that the current submarine cable connecting their two systems was built for emergency support only and is not intended to permit full-scale interconnection between them. The government commissioned a technical study in 2003, which recommended the construction of 'a new interconnector of two 400 kV circuits, each of 700 MW in capacity, connecting CLP's 400 kV system with HEC's 275 kV system through a new transformer station to be built on Hong Kong Island' to allow full interconnection between the two systems.¹⁰³ As mentioned earlier, even under the most aggressive use of the essential facility doctrine, no courts in the US or the EU have ordered the defendant to construct new facilities to accommodate its rival.¹⁰⁴ Therefore, the benefits of interconnection will be constrained by the capacity of the existing submarine cable. The amount of cross-selling between the two systems will be limited. Of course, it is possible that, if the economics so justify, CLP may construct another submarine cable on its own initiative and demand interconnection with HEC's power grid. In that case, HEC would have a difficult time resisting interconnection under the essential facility doctrine. But

¹⁰² Wolf, *supra* n. 10, at 4.

¹⁰³ *Stage 1 Consultation Paper*, *supra* n. 7, at 21.

¹⁰⁴ Richard Whish, *Competition Law* 697 (6th ed., Oxford 2009).

until that happens, the full competitive benefits of interconnection will not be achieved.

Lastly, full liberalization would require more than mere competition between the two incumbents. It would require the entry of new power providers, of which there are two sources, locally and the Mainland. In order for new local independent power providers to enter the market, the first hurdle to overcome is the lack of land to construct new power generation facilities. There is a chronic shortage of land in Hong Kong, where land prices are very high. The government will probably need to provide some preferential land grant to facilitate entry. Moreover, the existence of considerable excess capacity by the two incumbents may also be a serious threat to potential new entrants. With considerable excess capacity, the two incumbents could flood the market with electricity to undercut the tariffs of the new entrants to make entry uneconomical. The Competition Commission will need to be vigilant against potentially anticompetitive practices by the two incumbents against new entrants.

As for new entrants from the Mainland, the short-term outlook is not optimistic. Guangdong still suffers from electricity shortage and is unlikely to be able to supply Hong Kong in the near future.¹⁰⁵ The supply situation in Guangdong is still tight.¹⁰⁶ The government concluded, based on contacts with Guangdong authorities and its own study, that 'it would be prudent at this stage not to predicate the future development, at least in the short term, of the electricity market in Hong Kong on supply from the Mainland'.¹⁰⁷ The demand and supply situation in Guangdong is expected to improve in coming years. Nevertheless, 'supply would remain tight in the near term, especially in certain regions and during certain times of the year'.¹⁰⁸ Moreover, there are concerns about the reliability and environmental performance of the Mainland electricity companies. The government noted that most respondents to the Second Consultation on the Future Development of the Electricity Market prior to the renewal of the Schemes of Control in 2008 'did not support increased interconnection, out of concern that it might affect reliability and increase tariffs'.¹⁰⁹ The environmental impact of reliance on supply from China has also been cited as a reason for reservations about greater interconnection between

¹⁰⁵ Federation of Hong Kong Industries, *supra* n. 42, at 8.

¹⁰⁶ *Stage I Consultation Paper*, *supra* n. 7, at 26.

¹⁰⁷ Legislative Council Panel on Economic Services, *Future Development of the Electricity Market in Hong Kong (Stage II Consultation)* (Stage II Consultation Paper), 2, http://www.epd.gov.hk/epd/english/news_events/legco/files/PanelPaper_060327_Annex_e.pdf (accessed 29 Aug. 2014).

¹⁰⁸ Hong Kong SAR Government Economic Development and Labour Bureau, *Consultation Paper on Future Development of the Electricity Market in Hong Kong (Stage II Consultation)*, 5, http://www.epd.gov.hk/epd/english/news_events/legco/files/PanelPaper_060327_Annex_e.pdf (accessed 29 Aug. 2014).

¹⁰⁹ *Stage II Views Received*, *supra* n. 43, at 4.

Hong Kong and China.¹¹⁰ Even though the interconnection between CLP's power grid and the power grid of Guangdong province is sufficient to allow Mainland providers to supply the electricity needs of Hong Kong customers, if the generation capacity of the Guangdong providers is insufficient to generate excess supply for the Hong Kong market, these providers are unlikely to provide much competition to CLP and HEC. However, this does not mean that interconnection between CLP's grid and the grid of the Guangdong province is not worth pursuing. Over time, the supply situation in the Guangdong province will improve and entry of Guangdong providers into the Hong Kong market will be possible.

A litigation-based strategy is unlikely to achieve full liberalization of the electricity sector in Hong Kong. There are issues, such as the limited capacity of the submarine cable connecting CLP's and HEC's networks, and the lack of affordable land for the construction of new generation facilities, that cannot be resolved through litigation under competition law and would require the government to formulate a comprehensive policy. However, this does not mean that the strategy is not worth pursuing. It is possible that once interconnection between CLP's and HEC's networks has been ordered by the Tribunal, the government will be spurred into action to tackle the various other issues that cannot be resolved by the Tribunal. The recently adopted Competition Ordinance remains a useful tool for proponents of liberalization.

4 THE ENVIRONMENTAL EFFECTS OF INTRODUCING COMPETITION IN THE ELECTRICITY SECTOR

Having examined how competition law has the potential to be a strategic tool for proponents of market liberalization, this section explores the environmental effects of liberalization with the aim of determining whether competition can also be strategically harnessed to meet environmental objectives.¹¹¹

This possibility has not been well explored in the literature because it has largely been the case that the implementation of new environmental laws and policies has had anticompetitive effects and thereby engaged competition law. In the European Union (EU), for example, command and control regulation has given way to the use of market-based mechanisms such as emissions trading and

¹¹⁰ *Ibid.* at 7.

¹¹¹ This line of enquiry is inspired by the concept of 'regime borrowing' in the international relations literature. Regime borrowing occurs when linkages are sought to obtain the institutional and procedural benefits of an existing regime. Examples of such benefits include enforcement or sanction mechanisms and institutional authority: David W. Leebron, *Linkages*, 96 *Am. J. Intl. L.* 5–27, at 14 (2002).

biodiversity banking.¹¹² As Kingston argues, '[t]he shift towards market-based instruments has important implications for the interface between EU environmental and competition policy, bringing large areas of environmental policy within the scope of competition law for the first time'.¹¹³ This article seeks to fill a gap in the literature by exploring the effects in the opposite direction, that is, whether the introduction of competition law can bring about positive or negative effects thereby engaging environmental law in complementarity or conflict.

This section begins with a succinct overview of the Hong Kong electricity market's environmental performance. This is followed by a review of the various ways in which competition in the electricity sector can lead to poorer air quality. Based on publicly available documented case studies and secondary literature, there appears to be a relatively strong consensus in the literature that the environmental effects of liberalization in the electricity sector are likely to be negative. This article therefore argues for proactive regulatory intervention to address these environmental effects in the event of liberalization. At the same time, if liberalization results in increased cross-border sale of electricity from the Mainland to Hong Kong, this effectively means that the environmental costs of electricity production are transferred across the border to China. This bears a number of policy ramifications that will be briefly considered in the final part of this section.

4.1 ENVIRONMENTAL PERFORMANCE OF THE ELECTRICITY MARKET

As mentioned in the Introduction, air pollution is a serious environmental and public health issue in Hong Kong. In the past few years, Hong Kong has managed to reduce the emission of conventional air pollutants except sulphur dioxide, largely due to increased use of coal in electricity generation.¹¹⁴ In order to further reduce air pollution, the government has sought to ratchet up the pollution standards applicable to the electricity sector.¹¹⁵

Measures to encourage the power companies to reduce their emissions include linking the rate of return to their environmental performance and

¹¹² See generally, J. Scott (ed.), *Environmental Protection: European Law and Governance* (Oxford U. Press 2009).

¹¹³ S. Kingston, *Greening EU Competition Law and Policy*, 41 (Cambridge U. Press 2012).

¹¹⁴ Environmental Protection Department to the Legislative Council Panel on Environmental Affairs, *Progress of Measures to Improve Air Quality* (File Ref: CB(1) 647.07-08(15)); Anthony J. Hedley et al., *Air Pollution: Costs and Paths to a Solution in Hong Kong – Understanding the Connections Among Visibility, Air Pollution and Health Costs in Pursuit of Accountability*, 71 *J. Toxicology & Environmental Health* 544 (2008) (explaining the detrimental effects of sulphur dioxide pollution on human life and natural ecosystems).

¹¹⁵ See discussion in Chi Tak Chan, *What are the Alternatives Available to Hong Kong in Structuring the Electricity Supply Industry?* 34 *Energy Policy* 2891–2904, at 2893 (2005).

providing financial incentives for investment in renewable energy technologies. Targets to reduce emissions of certain air pollutants have also been included in the Specified Process Licenses granted to the power plants under the Air Pollution Control Ordinance, and these targets have gradually been made more stringent in order to achieve air quality objectives.¹¹⁶ However, it should be noted that these regulatory measures do not address the perverse incentives that are engendered by the SOC regulatory regime. For instance, under the SOC agreements, the two electricity companies can pass on all their fuel costs to consumers (thereby not bearing any risks of fuel price fluctuations) but at the same time, they are not supposed to make a profit from fuel costs. It can be argued that this feature of the SOC agreements gives CLP and HEC no incentives to economize on fuel, seek out more efficient fuel alternatives, as well as build more fuel-efficient power generators. To the extent that liberalization of the energy sector will force the electricity companies to become more competitive and cost-conscious, companies are likely to seek cost savings by becoming more fuel-efficient. This may yield environmental benefits as the burning of fossil fuels to generate electricity is a key contributor to global warming. Furthermore, the combustion of fossil fuels releases conventional air pollutants such as microscopic air pollutants that cause long-term adverse health effects in the population.¹¹⁷

4.2 MARKET LIBERALIZATION: WILL IT WORSEN AIR POLLUTION IN HONG KONG?

This section explores the various ways in which competition in the electricity sector can lead to poorer air quality. Even though the current body of literature is small and more empirical work is needed, it can be concluded that the environmental effects of liberalization of the electricity sector are ambiguous and liberalization has the potential to exacerbate the territory's serious air pollution problem.

4.2[a] *Increased Electricity Consumption Due to Lower Tariffs*

In theory, the introduction of competition is meant to increase efficiency and reduce electricity prices, thereby improving consumer welfare. However, the evolution of prices during and shortly after the liberalization process is complex and difficult to assess against the background of social, institutional, and

¹¹⁶ Legislative Council Panel on Environmental Affairs Subcommittee on Improving Air Quality, *Update of Air Quality Objectives*, Environmental Protection Department, http://www.epd.gov.hk/epd/english/news_events/legco/files/EA_Panel_120416a_eng.pdf (accessed 20 May 2013).

¹¹⁷ For data and useful discussion, see World Health Organization 'Air Pollution': http://www.who.int/topics/air_pollution/en/ (accessed 1 Jan. 2014).

technological changes. Case studies show that both price increases and price decreases have occurred in fully liberalized markets.¹¹⁸

From an environmental perspective, upward and downward movements in price as well as price fluctuations bear implications. A rise in electricity prices is expected to lead to reduced demand and encourage consumers to conserve or use more energy-efficient products. Conversely, the effect of a fall in electricity prices is expected to lead to increased demand and encourage wastage. The environmental issue at stake here is that electricity generation produces a number of air pollutants such as sulphur dioxide which pose harm to human beings and the environment. It is also now widely recognized that energy-related carbon dioxide emissions are a significant cause of global warming. Thus, that liberalization may give rise to increased demand for electricity is a cause of concern for some environmentalists.¹¹⁹

Yet, demand is rather price inelastic, especially in the short term, and research on the price elasticity of demand of the household sector and the commercial/industrial sector will have to be conducted to answer the empirical question of whether reduced prices will lead to substantially increased consumption in a liberalized Hong Kong electricity market. Eyre has argued that, in the UK where the government's energy model estimates that the household sector long-run price elasticity is only -0.19, 'household energy market liberalization may have only a small effect on demand even if price reductions are quite substantial'.¹²⁰ He further points out that '...it should also be recognised that increased demand is not synonymous with decreased energy efficiency. Much of any rise in demand in the UK would be in poorer households, using falling prices to raise comfort standards with little change in the efficiency with which energy is used'.¹²¹ It has also been argued that although high energy prices may help to reduce consumption, it is questionable if this is a desirable outcome if the high energy prices are the outcome of inefficiencies on the production side.¹²² There is much merit to Oosterhuis' policy recommendation that the 'environmental benefit' of high tariffs should not be an argument for maintaining protected

¹¹⁸ E. Bonneville & A. Rialhe, *Impact of Liberalization of the Electricity Market on Energy Efficiency, Quality of Supply and Environmental Performance*, Leonardo Energy Discussion Paper, 13 (2005), leonardo-energy.org (accessed 23 May 2013); W. Lise, V.G.M. Linderhof & O.J. Kuik, *Liberalising the Dutch Electricity Market: Are there Environmental Impacts?*, Research Symposium on European Electricity Markets, The Hague, 1–2 (September 2003), http://www.ecn.nl/fileadmin/ecn/units/bs/Symp_Electricity-markets/a1_1-paper.pdf (accessed 23 May 2013).

¹¹⁹ A.Y.H. Lo, *Merging Electricity and Environment Politics of Hong Kong: Identifying the Barriers from the Ways that Sustainability is Defined* 36 *Energy Policy* 1521–1537, 1533 (2008).

¹²⁰ Nick Eyre, *A Golden Age or a False Dawn? Energy Efficiency in UK Competitive Energy Markets*, 26 *Energy Policy* 963–972, 964.

¹²¹ *Ibid.*

¹²² F. Oosterhuis, *Liberalization and Environmental Policy in the European Electricity Market*, 6 *Energy Stud. Rev.* 226–236, 234 (1994).

electricity markets; instead, the need for higher energy prices call for linking market liberalization and the introduction of a tax on greenhouse gas emissions.¹²³

Price fluctuations pose a different set of concerns, an issue that has often been neglected in the literature. Van Soest and de Groot have found that market liberalization not only leads to lower energy prices, but increased price volatility which induces firms to be more prudent in their investment decisions concerning energy-saving and pollution control technologies.

4.2[b] *Decreased Investment in Pollution Control Technologies*

Increased competition and risk drive players in the electricity market to strive to reduce costs. Voss documents that in the German experience, one of the first moves made by German electricity utilities to increase their competitiveness in the newly liberalized market was to introduce drastic cost-cutting measures.¹²⁴ As pollution control equipment and monitoring programmes that are already in place represent sunk costs and the utilities have to continue to comply with environmental regulations, there is little that electricity utilities can do to reduce costs on this front other than not operating the pollution control equipment. However, the point remains that, utilities are minded to reduce expenditure in pollution control to minimize costs. In the context of Hong Kong, the environmental regulators will have to be vigilant about policing compliance with the Specified Processes Licenses issued pursuant to the Air Pollution Control Ordinance.

4.2[c] *Switching to Cheaper Fuel*

One of the cost-saving measures that generation companies can undertake is to use cheaper fuel to produce electricity. There is evidence that liberalization in the Australian electricity sector led to increased air pollution because companies were increasing their use of brown coal and low-quality black coal, which is a cheaper but more polluting source of energy.¹²⁵

¹²³ *Ibid.*, also see Andrew Ford, *Global Climate Change and the Electric Power Industry*, in *Competitive Electricity Markets: Design, Implementation, Performance* (Fereidoon P. Sioshansi ed., Elsevier 2008) for discussion of the significant role that the power sector can play in mitigating climate change in response to either a carbon tax or emissions trading.

¹²⁴ See A. Voss, *The Impact of Liberalisation on the Environmental Performance of the Electricity Sector in Germany*, Country Report, 12, Institute of Energy Economics and the Rational Use of Energy, http://www.dii.uchile.cl/progea/proyectos/grelelem/first/wp1_germany.pdf (accessed 1 May 2013).

¹²⁵ D. Sharma & A. Sproule, *The Nexus Between Competitive Electricity Markets: A Case Study in Australia*, Special Issue Energy J. 17–39 (1997).

In the case of Hong Kong, this sort of fuel-switching driven by cost considerations should not be a major concern because of the government's commitment to a specific fuel mix in the future as a major component of its overall strategy to reduce greenhouse gas emissions. We can assume that the government will seek to translate this policy commitment into enforceable obligations.¹²⁶ The government's 'Climate Change Strategy and Action Agenda' identified that in 2009, coal accounted for about 54% of the fuel mix for power generation, followed by natural gas (about 23%), and nuclear power imported from Mainland China (about 23%).¹²⁷ The government plans to achieve the following fuel mix in 2020: coal (no more than 10%), natural gas (about 40%), renewable energy (3%–4%) and nuclear (about 50%).¹²⁸ The increase in imported nuclear energy will, of course, depend heavily on the rate of construction of nuclear capacity in Mainland China.

The preceding discussion shows that the environmental consequences of the introduction of competition in the electricity market are ambiguous at best, and are adverse at worst. This suggests a negative answer to the question posed at the outset: can market liberalization be included in the environmental policy toolkit to improve Hong Kong's air quality? Further, it can be argued, given that the environmental effects of liberalization range from being uncertain to being negative, the environmental regulator in Hong Kong ought to anticipate these challenges so that market liberalization does not reverse the environmental gains that more stringent air pollution regulation has achieved or cause further degradation of Hong Kong's air quality.

As mentioned before, it is not likely that liberalization will lead to the entry of new players that will construct new power plants because the costs of obtaining land are prohibitive unless subsidies and tax exemptions are provided. A more likely result of liberalization will be opening the market to Mainland power companies to sell electricity to Hong Kong. This has two potential consequences: first, competition will lead to lower electricity tariffs and second, Hong Kong can continue to increase electricity consumption without bearing the environmental burden of the electricity production process which occurs across the border. That a wealthy and developed city can continue to enjoy its high standard of living and

¹²⁶ In the case of the agreement between the Guangdong provincial government and the Hong Kong government to reduce certain air pollutants by specified amounts, though it is not legally binding (*de jure*), the Hong Kong government has implemented concerted action to achieve the goals of the agreement as if the agreement were a legally binding one; see n. 23 in Jolene Lin, *Creating a Market for Clean Air: The Air Pollution Control (Amendment) Ordinance 2008*, 39(2) Hong Kong L. J. 269–284 (2009).

¹²⁷ Environment Bureau, HKSAR Government, *Hong Kong's Climate Change Strategy and Action Agenda*, 43, http://www.epd.gov.hk/epd/english/climate_change/files/Climate_Change_Booklet_E.pdf (accessed 26 May 2013).

¹²⁸ *Ibid.*

pursuit of economic growth while transferring environmental externalities to its relatively less well-off neighbour gives rise to concerns about the inequitable distribution of environmental hazards. Yet, even if Hong Kong wishes to be environmentally responsible in its procurement and consumption of electricity imported from the Mainland, there is little that the regulatory authorities can do. Applying Hong Kong laws extra-territorially is not a politically feasible option. Options such as introducing 'green electricity' procurement requirements and renewable energy certificates are viable only if there is sufficient political will to increase the share of renewable energy in the city's fuel mix.

One approach towards reducing the adverse environmental justice impact of importing more electricity from the Mainland would be to direct governmental attention and resources towards developing an emissions trading scheme for the Pearl River Delta (PRD) region. Tentative steps were taken in this direction with the passage of the Air Pollution Control (Amendment) Ordinance 2008. This ordinance established an emissions trading scheme (ETS) to facilitate pollution reduction by HEC and CLP.¹²⁹ Given that dual monopolistic market conditions are not suitable for emissions trading, it is not surprising that the ETS has been a dormant regulatory initiative.¹³⁰ However, the legal framework for an ETS exists and it was intended to be a step towards creating a PRD-wide scheme that could eventually link up with other emissions trading schemes that are being developed across Mainland China. It is not far-fetched to argue that, in the long term, developing the regional ETS (which will inevitably involve harmonization of standards) will create a regulatory pathway to addressing the environmental concerns of the sale and purchase of electricity between Hong Kong and Mainland China.

5 CONCLUSION

This article has considered the potential for using competition law to compel the liberalization of the electricity sector in Hong Kong. It began by evaluating the current regulatory framework based on the SOC agreements between the power companies and the government and identifying the shortcomings of this regulatory approach. While building on the existing literature on Hong Kong energy policy that focuses on analysing the feasibility of various options for regulatory reform, this article advanced the novel argument that a lawsuit based on

¹²⁹ Order No. 31 of 2008. The Bill was introduced on 6 Feb. 2008 (Legislative Council official website, available at <http://www.legco.gov.hk/english/index.htm>, accessed 11 Jun. 2008). See Part IVB of the Air Pollution Control Ordinance (Cap 311).

¹³⁰ Elsewhere, one of the authors has expressed reservations about the regulatory merit of creating an ETS that effectively involves only two market actors. Further, CLP owns and operates three of the power plants in the city while HEC operates one: Lin, *supra* n. 126.

the newly promulgated Competition Ordinance can be a strategy for moving the regulatory reform agenda forward in the face of governmental inertia.

The article then considered the possibility that introduction of competition will improve environmental performance of Hong Kong's electricity sector. Our findings suggest that competition is likely to lead to adverse environmental consequences. Hence, this article argued for proactive regulatory intervention to ensure that air pollution does not worsen due to liberalization. The challenge for Hong Kong is to reform its electricity market regulatory regime to dispel societal dissatisfaction with high electricity tariffs and to improve air quality. Competition law can go some way towards addressing the former, but not the latter.

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