

# Clashes Between Economies and Environments: Consumerism Versus Conservation in Taiwan and Hong Kong

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## I. HISTORICAL BACKGROUND

Both Taiwan and Hong Kong exhibit a clash between economic growth and environmental protection. The form that this classic clash takes in these two societies is nevertheless shaped by their particular demographic, geographic, economic, political and cultural experiences. Taiwan and Hong Kong have characteristically

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dense concentrations of population and economic activities in relatively small land areas, contributing to intense pressures on their respective natural environments. Yet up until only very recently, Taiwan's and Hong Kong's ecological issues were largely ignored despite physical manifestations of the palpable need to address worsening environmental conditions. This was primarily because these societies' outlook was development-driven coupled to a transient mentality, with economic (and political) concerns vastly outweighing environmental concerns. Taiwan's self-image was that of an embattled refugee regime's temporary political and military base serving as a place for obtaining resources to reclaim mainland China from the communists,<sup>2</sup> and Hong Kong's self-image was that of a leased enclave of capitalism serving as a temporary base for short-term economic profit until its return to communist mainland China.<sup>3</sup> Residents of Taiwan and Hong Kong shared similar waystation attitudes – that of living in 'borrowed homes on borrowed time.'<sup>4</sup> With uncertain futures, there was minimal attention given to environmental measures such as pollution controls or infrastructure investments like sewage systems.

Taiwan's four decades of rule by the Kuomintang regime were marked by a centralized repressive administration<sup>5</sup> that did not allow

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<sup>2</sup> See Hung-mao Tien, *Dynamics of Taiwan's Democratic Transition*, in IN THE SHADOW OF CHINA (1993), 101-116, 101; Taiwan Environmental Action Network, *Environmental Conditions and Environmental Law in Taiwan*, at <http://tean.formosa.org/te/lawcondition.html>.

<sup>3</sup> "The instability associated with Hong Kong's fight to develop as a capitalist state while at the doorstep of Asia's communist giant, the P.R.C., combined with the Hong Kong government's attenuated control over the island, does not provide fertile ground for the growth of a far-sighted environmental protection policy. Single-minded economic development appeared the best means to reap the greatest reward from what could be a short-lived enterprise." Richard J. Ferris Jr., *Aspiration and Reality in Taiwan, Hong Kong, South Korea, and Singapore: An Introduction to the Environmental Regulatory Systems of Asia's Four New Dragons*, 4 DUKE J. COMP. & INT'L L. 125 n.3 (1993).

<sup>4</sup> Civic Exchange, *Taking Charge and Cleaning Up: The Search for a Greener Environment in the Hong Kong SAR*, at <http://www.civic-exchange.org/publications/2001/Civiccontent.pdf>; see also Betty S.F. Ho, *Achieving Heritage Conservation in Sustainable Development*, May 10, 2000, at <http://www.conservancy.org.hk/articles/docs/20000510e.pdf>.

<sup>5</sup> Ferris, *supra* note 3, at 129.

for public participation. But this iron-fisted political control also created stability that enabled capitalist economic development, which featured industrialization and export manufacturing.<sup>6</sup> Hong Kong's colonial government adopted a positive non-interventionist attitude towards the economy, providing a stable institutional framework for private enterprise to prosper<sup>7</sup> in a capitalistic market economy featuring industrialization and export manufacturing. The slow reaction of the government to protect Hong Kong's natural environment was influenced by a strong commercial and industrial lobby within the government, at a time when no public participation was allowed in government policy formulation.<sup>8</sup>

Taiwan's and Hong Kong's respective rapid economic successes fueled the emergence of prosperous consumer societies characterized by not only high per capita resource use but also by high levels of waste generation and pollution. With residents' increasing affluence and education, however, came greater attention to their quality of life, and, hence, louder demands for improved environmental conditions. As the governments become more concerned with environmental issues and become more representative and responsive to the public, environmental problems are increasingly being addressed, although it remains obvious that the economy is still the primary focus of both the governments and residents of Taiwan and Hong Kong. Even today in Taiwan, industrial pressure groups influence the decision-making process of administrative agencies involved in environmental regulation,<sup>9</sup> and the government's treatment of environmental regulations as tools to please influential developers<sup>10</sup> reflects the pro-economic growth bias. Indeed, Taiwan's environmental policy has always been greatly influenced by economic

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<sup>6</sup> Tien, *supra* note 2, at 101.

<sup>7</sup> Hung Wing Tat, *The Politicization of the Environment*, in LIMITED GAINS: GRASSROOTS MOBILIZATION AND THE ENVIRONMENT IN HONG KONG, 41, 45 (1993).

<sup>8</sup> *Id.* at 46.

<sup>9</sup> Dennis Te-Chung Tang, *The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective*, 3 PAC. RIM L. & POL'Y J. 89, 101-2 (1993).

<sup>10</sup> Chiu Yu-Tzu, *Environmentalists Look to Protect Coastal Areas*, *TAIPEI TIMES*, May 27, 2003, at 2.

development needs.<sup>11</sup> Sharing a common goal to build a strong market economy, government and business likewise still enjoy a close relationship in Hong Kong.<sup>12</sup> This pro-business attitude has continued even after Hong Kong was transferred back to the People's Republic of China, and the protection of Hong Kong's capitalist economy was provided for in the governing Basic Law.<sup>13</sup>

## II. ECONOMIC GROWTH, CONSUMERISM AND ENVIRONMENTAL DEGRADATION

### A. PROBLEMS OF POLLUTION AND WASTE DISPOSAL

Taiwan's and Hong Kong's laissez-faire stances towards economic growth meant that, until only recently, few measures existed to protect the natural environment. "Hong Kong's prosperity has long been attributed to capitalism, industrial development, and economic growth. People are understandably reluctant to adopt measures that inhibit these valuable contributions."<sup>14</sup> Commercial and industrial sectors hold a short-sighted and self-centered view towards economic development, with no motivation or responsibility to limit pollution or their use of natural resources.<sup>15</sup> Hong Kong is known to be driven by commercial activities and to embrace consumerism as a culture.<sup>16</sup> "Hong Kong's favourite leisure activities are shopping,

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<sup>11</sup> Dennis Te-Chung Tang, *New Developments in Environmental Law and Policy in Taiwan*, 6 PAC. RIM L. & POL'Y J. 245, 248 (1997).

<sup>12</sup> Terri Mottershead, *Sustainable Development in Hong Kong – A Road Yet to be Traveled?*, 6 SING. J. INT'L & COMP. L. 809, 846 (2002). "A glaring problem is the entrenchment of business in the [political] system." Christine Loh, *Citizens Demand a Real Say in Their Own Affairs*, S. CHINA MORNING POST, Jan. 8, 2002.

<sup>13</sup> Yash Ghai, HONG KONG'S NEW CONSTITUTIONAL ORDER 139 (1997).

<sup>14</sup> Jo Ann Kwong, MARKET ENVIRONMENTALISM: LESSONS FROM HONG KONG 101 (1990), cited in Julie Bloch, *Conservation in a Concrete Jungle: Political, Legal and Societal Obstacles to Environmental Protection in Hong Kong*, 6 GEO. INT'L ENVTL. L. REV. 593, 600 (1994).

<sup>15</sup> Tat, *supra* note 7, at 47.

<sup>16</sup> Susan Yu, *Jaws of Extinction*, Focus Asia, May 27, 2001, at [http://focusasiatv.org/indepth.php?CLIP\\_DATE=20010527&CLIP\\_NO=4](http://focusasiatv.org/indepth.php?CLIP_DATE=20010527&CLIP_NO=4).

eating out and going to the cinema....Consumerism represents an important symbol of success,” as in other affluent, materialistic societies.<sup>17</sup> In fact, Hong Kong has the world’s highest number of restaurants per capita,<sup>18</sup> and the average Hong Kong household spends 16% of its monthly household expenditure on meals bought away from home.<sup>19</sup> But such an emphasis on economic growth and consumerism has led to degradation of the natural environment. In consequence, “Hong Kong is simultaneously an economic miracle and an environmental nightmare,”<sup>20</sup> and Taiwan has likewise been described as “the environmental nightmare of the economic miracle.”<sup>21</sup>

## 1. POPULATION DENSITY AND URBANIZATION

Taiwan and Hong Kong both have subtropical climates, small land masses, and high population densities. Population growth, in large part fueled by immigration of mainland Chinese, has placed pressure on Taiwan’s and Hong Kong’s limited natural resource bases, taxing their environments. In 1949, subsequent to the defeat of the Nationalist Kuomintang regime by the Chinese Communist Party, 2 million mainlanders retreated with Chiang Kai-shek to Taiwan.<sup>22</sup> Immediately following the lifting of martial law in Taiwan in 1987,

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<sup>17</sup> Jean Nicol, *Shopping for a New Identity?*, S. CHINA MORNING POST, Mar. 7, 2003.

<sup>18</sup> Hong Kong’s 10,000 restaurants annually produce more than 20,000 tons of waste cooking oil. *Hong Kong Phooey; Environmental Pollution*, THE ECONOMIST, June 12, 2004.

<sup>19</sup> Hong Kong Census and Statistics Department, *1999/2000 Household Expenditure Survey*; see generally Hong Kong Census and Statistics Department, at <http://www.censtatd.gov.hk/home/index.jsp>.

<sup>20</sup> Mei Ng, *Hong Kong: Economic Miracle or Environmental Miracle?*, Hong Kong Update, Center for Strategic and International Studies (CSIS); see generally Center for Strategic and International Studies, at <http://www.csis.org>.

<sup>21</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>22</sup> Central Intelligence Agency (CIA) World Factbook, *Taiwan*, May 16, 2006, at <http://www.cia.gov/cia/publications/factbook/geos/tw.html>.

an additional 50,000 Chinese from the mainland moved into Taiwan.<sup>23</sup> Taiwan's population now reaches 23.0 million, of which ethnic Taiwanese represent 84%, mainland Chinese 14%, and aborigines 2%.<sup>24</sup> In addition, Taiwan is home to many animal husbandry operations (especially pigs and poultry), which significantly contribute to pollution problems.<sup>25</sup>

Hong Kong's population, numbering just 33,000 in 1851, swelled when China's revolution of 1911 brought a wave of refugees to the British colony. Hong Kong's population had reached 900,000 by 1930, and 1.6 million in 1941.<sup>26</sup> Hong Kong's population grew considerably, straining the area's natural resources and resulting in severe deforestation, when hundreds of thousands of migrants fled violence and political uncertainty in mainland China in the late 1940s, and hundreds of thousands more left mainland China immediately following the takeover by the Chinese Communist Party.<sup>27</sup> Hong Kong's population reached 5.2 million by 1981,<sup>28</sup> and now numbers

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<sup>23</sup> Andrea Sachs, *A Grisly and Illicit Trade*, TIME MAGAZINE, Apr. 8, 1991, at 67.

<sup>24</sup> *Id.* Those who are of native Taiwanese ethnicity are the descendants of Han Chinese (Southern Fukienese) who migrated from Fukien, Fujian, and Guangdong Provinces during the 17<sup>th</sup> and 18<sup>th</sup> centuries (70%) as well as Han Chinese (Hakka) who migrated from Kwangtung Province beginning in the 17<sup>th</sup> century (14%); mainland Chinese who arrived during the 20<sup>th</sup> century are from all parts of mainland China (14%); aborigines are of Malayo-Polynesian origin (2%). Word IQ, *Definition of Demographics of Taiwan*, at [http://www.wordiq.com/definition/Demographics\\_of\\_Taiwan](http://www.wordiq.com/definition/Demographics_of_Taiwan); Tay-sheng Wang, *Taiwan*, in Poh-Ling Tan (ed.), ASIAN LEGAL SYSTEMS (1997), 124-159, 125-6.

<sup>25</sup> Energy Information Administration, *Taiwan: Environmental Issues* (Oct. 2003), at <http://www.eia.doe.gov/emeu/cabs/taiwanenv.html#ENVIRONMENT>.

<sup>26</sup> Public Broadcasting Station (PBS), *Commanding Heights: Hong Kong Full Report*, at [http://www.pbs.org/wgbh/commandingheights/lo/countries/hk/hk\\_full.html](http://www.pbs.org/wgbh/commandingheights/lo/countries/hk/hk_full.html).

<sup>27</sup> *Id.* "With the large influx of migrants from the Mainland since the 1930s, land had to be found to provide housing, transportation, infrastructure and other essential facilities for the expanding population." *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, [2003] 793 HKCU 1, 48 (H.C.).

<sup>28</sup> PBS, *supra* note 26; United Nations Human Settlements Programme (UN-HABITAT), *Hong Kong*, at <http://www.unhabitat.org/habrdd/conditions/eastasia/hongkong.htm>.

6.9 million (of which those of Chinese descent represent 95%).<sup>29</sup> During the two decades succeeding the return of Hong Kong to the People's Republic of China in 1997, researchers expect an estimated 1.7 million new immigrants from the mainland to arrive in Hong Kong.<sup>30</sup>

Due to the combination of large populations with limited arable land, Taiwan and Hong Kong have some of the highest population densities in the world. Only 25% of the land in Taiwan is arable,<sup>31</sup> while a mere 9% of the land in Hong Kong is arable.<sup>32</sup> At 714 persons per square kilometer, Taiwan has a very densely concentrated population.<sup>33</sup> With much of the interior of the island covered with inhospitable mountains, most of Taiwan's population is further concentrated in large urban centers and suburban sprawl located along the western coast's alluvial plains,<sup>34</sup> making that urban corridor one of the world's most densely urbanized areas.<sup>35</sup>

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<sup>29</sup> *Hong Kong: The Facts*, Hong Kong In Brief (Dec. 2004), at <http://www.info.gov.hk/info/hkbrief/eng/fact.htm>.

<sup>30</sup> Samuel K. H. Lee, *Attitudes of Hong Kong Chinese Towards Wildlife Conservation and the Use of Wildlife as Medicine and Food*, 1998, at <http://www.traffic.org/hongkong/executivesummary.html>. By 2001, Hong Kong was receiving more than 150 legal arrivals from the mainland every day, as well as numerous pregnant mainland women, both legal and illegal immigrants, who sought to deliver their babies in Hong Kong so as to secure a right of abode. James Tien, *Law Poses Limits on Tolerance of Courts, Government*, S. CHINA MORNING POST, July 31, 2001. Between 1997 and 2001, an estimated 500-600 babies were annually born in Hong Kong to mothers from mainland China who arrived into Hong Kong to give birth. Mark Landler, *Hong Kong Court Ruling on Boy Angers China*, NEW YORK TIMES, July 22, 2001. Comprising Hong Kong are Hong Kong Island, which was ceded to Britain in 1842, Kowloon Peninsula, which was acquired in 1852, and the New Territories, which were acquired in 1898 under a 99-year lease. Ferris, *supra* note 3, at 143.

<sup>31</sup> Wang, *supra* note 24, at 124.

<sup>32</sup> Ferris, *supra* note 3, at 145 n.151.

<sup>33</sup> Philip Courtenay, *Taiwan's Cities Hustle to Boost Quality of Life*, June 18, 2004, at <http://publish.gio.gov.tw/FCJ/past/04061871.html>; *see also* *Taiwan's Environment Under Great Pressure*, CENT. DAILY NEWS, Mar. 7, 2000.

<sup>34</sup> Taiwan Environmental Action Network, *supra* note 2; Wang, *supra* note 24, at 124.

<sup>35</sup> Courtenay, *supra* note 33.

By the 1980s, Hong Kong had become the world's most densely populated city.<sup>36</sup> Hong Kong's population density now measures 6,380 persons per square kilometer,<sup>37</sup> but given Hong Kong's steep mountains and planning controls, most of the population is further concentrated in a mere 225 square kilometers of urban development of even higher density.<sup>38</sup>

Taiwan and Hong Kong also share characteristically high rates of urbanization. Approximately 75% of Taiwan's population now lives in urban centers of more than 50,000 inhabitants.<sup>39</sup> With high numbers of migrants from mainland China streaming into Hong Kong, urban expansion overflowed from Hong Kong Island and Kowloon Peninsula into the New Territories.<sup>40</sup> In Hong Kong, 97% of the population now lives in urban areas.<sup>41</sup>

## 2. INDUSTRIALIZATION

Taiwan's urbanization was encouraged by its fast-paced industrialization.<sup>42</sup> Today, "[i]ndustrialisation and capitalism are well-developed in modern Taiwan."<sup>43</sup> Taiwan's labor force

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<sup>36</sup> Public Broadcasting Station (PBS), *supra* note 26.

<sup>37</sup> *Hong Kong: The Facts*, *supra* note 29. Hong Kong's most densely populated District Council is Kwun Tong, which has a population density of 50,910 persons per square kilometer. *Id.* Hong Kong's population density varies greatly by area, with Hong Kong Island having a density of 15,880 persons per square kilometer, Kowloon Peninsula having a population density of 44,110, and the New Territories having 3,770 persons per square kilometer in 2005. Hong Kong Census and Statistics Department, *Population and Vital Events*, at [http://www.censtatd.gov.hk/FileManager/EN/Content\\_803/population.pdf](http://www.censtatd.gov.hk/FileManager/EN/Content_803/population.pdf).

<sup>38</sup> *Hong Kong: The Environment*, HONG KONG YEARBOOK (2004), at [http://www.info.gov.hk/yearbook/2004/en/14\\_01.htm](http://www.info.gov.hk/yearbook/2004/en/14_01.htm).

<sup>39</sup> Courtenay, *supra* note 33.

<sup>40</sup> Ferris, *supra* note 3, at 143.

<sup>41</sup> In 1985, 93% of Hong Kong's population was urbanized, reaching 95% by 1995. UN-HABITAT, *supra* note 28. *See also* Asia Source, *Hong Kong S.A.R.*, at [http://www.asiasource.org/profiles/ap\\_mp\\_03.cfm?countryid=17](http://www.asiasource.org/profiles/ap_mp_03.cfm?countryid=17).

<sup>42</sup> Courtenay, *supra* note 33.

<sup>43</sup> Wang, *supra* note 24, at 127.

composition by occupation sector indicates industry representing 36%, services 58%, and agriculture 6%.<sup>44</sup> Taiwan now has the highest factory density in the world, with 2.74 factories per square kilometer.<sup>45</sup> Taiwan underwent rapid economic growth during the 1960s, 70s and 80s, and suffered concomitant environmental degradation. Taiwan experienced “unbridled industrial development” whereby small and medium sized industry spread throughout urban fringes and into the countryside, widely dispersing production processes.<sup>46</sup> The small scale and geographic decentralization of industry in Taiwan made it extremely difficult to regulate. This pattern was repeated for small-scale agribusinesses, which led to land erosion, deforestation, flooding, mudslides, land subsidence, overuse of pesticides and fertilizers, and fouling of waterways. Not only were industry and agriculture not zoned, but also there were no plans for control or collection of wastes.<sup>47</sup>

The discharge of wastewater into the natural environment from animal husbandry, aquaculture, and zoos greatly contributes to water pollution problems in Taiwan.<sup>48</sup> The island’s heavily populated west coast alluvial plains are home to 7 million pigs, which produce the waste equivalent of a further 30 million people.<sup>49</sup> Concentrated animal feeding operations create point and nonpoint source water

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<sup>44</sup> CIA World Factbook, *Taiwan*, *supra* note 22.

<sup>45</sup> *Taiwan’s Environment Under Great Pressure*, *supra* note 33.

<sup>46</sup> Taiwan Environmental Action Network, *supra* note 2. In 2000, 96% of enterprises in Taiwan were small and medium sized, many having resulted from the “make your living room a factory campaign” of the 1960s. The environmental consequence, however, is high rates of pollution from difficult to identify sources. Beth E. Kinne, *Regulatory Diversification and the Monitoring State: The Direction of Environmental Regulation in Taiwan*, 13 PAC. RIM L. & POL’Y J. 91, 99-100 (2004).

<sup>47</sup> Taiwan Environmental Action Network, *supra* note 2. *See also* Government Information Office, *Environmental Protection*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html>.

<sup>48</sup> Chiu Yu-Tzu, *EPA Sets Out New Water Regulations*, *TAIPEI TIMES*, July 23, 2003.

<sup>49</sup> Energy Information Administration, *supra* note 25.

pollution for Taiwan's rivers and coastal waters, with offal from pig and chicken farms fouling waterways.<sup>50</sup>

Taiwan's industrial wastes are produced principally from factories, agriculture, medical and other business organizations.<sup>51</sup> In 2000, there were 19.47 million metric tons of industrial waste produced, consisting of 17.86 million tons of non-hazardous waste and 1.61 million tons of hazardous waste (including heavy metals, contaminated medical supplies, solvents from the electronics industry, and petrochemicals from plastic resin plants).<sup>52</sup> Chemical and chemical related industries are responsible for over 60% of the total generated hazardous waste in Taiwan.<sup>53</sup> Their operations require the regular use of nearly 20,000 chemical substances, of which 6,000 are highly toxic.<sup>54</sup>

Currently, only 62% of Taiwan's industrial waste is properly treated.<sup>55</sup> Moreover, the majority of factories have no, or only rudimentary, wastewater treatment facilities.<sup>56</sup> The large number of small factories makes their regulation especially difficult and expensive.<sup>57</sup> Most industrial, agricultural, and residential wastewater drains directly into Taiwan's fresh waterways and coastal waters,

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<sup>50</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>51</sup> Government Information Office, *Environmental Protection: Solid Waste Disposal*, TAIWAN YEARBOOK (2004), at <http://english.www.gov.tw/Yearbook/index.jsp?catid=161&recordid=83363>.

<sup>52</sup> Rone Tempest, *Asia's Toxic Formula for Waste*, LOS ANGELES TIMES, Mar. 4, 1999, at A1. These figures have since decreased, dipping to a total of 13.41 million metric tons of industrial waste in 2003. Government Information Office, *Environmental Protection*, *supra* note 47.

<sup>53</sup> Michael Scott Feeley, *Reclaiming the Beautiful Island: Taiwan's Emerging Environmental Regulation*, 27 SAN DIEGO L. REV. 907, 915 (1990).

<sup>54</sup> *Environmental Protection: Solid Waste Disposal*, *supra* note 51.

<sup>55</sup> *Id.*

<sup>56</sup> Daniel C.K. Chow, *Recognizing the Environmental Costs of the Recognition Problem: The Advantages of Taiwan's Direct Participation in International Environmental Law Treaties*, 14 STAN. ENVTL. L. J. 256, 268 (1995).

<sup>57</sup> Taiwan Environmental Action Network, *supra* note 2; Kinne, *supra* note 46, at 100.

seriously polluting them.<sup>58</sup> Exacerbating this is the fact that Taiwan suffers from an inadequate sewage system, which covered a mere 10% of the island in 2002 (an increase from 5% in 1998).<sup>59</sup> Even in the capital, Taipei, only 67% of the city was connected to sewers in mid-2003 (an increase from 33% in 1998).<sup>60</sup> Consequently, Taiwan's coastal, surface and groundwater are polluted, with water pollution most severe in areas with a high concentration of industrial activity.<sup>61</sup> In fact, 36% of Taiwan's central rivers and 35% of its prefectural rivers were polluted to some degree in 2000.<sup>62</sup> Of Taiwan's 20 primary reservoirs, seven were heavily polluted and eutrophic in 1999.<sup>63</sup>

Taiwan also annually produces approximately 1.6 million metric tons of hazardous waste of which only 0.55 million tons is legally disposed of in landfills or disposal facilities.<sup>64</sup> The remainder of the waste is illegally dumped within Taiwan and abroad (such as in mainland China,<sup>65</sup> Malaysia,<sup>66</sup> and Cambodia<sup>67</sup>). To date, 139 illegal

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<sup>58</sup> Government Information Office, *Environmental Protection: Water Resources*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html#4>.

<sup>59</sup> Energy Information Administration, *supra* note 25; Taiwan.com.au, *Water Resources*, at <http://www.taiwan.com.au/Envtra/Protection/EP/Water/report02.html>.

<sup>60</sup> Government Information Office, *Environmental Protection: Water Resources*, *supra* note 59.

<sup>61</sup> Energy Information Administration, *supra* note 25.

<sup>62</sup> Of Taiwan's central rivers in 2000, 13% were heavily polluted, 12% were moderately polluted, 11% were lightly polluted, and 64% were unpolluted; of Taiwan's prefectural rivers in 2000, 9% were heavily polluted, 13% were moderately polluted, 13% were lightly polluted, and 65% were unpolluted. Government Information Office, *Environmental Protection: Water Resources*, *supra* note 58.

<sup>63</sup> *Id.*

<sup>64</sup> Tempest, *supra* note 52.

<sup>65</sup> See Chow, *supra* note 56, at 272. See also Changhua Wu & Simon Wang, *Environment, Development and Human Rights in China: A Case Study of Foreign Waste Dumping*, in HUMAN RIGHTS AND THE ENVIRONMENT: CONFLICTS AND NORMS IN A GLOBALIZING WORLD 198 (2002). Illegally dumped waste also originates in Hong Kong. In 1996, a total of 4,100 tons of hazardous and domestic

dump waste sites have been identified in Taiwan, including some in river and stream beds.<sup>68</sup> Several recent incidents have illustrated the problem of illegal dumping of hazardous waste within Taiwan.<sup>69</sup>

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wastes were smuggled into mainland China, most ending up in Guangdong Province, which borders Hong Kong. *Id.* at 206.

<sup>66</sup> See, e.g., *Firm in Trouble Over Shipment of Toxic Waste to Malaysia*, *TAIPEI TIMES*, June 8, 2004. From 2002 to 2004, a Taiwanese company, Hong You Technology Company, shipped an estimated 12,000 tons of toxic industrial waste from Taiwan to Malaysia. The Taiwan government revoked Hong You Technology's export permit once it discovered that its waste shipments were without the proper authorization from the Malaysian authorities, who had issued an import permit only for industrial waste rather than toxic waste. It was further questioned whether the Malaysian company receiving the waste, SynEnviro, had the proper technology to turn the waste into building bricks, as had been publicized. *Id.*

<sup>67</sup> See, e.g., *Tempest*, *supra* note 52. In 1998, a Taiwanese petrochemical company, Formosa Plastics Corporation, hired Jade Fortune Shipping Company to transport 3,000 tons of mercury-laden toxic waste (compressed industrial incinerator ash) to Cambodia for disposal. Jud Lohnes, *Hazardous Materials and Energy: Taiwanese Company Dumps 3000 Tons of Toxic Waste in Cambodia*, 1999 *COLO. J. INT'L ENVTL. L. Y.B.* 262, 263 (1999). Formosa Plastics had previously applied for a permit to ship 5,500 tons of mercury-laden unprocessed liquid brine sludge waste to Cambodia, but the EPA denied the request because it doubted Cambodia's ability to safely handle the toxic waste. One month later, Formosa Plastics applied for an export permit to ship stabilized solidified sludge waste to Cambodia, but before the EPA could respond to the request, Jade Fortune Shipping went ahead and shipped the waste. *Id.* at 265. During the night, the toxic waste was trucked 10 kilometers from Cambodia's Sihanoukville port and illegally dumped in an open treeless dirt field in Bet Trang Village. *Id.* at 266. Following the immediate deaths of several villagers and a dockworker, and the resultant pressure from the Cambodian government, the EPA, and human rights groups, Formosa Plastics repatriated the toxic waste and 2,000 tons of polluted topsoil back to Taiwan for disposal. *Id.* at 268. See also *Toxic Waste Returns to Taiwan*, *BBC NEWS*, Apr. 8, 1999.

<sup>68</sup> Lohnes, *supra* note 67, at 264.

<sup>69</sup> In 2000, approximately 600,000 households were left without running water for 5 days after 100 tons of toxic solvent from a local factory was dumped into the Chishan River in Kaohsiung County, the main water supply for the Kaohsiung metropolitan area. The factory's owner, Eternal Chemical Company, had contracted its waste disposal to Shengali Waste Handler, and had allowed Shengali Waste Handler to subcontract out to transporters who were not licensed to handle industrial waste. The transportation subcontractors illegally dumped 13,900 tons of Eternal Chemical's untreated toxic waste at random sites throughout Taiwan, including in the Chishan River. Jou Ying-cheng, *22 Indicted Over River Pollution Incident*, *TAIPEI TIMES*, Aug. 16, 2000. Then again in 2001, another Taiwanese company, THB Environment Corporation, a licensed handler of hazardous

The then British colony of Hong Kong developed as the central entrepot in the triangular trade between China, India and Britain.<sup>70</sup> Over the past few decades, Hong Kong's economy has progressed from being dominated by the textile and clothing industries, to its more recent emphasis on the plastic, electronic and optical industries and services.<sup>71</sup> Hong Kong annually produces 100,000 tons of chemical wastes.<sup>72</sup>

Throughout the 1960s and 70s, untreated industrial effluent, along with agricultural chemicals and domestic sewage, were discharged directly into Hong Kong's waterways, contaminating its rivers and harbors.<sup>73</sup> Consequently, by 1986, 45% of Hong Kong's rivers were categorized as having bad or very bad water quality.<sup>74</sup> The Hong Kong government has itself admitted that some streams are

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industrial waste, knowingly dumped toxic materials at unauthorized sites within Taiwan. In particular, THB Environmental illegally dumped more than 2,000 tons of hazardous copper-tainted sludge waste at a site in Yangmei Township in Yaoyuan County. Also in 2001, THB Environmental was caught trying to export from transportation stations in Taipei County and Keelung County 50 tons of old PC-boards inside a pair of its shipping containers labeled 'residue of copper compounds.' Chiu Yu-Tzu, *Illegal Dumping Case Now Used as Textbook Example*, TAIPEI TIMES, Aug. 6, 2003.

<sup>70</sup> PBS, *supra* note 26.

<sup>71</sup> George W. L. Hui & Keong T. Woo, *Different Heritages and Different Performances*, Hong Kong Update, Center for Strategic and International Studies (CSIS); *See generally* Center for Strategic and International Studies, *supra* note 20. PBS, *supra* note 26. In the past two decades, Hong Kong's economy has become increasingly focused upon the services sector, especially finance, media, education and tourism. Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

<sup>72</sup> Cecilia Chan & Peter Hills, *The Context, in* LIMITED GAINS: GRASSROOTS MOBILIZATION AND THE ENVIRONMENT IN HONG KONG (1993), 1-13, 1.

<sup>73</sup> PBS, *supra* note 26. In addition to discharges via outfall pipes, some pollutants are washed into Hong Kong's waters during rainstorms, deliberately dumped as waste (for example, the building industry dumps waste in designated marine spoil grounds), or come from ships (for example, oil discharged during tank cleaning) or come from fish rafts (raw sewage, litter, and remnants of fish food). World Wide Fund for Nature-Hong Kong (WWF-HK), *Marine Pollution in Hong Kong, Factsheet No.2* (Autumn 1993), at <http://www.wwf.org.hk/eng/pdf/references/factsheets/factsheet2.pdf>.

<sup>74</sup> *Hong Kong: The Environment*, *supra* note 38.

“no better than open sewers.”<sup>75</sup> Throughout the 1970s, a daily average of 1.6 million cubic meters of waste flowed into Hong Kong’s Victoria Harbour, and the water quality of Hong Kong’s Repulse Bay was recorded as being 52 times worse than that allowed under European safety standards.<sup>76</sup> By the mid-1980s, Hong Kong was the busiest container port in the world and one of the world’s largest exporters.<sup>77</sup> By the early 1990s, the combined liquid waste from raw sewage and industrial effluent flowing into Hong Kong’s waterways daily was 2 million tons, and enough heavy metals were being discharged to build a double decker bus each day.<sup>78</sup> Victoria Harbour has fared especially badly: “[P]oor water and sediment conditions and a lack of natural coastline in Victoria Harbour have led to ecologically degraded habitats that support only those species which are adapted to polluted conditions and can colonise unnatural substrata such as wharf piles, concrete walls and embankments.”<sup>79</sup>

Many of Hong Kong’s beaches are either regularly closed<sup>80</sup> or remain open but with posted warnings on account of their having

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<sup>75</sup> Wikipedia, *Ecology of Hong Kong*, June 16, 2006, at [http://en.wikipedia.org/wiki/Ecology\\_of\\_Hong\\_Kong](http://en.wikipedia.org/wiki/Ecology_of_Hong_Kong).

<sup>76</sup> PBS, *supra* note 26.

<sup>77</sup> *Id.*

<sup>78</sup> During the early 1990s, 50% of Hong Kong’s sewage was being pumped into the sea without receiving any treatment, while 40% received preliminary treatment (removing solids) and 10% received additional treatment. Industrial waste also entered Hong Kong’s waterways through sewage outfalls, illegal connections having been made into the storm drains. WWF-HK, *Marine Pollution in Hong Kong, Factsheet No.2*, *supra* note 73.

<sup>79</sup> *Society for Protection of the Harbour Ltd. v. Chief Executive in Council*, [2003] 1105 HKCU 1, 27-8 (H.C.).

<sup>80</sup> A notable case is that of Castle Peak Beach, located in the western New Territories, which remained closed for 24 years because water quality was so poor as to be deemed unsuitable for beachgoers. Castle Peak Beach reopened in June 2005 after extensive rehabilitation by the government, including dredging of seabed silt, beach area upgrades, and implementation of pollution control measures and sewerage programs. Martin Wong, *Revitalized Castle Peak Beach to End 24-Year Swimming Ban*, S. CHINA MORNING POST, May 28, 2005. Similarly, Angler’s Beach, Approach Beach, and Ting Kau Beach each remained closed for five years because of persistently high water pollution levels. *Worst Beaches ‘To Be Cleaned Up Within a Decade’*, S. CHINA MORNING POST, Feb. 23, 2001.

received water quality ratings of very poor due to their high *E.coli* bacterial counts<sup>81</sup> (from faecal contamination from sewage discharge) and resultant health risks posed to swimmers (such as gastro-intestinal and skin problems).<sup>82</sup> Linked to water pollution, red tide algae feast on the nitrogen nutrients coming from sewage, particularly the run-off from Hong Kong's pig and chicken farms.<sup>83</sup> Such red tides and algal blooms contribute to poor swimming conditions.<sup>84</sup> Red tides have caused beach closures, massive fish mortality, and have led to bans on the ingestion of local shellfish.<sup>85</sup> Consumption of Hong Kong shellfish also poses serious risks of Hepatitis A infection and heavy metal toxicity.<sup>86</sup> In 1990, for instance, mussels collected from a local

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<sup>81</sup> Each week, Hong Kong's Environmental Protection Department classifies beaches into four grades (good, fair, poor or very poor) according to their level of *E.coli* in the water. *All Clear for Most Beaches*, S. CHINA MORNING POST, Apr. 2, 1999.

<sup>82</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>83</sup> Annemarie Evans, *All at Sea in the Search for Ways to Turn Red Tide*, S. CHINA MORNING POST, May 18, 1998.

<sup>84</sup> Susan Furlong, *Quality of Water at Beaches Deteriorates*, S. CHINA MORNING POST, Apr. 12, 1993. Between 1999 and 2000, selected Hong Kong beaches were closed twice due to general pollution, nine times because of oil spills, and four times due to toxic red tides. Jennifer Ehrlich, *Our Sandy Rubbish Dumps*, S. CHINA MORNING POST, Aug. 29, 2000. During 2003, a total of 20 red tides occurred in Hong Kong, and between January and October 2004, a total of 32 red tides occurred. Andy Cheng, *Hard Times for Farmers*, S. CHINA MORNING POST, Oct. 23, 2004. Such events raised concerns about pollution levels in Hong Kong's harbors because stagnating pollutants favored red algal growth. Patsy Moy & Felix Lo, *Spread of Red Tide Rouses Fish Farm Fears*, S. CHINA MORNING POST, Sept. 7, 2004.

<sup>85</sup> Evans, *supra* note 83.

<sup>86</sup> Hepatitis A infection is extremely common in Hong Kong; between 1989 and 1994, an annual average of 1,389 Hong Kongers were infected with the Hepatitis A virus. Mariana Wan, *Lifting the Ban on Shellfish*, S. CHINA MORNING POST, Sept. 24, 1995. By age 50, approximately 90% of Hong Kong residents are carriers of the Hepatitis A virus. This is directly linked to consumption of contaminated seafood and to swimmers' swallowing polluted seawater, with the high levels of fecal contamination attributed to the city's insufficient sewage system. Bloch, *supra* note 14, at 596 n.11, citing Susan Furlong, *Hepatitis A Link to Delay in Clean-Up*, S. CHINA MORNING POST, Oct. 17, 1992. In fact, Hong Kong's delays in implementing its city's sewage system have contributed to a 70% increase in the number of Hepatitis A cases among residents. Susan Furlong, *Hepatitis A*

beach had a toxicity five times the internationally established safety limit.<sup>87</sup> Oil spills and floating rubbish further exacerbate already dangerous beach conditions.<sup>88</sup> As one seaside resident recently commented: "It made me sick to see the swimmers there with the condoms floating by and the rotten food everywhere."<sup>89</sup>

Increasing population and coastal development have raised levels of water pollution,<sup>90</sup> with beach conditions being worst in areas with highly developed hinterlands.<sup>91</sup> One regular beachgoer expressed severe disappointment with water quality at Hong Kong's beaches: "Even before the recent closures, the water quality at our beaches was very poor, especially when compared to those overseas. Hong Kong people are very selfish. Many of them just dump their rubbish on the beaches or in the harbour. They are just putting their own convenience before the environment. The most the Government can do is to close the dirty beaches, but that still leaves the problem unresolved."<sup>92</sup>

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*Link to Delay in Clean-Up*, S. CHINA MORNING POST, Oct. 7, 1992. Four major outbreaks of Hepatitis A infection have occurred in Hong Kong: in 1975, 1978, 1988 and 1992. In the 1988 outbreak, 80% of sufferers had eaten local oysters, clams, mussels, and/or cockles. In the 1992 outbreak, more than 60% of sufferers had consumed some type of shellfish such as oysters, clams, mussels, cockles, and scallops. Wan, *supra* note 86; Elaine Chan, *Clinic to be Set Up for Epidemic*, S. CHINA MORNING POST, Oct. 23, 1992.

<sup>87</sup> Bloch, *supra* note 14, at 597, citing David W. Chen, *Polluted Hong Kong Harbor Stinks*, S.F. EXAMINER, Nov. 3, 1991 at A-10. A two-year university study completed in 1995 showed that the Hepatitis A virus was present in 30% of oysters, 6% of clams, and 14% of mussels bought from markets across Hong Kong. Wan, *supra* note 86.

<sup>88</sup> Furlong, *supra* note 84.

<sup>89</sup> Ehrlich, *Our Sandy Rubbish Dumps*, *supra* note 84.

<sup>90</sup> Fiona Holland, *St. Stephen's Beach Given All-Clear 2 Days After Sewage Closure*, S. CHINA MORNING POST, July 19, 1997.

<sup>91</sup> John Flint, *Five Beaches Stay Off Limits as Water Quality Worsens*, S. CHINA MORNING POST, June 8, 1996.

<sup>92</sup> *Cloud Cast Over Sun Worshipper*, S. CHINA MORNING POST, July 23, 1997.

### 3. CONSUMERISM

Not only do Taiwan and Hong Kong support dense populations of relatively wealthy inhabitants, but also thriving post-manufacturing consumer societies.<sup>93</sup> Taiwan has the highest motorized vehicle density in the world, with 442 vehicles per square kilometer.<sup>94</sup> In 2004, there were 6.34 million registered motor vehicles in Taiwan (both passenger cars and commercial vehicles), many of which used leaded gasoline.<sup>95</sup> Motor vehicle exhaust represents more than 95% of the air pollution in Taipei, Taiwan's capital and largest city.<sup>96</sup>

Throughout the Pearl River Delta, vehicle ownership is rising rapidly with growing wealth.<sup>97</sup> Hong Kong has seen a swift increase in private vehicle ownership,<sup>98</sup> with licensed motor vehicles now numbering 532,872, or 274 vehicles per square kilometer.<sup>99</sup> Hong Kong's vehicular traffic contributes to its notoriously severe air

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<sup>93</sup> Kathleen McLaughlin, *Wrap that in Plastic? Not in Taiwan, Unless You Pay*, CHRISTIAN SCIENCE MONITOR, June 15, 2004. For instance, Taiwan and Hong Kong, along with Singapore, are among the world's top ten per capita paper consumers. Sharmilpal Kaur, *It's Official, Singapore's a Paper Junkie*, THE STRAITS TIMES, June 14, 2003. Hong Kong is also among the world's top five largest consumers of tropical hardwoods. Bloch, *supra* note 14, at 597, citing Kathy Griffin, *At Loggerheads With Loggers*, S. CHINA MORNING POST, July 14, 1991.

<sup>94</sup> *Taiwan's Environment Under Great Pressure*, *supra* note 33.

<sup>95</sup> Republic of China, *Transportation, Storage and Communication: Railways, Highways, Motor Vehicles in Use*, STATISTICAL YEARBOOK OF THE REPUBLIC OF CHINA (2004), at [http://eng.stat.gov.tw/public/data/dgbas03/bs2/yearbook\\_eng/y128.pdf](http://eng.stat.gov.tw/public/data/dgbas03/bs2/yearbook_eng/y128.pdf); Chow, *supra* note 56, at 266.

<sup>96</sup> Government Information Office, *Environmental Protection: Air Quality*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt13-1.htm#1>.

<sup>97</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, Dec. 2002, at <http://www.civic-exchange.org/publications/2002/PRD%20report%20-%20E%20-%20web.doc>.

<sup>98</sup> *Red Alert: Anyone Seen Kowloon?*, NEWSWEEK, Feb. 1, 1999, at 77.

<sup>99</sup> *Hong Kong: The Facts*, *supra* note 29.

pollution, aggravated by high diesel fuel use.<sup>100</sup> In fact, motor vehicle exhaust accounts for approximately 75% of air pollution in Hong Kong.<sup>101</sup> In addition, factory emissions and construction exacerbate Hong Kong's poor air quality,<sup>102</sup> as does the incineration of industrial by-products such as used oil.<sup>103</sup>

As a consequence of their levels of economic development and emergence as consumer societies, Taiwan and Hong Kong residents account for disproportionately high rates of resource use and waste generation. Affluence and modernization have replaced traditional refuse with less degradable waste.<sup>104</sup> Moreover, many Hong Kong consumers report an unwillingness to sacrifice modern conveniences for environmental benefits.<sup>105</sup>

Taiwan has the highest density of resource consumption in the world, with a fuel expenditure of 2,074 tons per square kilometer.<sup>106</sup> Taiwan's per capita energy use is the second highest in East Asia, having tripled since 1980, and Taiwan's local electricity production now measures 150 billion kWh.<sup>107</sup> And at 3.18 metric tons, Taiwan's per capita carbon emissions are also the second highest in East Asia, having tripled since 1980.<sup>108</sup> In Hong Kong, local electricity

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<sup>100</sup> PBS, *supra* note 26; Anne Stewart, *Diesel Engines Send Air Pollution Soaring*, S. CHINA MORNING POST, Apr. 18, 1998.

<sup>101</sup> Jennifer Ehrlich, *Record Pollution Chokes SAR*, S. CHINA MORNING POST, Apr. 9, 2000.

<sup>102</sup> PBS, *supra* note 26; Hong Kong Vegan Society, *Environmental Issues in Hong Kong*, at <http://www.ivu.org/hkvegan/gb/hkenv.html>.

<sup>103</sup> Civic Exchange, *Waste Disposal*; *see generally* Civic Exchange, at <http://www.civic-exchange.org>.

<sup>104</sup> Feeley, *supra* note 53, at 915.

<sup>105</sup> Bloch, *supra* note 14, at 620 n.196.

<sup>106</sup> *Taiwan's Environment Under Great Pressure*, *supra* note 33.

<sup>107</sup> Taiwan's per capita energy use totaled 181.5 million British thermal units (Btu) in 2001. Energy Information Administration, *supra* note 25.

<sup>108</sup> *Id.* Taiwan's per capita carbon dioxide emissions in 1996 measured 2,700 kilograms. SRI, *Taiwan*, at <http://www.asria.org/ref/countries/taiwan>.

production measures 127,822 terajoules (30 billion kWh),<sup>109</sup> while electricity consumption measures 149,262 terajoules and gas consumption measured an additional 27,002 terajoules; in fact, 83% of households in a 2003 survey reported that they “did not mind using appliances with high electricity consumption for comfort of living” and 76% “did not care about the amount of electricity consumed as well as the bill charges involved”.<sup>110</sup> Hong Kong’s water usage is likewise high. Hong Kong residents had a combined average consumption of 2.67 million cubic meters of water per day in 2003; annual consumption of potable water totaled 974 million cubic meters and additional use of seawater for flushing amounted to 241 million cubic meters.<sup>111</sup>

In Taiwan, consumerism is inextricably linked with pollution and waste disposal problems.<sup>112</sup> The average amount of residential waste produced per capita in Taiwan nearly doubled between 1985 (0.67 kilograms) and 2000 (1.05 kilograms).<sup>113</sup> A daily average of 22,964 metric tons of rubbish is either dumped into landfills or is

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<sup>109</sup> Hong Kong Census and Statistics Department, *Local Electricity Production* (Oct. 28, 2004); see generally Hong Kong Census and Statistics Department, at <http://www.censtatd.gov.hk/home/index.jsp>.

<sup>110</sup> Hong Kong Census and Statistics Department, *Energy Consumption* (Mar. 2004); see generally Hong Kong Census and Statistics Department, at <http://www.censtatd.gov.hk/home/index.jsp>; Hong Kong Census and Statistics Department, *Public Opinions on Electricity Supply in Hong Kong* (2003), at [http://www.censtatd.gov.hk/FileManager/EN/Content\\_631/th17\\_elect.pdf](http://www.censtatd.gov.hk/FileManager/EN/Content_631/th17_elect.pdf).

<sup>111</sup> Hong Kong’s water consumption figures for 2003 were an increase upon those for 2002, when the average daily consumption was 2.60 million cubic meters; consumption of potable water totaled 949 million cubic meters and use of seawater was 235 million cubic meters. *Land, Public Works and Utilities: Water Supplies*, HONG KONG YEARBOOK (2003), at [http://www.info.gov.hk/yearbook/2003/english/chapter12/12\\_22.html](http://www.info.gov.hk/yearbook/2003/english/chapter12/12_22.html).

<sup>112</sup> For instance, it is conservatively estimated that approximately 60 million compact discs (CDs) weighing 990 tons are discarded annually in Taiwan (this estimate excludes defective compact discs discarded by manufacturers). If compact discs are dumped at landfills, soil and groundwater may be polluted by heavy metals, while burning the discs in incinerators may produce the dangerous chemical dioxin. Chiu Yu-Tzu, *Taiwan to Recycle Discarded CDs by Middle Next Year*, *TAIPEI TIMES*, Dec. 4, 2003.

<sup>113</sup> Government Information Office, *Environmental Protection: Solid Waste Disposal*, *supra* note 51.

incinerated.<sup>114</sup> By 1998, 66 of Taiwan's 316 rubbish treatment sites had reached full capacity,<sup>115</sup> with many others nearing capacity.<sup>116</sup> But not all solid waste reaches Taiwan's treatment sites. Annually, an estimated 7.0 million tons of factory waste, including 1.4 million tons of toxic waste, is illegally dumped in open landfills reserved for household rubbish, left by roadsides, thrown into canyons or riverbeds, or dropped into the ocean.<sup>117</sup>

Hong Kong's landfills are nearing capacity before schedule as a result of the ever-escalating amounts of solid waste generated. Hong Kong currently has three large landfills located in the New Territories, but these only have remaining lifespans of 8-12 years<sup>118</sup> despite having been designed to last 40 years.<sup>119</sup> The average daily per capita amount of solid waste produced by Hong Kong's residents measured 1.38 kilograms in 2003.<sup>120</sup> A daily average of 9,440 tons of municipal waste (7,400 tons of residential waste and 2,040 tons of commercial and industrial waste),<sup>121</sup> along with 7,000 tons of construction and demolition waste is dumped into Hong Kong's landfills.<sup>122</sup> Yet, not all of Hong Kong's waste makes it into landfills. An additional 13,926 tons of floating refuse was collected in Hong Kong's waters in 2003, mostly consisting of household rubbish including bottles, cans, packaging and bags.<sup>123</sup> Flytipping, i.e., the

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<sup>114</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (Oct. 2002), at [http://www.gio.gov.tw/taiwan-website/5-gp/q&a/page\\_12.htm](http://www.gio.gov.tw/taiwan-website/5-gp/q&a/page_12.htm).

<sup>115</sup> *Id.*

<sup>116</sup> *Environmental Protection: Solid Waste Disposal*, *supra* note 51.

<sup>117</sup> Jonathan Moore, *What to do with All that Waste?*, BUSINESS WEEK (International edition), Jan. 18, 1999; *see also* Taiwan Environmental Action Network, *supra* note 2; Lohnes, *supra* note 67, at 263.

<sup>118</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>119</sup> Civic Exchange, *Waste Disposal*, *supra* note 103.

<sup>120</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>121</sup> *Id.*

<sup>122</sup> K. K. Chadha, *Coming to Grips with Hong Kong Pollution*, ASIA TODAY, Feb. 2000.

illegal dumping of waste either on private land, government land, by the sides of roads, or in country parks and green belt areas, is also a common practice among many of Hong Kong's contractors who simply dump construction debris such as broken masonry and concrete, old bamboo poles, and empty paint and oil drums.<sup>124</sup> Despite there being laws imposing penalties on littering in every city, 54% of respondents in a 2002 survey of Pearl River Delta residents reported seeing people littering in the streets every day, while another 14% saw people littering several times per week.<sup>125</sup>

## B. PROBLEMS OF HABITAT DESTRUCTION AND ENDANGERED SPECIES

### 1. LAND CONVERSION AND RECLAMATION

As a result of excessive logging in mountain areas and massive exploitation of slope lands for land development, Taiwan has experienced mudslides, floods, and the erosion of riverbanks and seacoasts.<sup>126</sup> Cash cropping of lumber and sugar has further contributed to the problem.<sup>127</sup> Mountain deforestation as well as the

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<sup>123</sup> *Hong Kong: The Environment*, *supra* note 38. The 2003 data indicates an increasing trend; 5,500 tons of refuse was collected from Hong Kong's waters and coastal areas in 1996, while 11,300 tons was collected in 2000. Civic Exchange, *Floating Refuse & Beach Litter*; *see generally* Civic Exchange, at <http://www.civic-exchange.org>. Water quality analysts from Hong Kong's Environmental Protection Department report that most floating refuse is thrown away by picnicking residents. Principal environmental protection officer, Patrick Lei Chee-koong, concludes: "We need to improve the attitude of the public not to throw litter onto the land or into the sea." Ehrlich, *Our Sandy Rubbish Dumps*, *supra* note 84.

<sup>124</sup> Civic Exchange, *Hong Kong's Wastes*; *see generally* Civic Exchange, at <http://www.civic-exchange.org>.

<sup>125</sup> Hong Kong has raised its littering penalty to HK\$600. Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>126</sup> Government Information Office, *Environmental Protection*, *supra* note 47.

<sup>127</sup> Jiunn-rong Yeh, *Institutional Capacity-Building Toward Sustainable Development: Taiwan's Environmental Protection in the Climate of Economic Development and Political Liberalization*, 6 *DUKE J. COMP. & INT'L L.* 229, 251 (1996).

development of golf courses and real estate have also damaged water quality in Taiwan.<sup>128</sup> Fish farms and large-scale industrial park complexes along sections of Taiwan's coastline have led to sand bar erosion.<sup>129</sup> Another problem is that of land subsidence due to the over-pumping of groundwater from aquifers for shrimp, eel, and fish ponds.<sup>130</sup> Taiwan's aquaculturalists have dug approximately 170,000 illegal wells, with additional groundwater also being pumped for standard agricultural, industrial and residential uses.<sup>131</sup> While 5.94 billion cubic meters of groundwater is being pumped annually, only 4.00 billion cubic meters is being replaced, with land subsidence the result.<sup>132</sup> The excessive use of underground water has caused the level of affected land areas to sink, as much as 3.06 meters in some coastal areas in southern Taiwan.<sup>133</sup> In all, nearly 865 square kilometers of Taiwan's coastal plains have subsided at an average rate of 5-15 centimeters per year.<sup>134</sup> Consequently, the ocean water mark has moved inland, beaches have shrunk or even disappeared, flooding has occurred due to big storm waves, and the salt content in soil has risen.<sup>135</sup>

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<sup>128</sup> Government Information Office, *Environmental Protection: Water Resources*, YEARBOOK OF REPUBLIC OF CHINA (2001), at <http://www.taiwan.com.au/Envtl/Protection/EP/Water/report01.html>.

<sup>129</sup> Chiu, *Environmentalists Look to Protect Coastal Areas*, *supra* note 10; *see also* Government Information Office, *Agriculture: Fishing: Aquaculture*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p194.html#6>.

<sup>130</sup> Taiwan Environmental Action Network, *supra* note 2; *Eel Farming in Taiwan*, at <http://www.american.edu/TED/eelfarm.htm>.

<sup>131</sup> Government Information Office, *Environmental Protection: Water Resources*, *supra* note 128.

<sup>132</sup> *Id.*

<sup>133</sup> *Southern Taiwan Villagers in Struggle with Encroaching Ocean*, UNITED DAILY NEWS, May 27, 2003.

<sup>134</sup> Government Information Office, *Environmental Protection: Water Resources*, *supra* note 128; *Eel Farming in Taiwan*, *supra* note 130.

<sup>135</sup> *Southern Taiwan Villagers in Struggle with Encroaching Ocean*, *supra* note 133.

In Hong Kong, population growth during the past half-century has led to severe deforestation and soil erosion.<sup>136</sup> In addition, wildfires during the 1980s destroyed thousands of trees.<sup>137</sup> One of the biggest threats to Hong Kong's forest areas is hill fires caused by campers, hikers or grave visitors. In 2001, there were a total of 106 hill fires inside Hong Kong's country parks that affected 495 hectares, causing risk to life and property and loss of topsoil.<sup>138</sup> Coastal wetlands such as mangrove forests have been reclaimed so as to allow for development of new towns like Tai Po and Sha Tin, and wetlands in the New Territories have recently come under threat as the Hong Kong government and private developers plan to build huge residential estates to meet the rising demands for housing.<sup>139</sup>

"Hong Kong has throughout her history depended on reclaimed land for development."<sup>140</sup> With land as a scarce commodity yet an increasing population and expanding economic activities, Hong Kong has traditionally created land through reclamation of its harbors<sup>141</sup> and cutting slopes into hillsides.<sup>142</sup> Hong

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<sup>136</sup> PBS, *supra* note 26.

<sup>137</sup> *Id.*

<sup>138</sup> Civic Exchange, *Environmental Issues*; see generally Civic Exchange, at <http://www.civic-exchange.org>.

<sup>139</sup> World Wide Fund for Nature-Hong Kong (WWF-HK), *Wetlands Factsheet No.8* (Spring 1994), at <http://www.wwf.org.hk/eng/pdf/references/factsheets/factsheet8.PDF>; World Wide Fund for Nature-Hong Kong (WWF-HK), *Wetlands in Hong Kong: Background*, at <http://www.wwf.org.hk/eng/pdf/conservation/wetland/background.pdf>; Mottershead, *supra* note 12, at 835. See, e.g., *Sha Lo Tung Dev. Co. Ltd. v. Chief Executive in Council* [2001] 11 HKCU 1 (H.C.); *Lo Chai Wan v. Appeal Board* [1996] 6 HKPLR 33 (C.A.); *Henderson Real Estate Agency Ltd. v. Lo Chai Wan* [1996] 7 HKPLR 1 (P.C.).

<sup>140</sup> *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, *supra* note 27, at 47.

<sup>141</sup> "Reclamation means any works carried out or intended to be carried out for the purpose of forming land from the seabed or foreshore....[R]eclamation is practically irreversible. Once land is formed by reclamation, it cannot be undone and part of the harbour is lost forever." *Town Planning Bd. v. Society for the Protection of the Harbour*, [2004] 43 HKCU 1, 3 (C.F.A.).

<sup>142</sup> Shann Davies, *Dinosaurs at the Gate of Understanding*, ASIA TODAY, Oct. 1993; Jiu J. Jiao, Subhas Nandy & Hailong Li, *Analytical Studies on the Impact*

Kong's long history of land reclamation spans over a century, and more reclamation projects are still being planned.<sup>143</sup> Hong Kong Island has grown from approximately 7,000 hectares when the colony was first established to 9,500 hectares in 1990, with most of the new land forming Hong Kong's financial district.<sup>144</sup> To satisfy the growing needs for housing, most of Hong Kong's new towns created since 1970 are located largely on reclaimed land.<sup>145</sup> Indeed, much of urban Hong Kong is built upon reclaimed land,<sup>146</sup> and over 10% of Hong Kong's developed land area<sup>147</sup> or 6.1% of its total area has been reclaimed from the sea.<sup>148</sup> Says a Hong Kong developer: "If it's part of Hong Kong, and it's flat, then it used to be the sea."<sup>149</sup>

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*of Land Reclamation on Ground Water Flow*, GROUND WATER, Nov. 1, 2001, at 912.

<sup>143</sup> Jiu J. Jiao, Subhas Nandy & Hailong Li, *supra* note 142; Zofia Rybkowski & John Seel, *Hong Kong*, ARCHITECTURAL RECORD, July 1997, at 86. For example, the Hong Kong government had gazetted seven new reclamation projects totaling 584 hectares within Victoria Harbour between 1996 and 2002 for purposes ranging from land for roads, housing, office space, commercial development, and amenities provision. Society for Protection of the Harbour Limited, *Court of Final Appeal (CFA) for Wan Chai*, Jan. 8, 2004, at [http://www.friendsoftheharbour.org/news\\_main.php](http://www.friendsoftheharbour.org/news_main.php). Upon review of the reclamation projects and after active public consultation, however, the government decided to proceed with only three of the seven projects, all of which were also amended to reduce their reclamation sizes. Hong Kong Government Information Centre, *Press Release: Harbour Planning to be Reviewed with Full Public Participation*, Mar. 16, 2004, at <http://www.info.gov.hk/gia/general/200403/16/0316178.htm>.

<sup>144</sup> And if plans for further reclamation proceed, an additional 1,300 hectares will be dredged from Hong Kong's Victoria Harbour. Piers Wehner, *Harbouring Anger at High-Handedness*, ESTATES GAZETTE, June 26, 2004, at 68.

<sup>145</sup> Jiao, Nandy & Li, *supra* note 142.

<sup>146</sup> *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, *supra* note 27, at 48.

<sup>147</sup> Jiao, Nandy & Li, *supra* note 142.

<sup>148</sup> Since 1887, 67 square kilometers of land have been reclaimed. *Hong Kong: The Facts*, HONG KONG YEARBOOK (2003), at [http://www.info.gov.hk/yearbook/2003/english/hkfact/hkfact\\_area.html](http://www.info.gov.hk/yearbook/2003/english/hkfact/hkfact_area.html). Between 1999 and 2003 alone, Hong Kong's total land area increased from 1,096.6 square kilometers to 1,102.2 square kilometers. Hong Kong Census and Statistics

Hong Kong's rapid urban development results in the daily generation of 52,000 tons of construction and demolition material, of which 87% is suitable for reuse in reclamation projects in place of marine sand.<sup>150</sup> Land reclamation, however, has destroyed much of the natural shoreline,<sup>151</sup> negatively impacting the coastal environment and marine ecology.<sup>152</sup> Yet, as the courts have acknowledged, the "harbour is and has throughout the history of Hong Kong been a central part of its identity."<sup>153</sup> Hong Kong's reclamation plans are so extensive that alarmed residents are voicing their concerns: "Hong Kong's magnificent harbour is fast shrinking. If the government has its way, the harbour will become a river."<sup>154</sup> Reclamation dredging is also changing the regional groundwater regime<sup>155</sup> and posing a threat to seawater quality; for instance, the dredging of marine sand required for reclamation to build the new airport caused large sediment plumes that clouded the water choking fish and smothering coral reefs.<sup>156</sup> Changes in the coastline resulting from reclamation affect water movement, reduce fish spawning and nursery grounds, destroy corals,

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Department, *Geography and Climate* (Mar. 2004); see generally Hong Kong Census and Statistics Department, at <http://www.censtatd.gov.hk/home/index.jsp>.

<sup>149</sup> Wehner, *supra* note 144.

<sup>150</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>151</sup> Edwin Lau, *Hong Kong: Fragrant Harbor?*, at <http://www.dbc.uci.edu/~sustain/suscoasts/edwinlau.html>.

<sup>152</sup> Jiu J. Jiao, *Preliminary Study on Impact of Land Reclamation on Regional Groundwater Regime: Abstract of the Proposal* (2000), at <http://hydro.geo.ua.edu/jiao/reclamation.htm>.

<sup>153</sup> *Town Planning Bd. v. Society for the Protection of the Harbour*, *supra* note 141, at 1.

<sup>154</sup> Rybkowski & Seel, *supra* note 143.

<sup>155</sup> Jiao, *supra* note 152; Jiao, Nandy & Li, *supra* note 142; see, e.g., J. J. Jiao, *Preliminary Conceptual Study on Impact of Land Reclamation on Groundwater Flow and Contaminant Migration in Penny's Bay* (2002), at <http://hydro.geo.ua.edu/jiao/research/FullPaper/pennyBay.pdf>.

<sup>156</sup> WWF-HK, *Marine Pollution in Hong Kong Factsheet No.2*, *supra* note 73. Hong Kong's new 5.56 million square foot airport terminal was constructed on 3,083 acres of reclaimed land off Lantau Island. Rybkowski & Seel, *supra* note 143.

alter flooding patterns, impact the stability of slopes and foundations, and may worsen marine pollution effects.<sup>157</sup> Red tide occurrences in Hong Kong's harbors have been linked to stagnating pollutants and slow water currents, exacerbated by reclamation which restricts proper flushing of the harbor water and thus allows red algae to settle and build up on the seabed.<sup>158</sup>

## 2. WILDLIFE TRADE

Mainland China is the most popular place to eat exotic cuisine, followed closely by Hong Kong.<sup>159</sup> Two recent surveys in Hong Kong indicate that between approximately one-third<sup>160</sup> and one-half<sup>161</sup> of residents have consumed exotic or protected animals. Not only is Hong Kong a destination market, but it is also a major transshipment point for illegal wildlife and wildlife parts going into Taiwan and mainland China.<sup>162</sup> In Hong Kong, snakes are the most popular exotic delicacy, followed by civet cats and pangolins.<sup>163</sup> Shark fin soup is similarly considered a status symbol for those who can afford to buy it, and an expanding middle class has meant a greater demand for the fins in the industry's major markets of Hong Kong, Taiwan and

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<sup>157</sup> WWF-HK, *Marine Pollution in Hong Kong Factsheet No.2*, *supra* note 73; Ferris, *supra* note 3, at 8; Jiao, Nandy & Li, *supra* note 142; Civic Exchange, *Environmental Issues*, *supra* note 138.

<sup>158</sup> Moy & Lo, *supra* note 84; Evans, *supra* note 83.

<sup>159</sup> Lee, *supra* note 30.

<sup>160</sup> A 1996 survey of Hong Kong's adult Chinese residents indicated that 33% had consumed exotic animals. *Id.*

<sup>161</sup> A 1993 survey of Hong Kong residents indicated that 52% had consumed at least one kind of protected animal. Bloch, *supra* note 14, at 622.

<sup>162</sup> Susan Yu, *Pangolins in Peril*, Focus Asia, Aug. 10, 2003, at [http://focusasia.startv.com/print.cfm?CLIP\\_DATE=20030810&CLIP\\_NO=2](http://focusasia.startv.com/print.cfm?CLIP_DATE=20030810&CLIP_NO=2); World Wide Fund for Nature-Hong Kong (WWF-HK), *Wildlife Trade Factsheet No.5* (Spring 2004), at <http://www.wwf.org.hk/eng/pdf/references/factsheets/factsheet5.pdf>.

<sup>163</sup> WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162.

Singapore.<sup>164</sup> Hong Kong's Tourism Board even promoted the city in 2001 as a destination for shark fin dishes.<sup>165</sup> More than half the Hong Kong Chinese adult population also consumes medicinal tonic foods containing wild animal derivatives such as edible swiftlet nests,<sup>166</sup> tiger bones, and turtle tonic jelly.<sup>167</sup> For acquisitive Taiwanese, contraband endangered species appeal to wealthy consumers because environmentalism is still a new concept and Chinese society tends to emphasize the utility of animals.<sup>168</sup> Hence, in Taiwan, exotic pets are kept as status symbols, animal pelts are hung in homes, endangered animals that carry connotations of power are eaten, and traditional medicines are made from wildlife parts;<sup>169</sup> moreover, many tropical hardwoods and unsustainably harvested timber products are used in

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<sup>164</sup> Hong Kong, the hub for the import and re-export trade, saw US\$250 million worth of shark fins in 2000. Yu, *Jaws of Extinction*, *supra* note 16. Hong Kong annually imported 11 metric tons of shark fin during the period 1998-2002, and is estimated to handle 50-80% of the world trade in shark fin. WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162. As a member of the Hong Kong Food Trades Association expressed: "For the Chinese, if there's no shark fin, then it's like all foods are common. You feel as though something is missing....It's all about culture. Since the Qing Dynasty, shark fins have been eaten by the Chinese." Yu, *Jaws of Extinction*, *supra* note 16.

<sup>165</sup> Yu, *Jaws of Extinction*, *supra* note 16.

<sup>166</sup> *Id.*

<sup>167</sup> The importation of live tortoises and fresh water turtles into Hong Kong increased a dramatic 33-fold in the period 1992-2001, many of which were re-exported to mainland China for consumption as food or as medicinal turtle tonic jelly. WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162. In Hong Kong, four highly endangered triple-striped box turtles ('gold coin turtles') were stolen from the Zoological and Botanical Gardens in 2004, presumably to be sold on the black market (where they are worth about \$50,000) to be used to make Chinese medicinal turtle tonic jelly that is sold in Chinese herbal tea shops popular in Hong Kong and in mainland China. Clifford Lo, *Rare Turtles Stolen from Zoological Gardens*, S. CHINA MORNING POST, July 6, 2004. Likewise in 1993, 30 turtles (worth \$62,000) used in making Chinese medicinal turtle tonic jelly were stolen from a Hong Kong herbal tea shop. *Turtle Theft*, S. CHINA MORNING POST, Jan. 29, 1993. See also World Wide Fund for Nature-Hong Kong (WWF-HK), *Wildlife Trade: Introduction*, at [http://www.wwf.org.hk/eng/conservation/wl\\_trade/index.html](http://www.wwf.org.hk/eng/conservation/wl_trade/index.html).

<sup>168</sup> Sachs, *supra* note 23.

<sup>169</sup> *Id.*

construction and home furnishings.<sup>170</sup> Likewise, in Hong Kong, a large quantity of tropical rain forest products are used, a variety of endangered birds are kept as house pets, and illegally traded wildlife and plants are used in the manufacture of garments, jewelry, and home ornaments and curios.<sup>171</sup> Hong Kong is also the world's trade center in live reef fish, consuming, importing, or re-exporting 60% of the entire global trade.<sup>172</sup>

In addition to the consumption of endangered species as food delicacies, many plant and animal species are consumed as ingredients in traditional Chinese medicines. Rapid economic growth and rising personal incomes in Chinese societies, especially Taiwan and Hong Kong, have led to a dramatic increase in demand for ingredients of Chinese traditional medicine.<sup>173</sup> Taiwan is the world's leading consumer of illegally acquired endangered wildlife parts used in traditional Chinese medicine, such as rhino horns, tiger bones, rare monkeys, anteaters, bear parts, ivory, and others; in March 1994, 6.5% of the traditional Chinese pharmacies investigated in Taiwan were found to have violated conservation laws.<sup>174</sup>

Hong Kong is the world's leading importer of medicinal plants; as much as 7,000 metric tons of medicinal plants were imported into Hong Kong during the 1990s, although most was re-exported to Taiwan, mainland China, South Korea, Japan, and the USA.<sup>175</sup> Approximately 6.8% of Hong Kong's adult Chinese population regularly uses traditional Chinese medicine, citing

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<sup>170</sup> WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162.

<sup>171</sup> Bloch, *supra* note 14, at 597; WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162; WWF-HK, *Wildlife Trade: Introduction*, *supra* note 167.

<sup>172</sup> Civic Exchange, *Environmental Issues*, *supra* note 138.

<sup>173</sup> *Threatened Animals*, MACLEAN'S, Aug. 7, 1989, at 44.

<sup>174</sup> Chow, *supra* note 56, at 273; Government Information Office, *Environmental Protection: Wildlife Conservation*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt13-5.htm>.

<sup>175</sup> WWF-HK, *Wildlife Trade Factsheet No.5*, *supra* note 162. In addition to the importation of medicinal plants, Hong Kong is also a major importer of wildlife parts, having legally imported 1.4 million pounds of pharmaceutical animal parts in 1988. *Threatened Animals*, *supra* note 173.

perceived need and efficacy as the major reasons why they prefer to use medicine containing wild animal parts.<sup>176</sup> Although many express concern about the plight of endangered species, 14% of Hong Kong's traditional Chinese medicine users still claim they would continue to consume medicine containing ingredients derived from protected endangered species despite knowing the legal prohibitions, and another 37% claim they might do so depending upon the situation.<sup>177</sup>

### III. ADDRESSING QUALITY OF LIFE CONCERNS

Various government agencies and private conservation groups have worked on educational campaigns aimed at cultivating a conservation ethic among the people of Taiwan.<sup>178</sup> Concurrently, Taiwan's relaxation of the strict controls against public demonstrations over the past two decades has enabled residents to voice concerns over their general welfare.<sup>179</sup> Taiwan's people are starting to demand a quality of life commensurate with their level of economic achievement.<sup>180</sup> As environmental conditions worsened, the declining quality of life for residents became a major social issue.<sup>181</sup> A 1993 survey of Taiwan residents indicated a general dissatisfaction with the deteriorating natural environment, with 88% of respondents believing environmental problems in Taiwan were either very serious or serious.<sup>182</sup>

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<sup>176</sup> Lee, *supra* note 30.

<sup>177</sup> For instance, 23% of users of traditional Chinese medicine containing rhino horn and 19% of tiger bone users stated they would continue using these medicinal products even knowing that it was against the law. *Id.*

<sup>178</sup> Government Information Office, *Environmental Protection: Cultivating a Conservation Ethic*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt13-7.htm#16>.

<sup>179</sup> Ferris, *supra* note 3, at 127.

<sup>180</sup> Tang, *New Developments in Environmental Law and Policy in Taiwan*, *supra* note 11, at 248; Government Information Office, *Environmental Protection Efforts*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt13.htm>.

<sup>181</sup> Chow, *supra* note 56, at 270.

<sup>182</sup> Yeh, *supra* note 127, at 235 n.18.

Health issues have also increased residents' concerns regarding the state of the environment. For instance, widespread water contamination gives Taiwan the highest hepatitis rate in the world.<sup>183</sup> Rises in Taiwan's air pollution, especially particulates and nitrogen dioxide, have been linked to increased death rates for respiratory disease, heart disease and stroke; respondents in a 2004 survey cited several items as urgent in terms of improving air quality, including curbing emissions from motor vehicles, factories, kitchen air, and construction sites.<sup>184</sup>

Similarly, health reports from Hong Kong have linked rising hospital admissions and deaths to high air pollution levels.<sup>185</sup> The dramatic increase in the number of cases of asthma and bronchial infections in recent years has been blamed on poor air quality,<sup>186</sup> and fine particle air pollution has been linked to heart disease, stroke, cancer, diabetes, Alzheimer's and Parkinson's disease.<sup>187</sup> Acting as an aggravating factor for existing conditions, fine particulate matter is associated with up to 47% of premature deaths in Hong Kong.<sup>188</sup> In fact, breathing Hong Kong air is equated to smoking eight cigarettes a day in terms of lost life expectancy.<sup>189</sup> The Hong Kong government, during times of especially poor air quality, issues warnings for asthmatics, heart patients, children and elderly to stay indoors, reduce

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<sup>183</sup> Feeley, *supra* note 53, at 915.

<sup>184</sup> *Air Pollution Increases Stroke Risk*, BBC NEWS, Oct. 10, 2003; Government Information Office, *Environmental Protection: Air Quality*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html#2>.

<sup>185</sup> Joe Kainz, *Clean Living*, Focus Asia, Jan. 7, 2001, at [http://focusasia.startv.com/print.cfm?CLIP\\_DATE=20010107&CLIP\\_NO=2](http://focusasia.startv.com/print.cfm?CLIP_DATE=20010107&CLIP_NO=2); Patsy Moy, *Report Sparks Criticism of Pollution Delay*, S. CHINA MORNING POST, Nov. 17, 2001.

<sup>186</sup> *Wikipedia*, *supra* note 75.

<sup>187</sup> Richard Holdcroft, *The Hidden Danger in Our Air*, S. CHINA MORNING POST, Oct. 23, 2005.

<sup>188</sup> Nick Gentle, *Early Deaths at Hands of Silent Killer*, S. CHINA MORNING POST, Feb. 25, 2005.

<sup>189</sup> Holdcroft, *supra* note 187.

physical activity and avoid exertion.<sup>190</sup> In a 2004 survey, nearly all Hong Kong respondents said air pollution affected them, 66% said they suffered from eye irritation at times of high pollution, 37% experienced breathing problems, 30% had skin problems, 21% felt emotionally disturbed, 40% tried to avoid too much outside activity, and 53% were worried about their living environment and cited smog as a reason that they wanted to move.<sup>191</sup> Air pollution's impact is regularly discussed in the media, within academia, at the workplace, and at home.<sup>192</sup> "Air pollution has been a growing blight in Hong Kong....At dinner parties, people talk about scratchy throats, headaches and wind direction."<sup>193</sup>

Hong Kong's laissez-faire principles have allowed it to achieve significant economic growth, but at the price of a diminished quality of life for its residents.<sup>194</sup> In a 1993 Hong Kong survey, 92% of respondents regarded air pollution as a very serious problem in Hong Kong, 85% regarded noise pollution as a very serious problem, 95% considered water pollution to be a very serious problem, 45% felt that way about contamination of drinking water, and 95% felt that way about accumulation of plastic bags.<sup>195</sup> In a 2001 survey, many Hong Kong residents expressed a great deal of concern about environmental issues, reported a desire for the government to make many environmental issues a top or medium priority, expressed dissatisfaction with the government's efforts to clean up the environment, and reported a willingness to support greater law enforcement and higher fines to protect the environment.<sup>196</sup> Likewise,

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<sup>190</sup> Stewart, *supra* note 100; Ehrlich, *Record Pollution Chokes SAR*, *supra* note 101.

<sup>191</sup> Cheung Chi-fai, *Most Cite Smog as a Reason to Leave*, S. CHINA MORNING POST, Jan. 17, 2005.

<sup>192</sup> Chris Davis, *In Hot Pursuit of Airborne Pollutants*, S. CHINA MORNING POST, Jan. 15, 2005.

<sup>193</sup> *Red Alert: Anyone Seen Kowloon?*, *supra* note 98.

<sup>194</sup> Ng, *supra* note 20.

<sup>195</sup> Cecilia Chan & Peter Hills, *Conclusions*, in LIMITED GAINS: GRASSROOTS MOBILIZATION AND THE ENVIRONMENT IN HONG KONG, 201, 205 (1993).

<sup>196</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

in a 1993 Hong Kong survey, a full 95% of respondents supported increased government spending on the environment.<sup>197</sup> In a 2002 survey, Pearl River Delta residents reportedly expect the government to control environmental issues in the following order of priority: use of pesticides in vegetables and uninspected meat products, water pollution (drinking water, rivers, marine), air pollution, and shortage of fresh water.<sup>198</sup> Thus, resident's concerns were closely related to their daily lives in the areas of safe food, water and air.<sup>199</sup>

Despite such citizens' concerns regarding environmental conditions, Hong Kong residents historically had not engaged in public participation due to the nature of their executive led government, with democratic representation being a new phenomenon.<sup>200</sup> In the past, Hong Kong's colonial rulers were vested with the trust of the people to make all decisions concerning affairs,<sup>201</sup> and those decisions were made in private behind closed doors.<sup>202</sup> Hong Kong's people were relatively apolitical because there were no political parties or politicians as all politics were internalized within the colonial government structure.<sup>203</sup> The colonial "British [rulers] were very successful in defusing the political passions of Hong Kong people."<sup>204</sup> Today, however, Hong Kong residents expect greater involvement and participation in decision-making, and are increasing their demands of the government.<sup>205</sup> Hong Kong residents are more

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<sup>197</sup> Chan & Hills, *Conclusions*, *supra* note 195, at 205.

<sup>198</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>199</sup> *Id.*

<sup>200</sup> Mottershead, *supra* note 12, at 840.

<sup>201</sup> Tat, *supra* note 7, at 41.

<sup>202</sup> Ng, *supra* note 20.

<sup>203</sup> Tat, *supra* note 7, at 47.

<sup>204</sup> Loh, *supra* note 12.

<sup>205</sup> Mottershead, *supra* note 12, at 843. For instance, in a 2005 survey, 80% of Hong Kongers polled believed that full democracy would be beneficial to Hong Kong, 65% said they believed a clear date should be set for when Hong Kongers could elect their city's chief executive and all members of the legislature, and 70% wanted full democracy by 2012. *Hong Kong: Nearly 70 Percent Want*

willing to complain now that they are able to. “Where in the mid-1990s environmental and SD [sustainable development] matters would barely have raised a whisper of concern, today, the voices of concern are widespread and, in some sectors, have risen to a dull but discernable roar.”<sup>206</sup>

#### A. PUBLIC EDUCATION

The dramatic spread of universal education, with concomitant high literacy rates,<sup>207</sup> throughout Taiwan has helped to increase public awareness of environmental issues.<sup>208</sup> For Hong Kong residents, rising living standards and a generally high level of education and literacy<sup>209</sup> have helped to foster a situation in which awareness of environmental issues has grown significantly over the past two decades,<sup>210</sup> permeating throughout the society, where once, concern for Hong Kong’s environment was seen by the public as within the sphere of the wealthy, and environmental groups were comprised almost entirely of expatriate members.<sup>211</sup> Today, a growing

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*Democracy By 2012*, PACIFIC MAGAZINE, Nov. 5, 2005, at <http://www.pacificislands.cc/pina/pinadefault2.php?urlpinaid=17973>. Hong Kongers currently have no say in choosing their leader (a 800-person election committee picks Hong Kong’s chief executive) and they have only a partial say in choosing their legislature (30 of 60 legislative seats were directly picked by ordinary voters in the last election, while the other 30 were filled by special interest groups). *Id.*

<sup>206</sup> Mottershead, *supra* note 12, at 810.

<sup>207</sup> In Taiwan, 96% of the total population aged 15 years and older could read and write in 2003. CIA World Factbook, *Taiwan*, *supra* note 22.

<sup>208</sup> See National Council for Sustainable Development Network, *Research, International Cooperation, Education & Public Awareness*, at <http://ivy2.epa.gov.tw/NSDN/en/UNFCCC/six.htm>.

<sup>209</sup> In Hong Kong in 2002, 94% of the total population aged 15 years and older has attended school. Central Intelligence Agency (CIA) World Factbook, *Hong Kong*, May 16, 2006, at <http://www.cia.gov/cia/publications/factbook/geos/hk.html>.

<sup>210</sup> Chan & Hills, *Conclusions*, *supra* note 195, at 203.

<sup>211</sup> Tat, *supra* note 7, at 41.

percentage of members of Hong Kong's environmental groups are local Chinese.<sup>212</sup>

Taiwan's government has sought to increase public awareness of environmental issues and inculcate a positive environmental ethic.<sup>213</sup> Taiwan's Council of Agriculture has sponsored research projects, hosted international symposia, subsidized publicity campaigns, and commissioned other government agencies, such as the Ministry of Education, to provide conservation related publications, including 16 new school textbooks that introduced conservation concepts.<sup>214</sup> Public awareness has been gained through a variety of methods, from formal education to informal experience. In a 2002 survey of Pearl River Delta residents, the greatest sources of information on environmental protection were television, newspapers and schools.<sup>215</sup>

In a 1996 survey of Hong Kong's adult Chinese population, 59% expressed concern about endangered species.<sup>216</sup> In a 1993 Hong Kong survey, 12% of respondents had participated in an environmental campaign and 6% had been a member of an environmental group.<sup>217</sup> In a 2001 Hong Kong survey, nearly one in five residents had made a financial donation to an environmental group within the past year, while 55% of residents had participated within the last two years in a waste recycling project, 11% had participated in a clean up activity like litter collecting or beach cleaning, 8% had participated in tree or mangrove planting, 8% had gone to an environmental talk or conference, and 7% had gone to an environmental protection carnival or fair.<sup>218</sup>

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<sup>212</sup> Ferris, *supra* note 3, at 149 n.182; Bloch, *supra* note 14, at 600 n.42. See also Mottershead, *supra* note 12, at 844.

<sup>213</sup> Government Information Office, *Environmental Protection Efforts*, *supra* note 180.

<sup>214</sup> Government Information Office, *Environmental Protection: Cultivating a Conservation Ethic*, *supra* note 178.

<sup>215</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>216</sup> Lee, *supra* note 30.

<sup>217</sup> Chan & Hills, *supra* note 195, at 206.

<sup>218</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

During 2003 in Hong Kong, various environmental education activities and community involvement projects were organized to promote a green culture, including District Green Hong Kong Ambassadors Scheme, Greening Hong Kong Subsidy Scheme, community planting days, horticultural courses, Best Landscape Award for Private Property Development, and Hong Kong Flower Show.<sup>219</sup> Programs for school children in 2003 included the Greening School Subsidy Scheme, School Planting Plot in Park Scheme, and One Person One Flower Programme.<sup>220</sup> Since 1990, the Environmental Campaign Committee has given financial support to Hong Kong schools, youth centers, and environmental organizations for activities that promote environmental protection.<sup>221</sup> In 2002, Hong Kong's Sustainable Development Unit co-hosted an international symposium on 'Sustainability and the City.'<sup>222</sup> In addition, the Hong Kong government issues, on both television and radio, Announcements of Public Interest on various environmental protection topics such as air quality and water conservation.<sup>223</sup>

Government sponsored public education regarding wildlife protection is exemplified by Taiwan's recent efforts. In 1995, Taiwan's Government Information Office sponsored a touring photographic exhibition to raise public consciousness about wildlife conservation and environmental protection.<sup>224</sup> Taiwan's Council of Agriculture has likewise engaged in a comprehensive education program aimed at increasing public awareness of the importance of saving endangered wildlife and appreciating Taiwan's environmental heritage, producing some 30 wildlife conservation films in 1995

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<sup>219</sup> *Hong Kong: Green Promotion/Initiatives*, HONG KONG YEARBOOK (2003), at [http://www.info.gov.hk/yearbook/2003/english/chapter19/19\\_33.html](http://www.info.gov.hk/yearbook/2003/english/chapter19/19_33.html).

<sup>220</sup> *Id.*

<sup>221</sup> Cecilia Chan, *Attitudinal and Behavioural Change in Environmental Protection*, in LIMITED GAINS: GRASSROOTS MOBILIZATION AND THE ENVIRONMENT IN HONG KONG 161, 166 (1993).

<sup>222</sup> Mottershead, *supra* note 12, at 832.

<sup>223</sup> Chan, *supra* note 221, at 168.

<sup>224</sup> Government Information Office, *Environment and Wildlife Protection in Taiwan*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.taiwan.com.au/Envtra/Protection/Ethic/report02.html>.

alone.<sup>225</sup> Taiwan's Government Information Office also produced several wildlife conservation films as did the Department of Health, which were frequently aired on network and cable television.<sup>226</sup> Taiwan's Council of Agriculture also sponsored the Public Radio System to broadcast two wildlife conservation programs every week between October 1994 and June 1997, and in 1994, the Government Information Office rented seven billboards in three cities displaying conservation messages to enhance public awareness.<sup>227</sup>

## B. CITIZEN ACTIVISM

### 1. PROTESTS

Taiwan residents had severely restricted civil and political rights under four decades of authoritarian one party rule.<sup>228</sup> But democratic reforms, implemented after martial law was lifted in 1987, meant that many restrictions on public rallies, group activity, and mass media were removed.<sup>229</sup> The resulting liberalization of society and new democratic processes including popular vote have focused public outcry over deteriorating environmental conditions.<sup>230</sup> Between 1980 and 1996, there were 1,211 protests against air pollution in Taiwan, with 90% occurring after 1987.<sup>231</sup> With the

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<sup>225</sup> John Sneddon, *Good News for Taiwan's Endangered Species*, TRAVEL IN TAIWAN (1995), at [http://www.sinica.edu.tw/tit/environment/0896\\_Species.html](http://www.sinica.edu.tw/tit/environment/0896_Species.html).

<sup>226</sup> *Wildlife Conservation Progress: Examples of Conservation Education*, at [http://park.org/Taiwan/Government/Theme/Environmental\\_Ecological/env18.htm](http://park.org/Taiwan/Government/Theme/Environmental_Ecological/env18.htm). The Government Information Office's films included "Return Wildlife to Nature", "Prevention of Forest Fires", "Informing the Authorities of an Unlawful Act", as well as others which covered topics such as the environment, traditional medicines, pets, travel, and consumption behavior. The Department of Health's two short films were entitled "Protect Bears, Please Use Substitute Medicines" and "Do Not Use Bear Gall Bladders Originating from Protected Species". *Id.*

<sup>227</sup> *Id.*

<sup>228</sup> Wang, *supra* note 24, at 134; Tien, *supra* note 2, at 101.

<sup>229</sup> Tien, *supra* note 2, at 102.

<sup>230</sup> Kinne, *supra* note 46, at 100.

<sup>231</sup> *Id.* at 102.

government allowing an increase in public commentary, environmental issues have come to the forefront of political discourse.<sup>232</sup> There are signs that environmental activists are mobilizing public opinion and that government agencies are increasingly responsive.<sup>233</sup> “Now that Taiwan enjoys a full democracy with elected officials at all levels of government, environmental issues dominate the political agenda. Citizens routinely reject proposals for landfills, incinerators and other systems to dispose of the waste.”<sup>234</sup> For instance, Taiwan residents have recently protested proposed household waste incinerators,<sup>235</sup> toxic waste dumping in landfills,<sup>236</sup> and hazardous waste treatment sites,<sup>237</sup> as well as naphtha cracking plants,<sup>238</sup> reclamation projects,<sup>239</sup> a cement plant, and a dam.<sup>240</sup>

Hong Kong’s political context for environmental policy making was similarly altered by the transformation of the government into a representative one with district boards and a directly elected Legislative Council, with government consequently now more transparent and under more intense public scrutiny.<sup>241</sup> Hong Kong residents are gradually growing accustomed to vigorous and open discussions,<sup>242</sup> becoming increasingly outspoken and vocal about

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<sup>232</sup> *Id.*

<sup>233</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>234</sup> Tempest, *supra* note 52.

<sup>235</sup> Chiu Yu-Tzu, *More Controversy Over Incinerators*, TAIPEI TIMES, May 6, 2004.

<sup>236</sup> Lohnes, *supra* note 67, at 265.

<sup>237</sup> Francis Markus, *Taiwanese Waste Sent to Europe*, BBC NEWS, Mar. 2, 2000.

<sup>238</sup> Kinne, *supra* note 46, at 96 n.39.

<sup>239</sup> Wehner, *supra* note 144.

<sup>240</sup> Kinne, *supra* note 46, at 101 n.88.

<sup>241</sup> Chan & Hills, *Conclusions*, *supra* note 195, at 208; Tat, *supra* note 7, at 47. *See also* Mottershead, *supra* note 12, at 841.

<sup>242</sup> Bloch, *supra* note 14, at 626 n.241.

issues affecting their welfare (including environmental quality), with environmental issues likewise becoming more political.<sup>243</sup> Hong Kongers throughout the late 1980s and early 90s protested the Daya Bay Nuclear Plant, jointly developed by the China Light and Power Company of Hong Kong and Guangdong authorities and located 50 kilometers from the China-Hong Kong border, fearing that it was unsafe and posed health and environmental hazards.<sup>244</sup> Many questions regarding safety measures and the management of the nuclear plant were raised.<sup>245</sup> A number of concerned groups came together to form an ad hoc group named 'The Joint Conference for the Shelving of the Daya Bay Nuclear Plant' who then organized the 'Sign Up Against Daya Bay Nuclear Plant' campaign. Over 1 million Hong Kong residents signed the petition protesting against the nuclear plant being constructed, which was submitted to China's government in Beijing in September 1986.<sup>246</sup>

Many of Hong Kong's land reclamation schemes are to support transportation projects,<sup>247</sup> with 40% of reclaimed land for road building.<sup>248</sup> On May 2, 2004, local residents and environmental activists came together in an attempt to block further development on reclaimed land, with 12,000 participants walking the length of Victoria Harbour to protest against government plans for a new highway that would require the reclamation of 631 hectares, and hence would free up more land for development.<sup>249</sup> Hong Kong's residents have increasingly begun to object to related projects. On March 21, 2001, over 20,000 protestors joined in another march to save Victoria Harbour. Similarly, local campaigners in April 2001 succeeded in persuading the Planning Authority to reject plans for an 88-storey hotel, claiming it would destroy the Wanchai red light

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<sup>243</sup> Tat, *supra* note 7, at 42, 48.

<sup>244</sup> Ferris, *supra* note 3, at 158.

<sup>245</sup> Tat, *supra* note 7, at 43.

<sup>246</sup> *Id.* at 44.

<sup>247</sup> Henry Richmond, *Hong Kong's Gateway to the Future Means Good Sales Today for U.S. Firms*, BUSINESS AMERICA, Nov. 18, 1991, at 8.

<sup>248</sup> Ng, *supra* note 20.

<sup>249</sup> Wehner, *supra* note 144.

district.<sup>250</sup> The 'Tsing Yi Concern Group' has organized demonstrations opposing the construction of the Container Terminal 9 project adjacent to Tsing Ti Island, and has for years been pressing the Hong Kong government to relocate hazardous facilities, including an oil depot and chemical plants, away from the island.<sup>251</sup>

## 2. COMPLAINTS

In addition to protesting, Taiwan and Hong Kong residents are also able to make official complaints to their respective governments. The annual number of registered environmental nuisance complaints (including complaints about noise pollution, air pollution, and waste disposal) in Taiwan has continued to increase over recent years, rising from 67,438 complaints in 1991 to 102,200 complaints in 2000.<sup>252</sup> In contrast, the annual number of pollution complaints (including noise pollution, air pollution and vehicle emission complaints) in Hong Kong<sup>253</sup> has actually decreased recently, falling from 30,736 complaints in 2000 to 25,597 complaints in 2001; there was a corresponding decrease in the number of prosecutions for pollution offenses, falling from 1,824 in 2000, to 1,151 in 2001,<sup>254</sup> to 842 in

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<sup>250</sup> *Id.*

<sup>251</sup> *Tat, supra* note 7, at 47.

<sup>252</sup> Government Information Office, *Environmental Protection: Noise Pollution*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt13-2.htm#2>.

<sup>253</sup> In Hong Kong, there were 2,200 noise complaints concerning construction sites and 2,400 for commercial and industrial activities in 1998. Ambrose Leung, *Noise Law to Deter Directors*, S. CHINA MORNING POST, Dec. 21, 1999. In 1991, air pollution complaints resulting in investigations numbered 1,659. Ferris, *supra* note 3, at 152. In a 1991 survey of Hong Kong residents, 9% of respondents had complained at least once about an environmental problem to an authority. Bloch, *supra* note 14, at 626. In a 2002 survey of Pearl River Delta residents, 17% of respondents had made a complaint about pollution to the government, while 82% had never complained and 1% did not know they should complain to the government. Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>254</sup> Chi-fai Cheung, *Pollution Cases Fall With Soft Approach*, S. CHINA MORNING POST, June 17, 2002.

2002, and to 577 in 2003.<sup>255</sup> This decrease reversed a rising trend that had begun in 1997, and is officially attributed to both improved environmental conditions and to a less confrontational way of dealing with offenders.<sup>256</sup> Hong Kong's Environmental Protection Department has increasingly chosen to cooperate with trade leaders rather than immediately prosecute the offenders, because the offenders would merely incorporate the costs of their fines into their operating budgets<sup>257</sup> and would take their cases to court to fight the offense charges.<sup>258</sup>

### 3. LITIGATION

As most residents are now second or third-generation born in Hong Kong, the influence of traditional Chinese Confucian attitudes (such as conciliation being preferred to confrontation, and the concept of 'loosing face' providing a disincentive to litigation) is diminishing, and Hong Kong residents are becoming more insistent on obtaining their rights even if it means resorting to formal dispute resolution measures like litigation.<sup>259</sup> The progress of environmental politics in

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<sup>255</sup> *Hong Kong: The Environment: Legislation and Pollution Control*, HONG KONG YEARBOOK (2004), at [http://www.info.gov.hk/yearbook/2004/en/14\\_05.htm](http://www.info.gov.hk/yearbook/2004/en/14_05.htm); Hong Kong Environmental Protection Department, *Laws and Regulations: Enforcement*, at [http://www.epd.gov.hk/epd/english/laws\\_regulations/enforcement/resource\\_enfor2.html](http://www.epd.gov.hk/epd/english/laws_regulations/enforcement/resource_enfor2.html).

<sup>256</sup> *Id.*

<sup>257</sup> A recent study in Hong Kong shows that the average fine meted out for environmental offenses, even taking account of repeat offenders, is approximately 20% of the maximum – costs which most offenders are happy to bear. Berry Fong Chung Hsu, *Constitutional Protection of a Sustainable Environment in the Hong Kong Special Administrative Region*, 16 J. ENVTL. L. 193, 212-3 (2004).

<sup>258</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>259</sup> Bloch, *supra* note 14, at 625 n.239. Hong Kong has six environmentally related Appeal Boards: Air Pollution Control, Noise Control, Water Pollution Control, Waste Disposal, Dumping at Sea, and Environmental Impact Assessment. Mottershead, *supra* note 12, at 817 n.12. In addition, Hong Kong has two indirectly environmentally related boards: Town Planning Appeal Board and Appeal Tribunal (Building). Bryan Bachner, *The Case for an Environmental Law Court in Hong Kong (Part 2)*, ENVIRONMENTAL PRACTICE, Apr. 2003, at <http://www.hk-lawyer.com/2003-4/Apr03-environ.htm>.

Hong Kong over the past few decades has resulted not only in an improved legal and institutional regime, but also in increased challenges to that system by citizens and non-governmental organizations demanding even greater environmental protection.<sup>260</sup>

For example, Hong Kong environmental groups legally challenged a governmental decision approving plans for the development of a private golf course partially situated within the Pat Sin Leng Country Park located in Sha Lo Tung Valley<sup>261</sup> (an isolated valley at the foot of mountain ranges within the New Territories significant for “its high ecological value”).<sup>262</sup> The case was decided for the environmental groups because the Country Parks Board conceded that it had circumvented the statutory procedure. The developer, however, merely redesigned the golf course to exclude all country park land from the project.<sup>263</sup> Dissatisfied with the apparent bias in favor of the developer, the environmental groups then filed a complaint before the ombudsman.<sup>264</sup> The Hong Kong government intervened by zoning the remote valley as a conservation area (‘Site of Special Scientific Interest’) under the Town Planning Ordinance because of the ecological impact that would result from the developer’s proposed residential housing and recreational project that included the controversial golf course.<sup>265</sup> The Planning Board’s decision designating Sha Lo Tung as a conservation area was challenged, however, by the developer.<sup>266</sup> The court ultimately backed the Town Planning Board in opposing the development project within the Site of Special Scientific Interest<sup>267</sup> because it

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<sup>260</sup> Bachner, *supra* note 259.

<sup>261</sup> Bloch, *supra* note 14, at 627.

<sup>262</sup> *Sha Lo Tung Dev. Co. Ltd. v. Chief Executive in Council*, *supra* note 139, at 3.

<sup>263</sup> Bloch, *supra* note 14, at 628.

<sup>264</sup> *Id.*

<sup>265</sup> Lisa Hopkinson, *Conservation Costs, But Inaction Costs More*, S. CHINA MORNING POST, Apr. 22, 2003.

<sup>266</sup> Antoine So, *Rejoicing Green Groups See More Trouble Ahead*, S. CHINA MORNING POST, Jan. 10, 2001.

would have adversely impacted the sensitive ecology of Sha Lo Tung Valley, which features riverbank wetlands and woodlands with over 100 species of plants, and serves as the habitat for aquatic fish and amphibians as well as rare species of dragonfly (numbering 68 of Hong Kong's 106 total species)<sup>268</sup> and butterfly (numbering 127 of Hong Kong's 200 total species).<sup>269</sup>

Likewise, a Hong Kong environmental group legally challenged the Town Planning Board's decision to allow Victoria Harbour reclamation projects along the Wai Chai District on the basis that the decision did not comply with the Protection of the Harbour Ordinance<sup>270</sup> which stipulates that "[t]he harbour is to be protected and preserved as a special public asset and a natural heritage of Hong Kong people, and for that purpose there shall be a presumption against reclamation in the harbour",<sup>271</sup> and was therefore unlawful.<sup>272</sup> In ruling, the court cautioned: "Precisely because Hong Kong owes much of her present achievement to reclamation in the [Victoria] Harbour, it is incumbent upon public officials and authorities to

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<sup>267</sup> *Sha Lo Tung Dev. Co. Ltd. v. Chief Executive in Council*, *supra* note 139.

<sup>268</sup> Sha Lo Tung is an abandoned agricultural area in an upper valley floor that was originally settled in the late 1600s and early 1700s. "The village houses are Grade II historical buildings which are of architectural and historical significance. The significance of the area is, however, its high ecological value because of the presence of an extremely diverse community of dragonflies, especially around the stream courses, which form part of the stream courses running through the Pat Sin Leng Country Park and consist of pristine water, and the nearby woodlands. The number of species recorded in the catchment area is more than any other site in Hong Kong. Currently, there are 68 species of dragonflies recorded in the area from a total of 106 species known from the whole territory. Many of the species recorded are rare stream species. The stream courses are also important habitats for other aquatic fauna such as fresh water fish and amphibian." *Id.* at 4.

<sup>269</sup> So, *supra* note 266; Bloch, *supra* note 14, at 627; Mottershead, *supra* note 12 at 835.

<sup>270</sup> *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, *supra* note 27.

<sup>271</sup> *Id.* at 19-20.

<sup>272</sup> *Town Planning Bd. v. Society for the Protection of the Harbour*, *supra* note 141, at 4.

treasure what is now left of the Harbour.”<sup>273</sup> A companion case filed by the same environmental group challenged the Chief Executive in Council’s approval of a related Victoria Harbour reclamation project along the northern foreshore of Hong Kong Island in the commercial district known as Central, claiming that it too was in contravention of the Protection of the Harbour Ordinance and was therefore unlawful.<sup>274</sup>

### C. GOVERNMENT RESPONSE

There are signs that Taiwan’s environmental activists are mobilizing public opinion and that government agencies are increasingly responsive.<sup>275</sup> “Environmentalism has great popular support in Taiwan, and its influence on public policy has grown. The government has signaled its willingness to accommodate the public’s wishes.”<sup>276</sup> Moreover, Taiwan has relinquished claims to mainland China, only seeking independence for its own islands. Taiwan’s government, aiming to achieve greater international recognition, has responded to international criticism of its environmental record<sup>277</sup> and has even made efforts to adhere to international environmental treaties (irrespective of whether or not it is a party to the agreement).<sup>278</sup>

To better address Taiwan’s many environmental problems, the government has taken measures to amend existing laws to make them more strict, draft new laws to fill regulatory gaps, improve enforcement of laws, and enhance the profile of the Environmental

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<sup>273</sup> *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, *supra* note 27, at 48.

<sup>274</sup> *Society for Protection of the Harbour Ltd. v. Chief Executive in Council*, *supra* note 79. The court, however, was unconvinced by the environmental group’s arguments both in the original case and on appeal. *See Society for Protection of the Harbour Ltd. v. Chief Executive in Council*, [2004] 294 HKCU 1 (H.C.).

<sup>275</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>276</sup> Energy Information Administration, *supra* note 25.

<sup>277</sup> *Id.*

<sup>278</sup> Government Information Office, *Environment and Wildlife Protection in Taiwan*, *supra* note 224; Yeh, *supra* note 127.

Protection Administration (EPA), as well as to increase public awareness of environmental issues and inculcate a positive environmental ethic.<sup>279</sup> Taiwan's regulatory regime is characterized by diverse shared responsibility across government sectors, between central and local governments, and between the public and private sectors.<sup>280</sup> Many of the environmental statutes focus on the use of emission and effluent standards, determined by the relevant administrative agencies, as an abatement mechanism.<sup>281</sup> Command-and-control regulation continues to dominate in most of Taiwan's environmental laws, although market-based strategies such as levying pollution tax on sources of pollution are beginning to be utilized as well.<sup>282</sup> Sanctions available for violations tend to include fines, suspension of operation, shut down, and criminal penalties.<sup>283</sup> Recent amendments to pollution control laws have added or increased the fines and penalties for illegal effluence and dumping.<sup>284</sup>

#### 1. OPEN SPACE PRESERVATION

It is possible for a society to be both heavily urbanized and heavily vegetated. Hong Kong is particularly notable for the co-existence of greenery and skyscrapers in an urban setting; the vertical placement of most residents in flats in high-rise apartment buildings allows Hong Kong to remain a densely populated yet green city.<sup>285</sup> Hong Kong has set aside a full 38% of its land area, protected as 23 county parks and 15 special areas, as well as 4 marine parks and 1

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<sup>279</sup> Government Information Office, *Environmental Protection Efforts*, *supra* note 180.

<sup>280</sup> Kinne, *supra* note 46.

<sup>281</sup> Tang, *The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective*, *supra* note 9, at 98.

<sup>282</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>283</sup> Tang, *The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective*, *supra* note 9, at 108.

<sup>284</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>285</sup> Word IQ, *Definition of Demographics of Hong Kong*, at [http://www.wordiq.com/definition/Demographics\\_of\\_Hong\\_Kong](http://www.wordiq.com/definition/Demographics_of_Hong_Kong).

marine reserve.<sup>286</sup> The county parks are mostly located in upland areas.<sup>287</sup> And as all of Hong Kong's 17 reservoirs lie within park boundaries, watershed protection was a major motivator in designating the park lands as off-limits to development and private motor vehicles.<sup>288</sup> In Taiwan, an increased standard of living in a democratic setting, coupled with increased public realization of environmental ethics, has led to a corresponding demand for government action to save Taiwan's natural habitat and endangered flora and fauna.<sup>289</sup> Taiwan's government has set aside 19.5% of the total land area as a multi-tiered conservation system, with 6 national parks, 19 nature reserves, 9 forest reserves, 16 wildlife refuges, and 30 major wildlife habitats.<sup>290</sup>

## 2. WILDLIFE PROTECTION

Trafficking in certain wildlife products in Taiwan is proscribed by the Wildlife Conservation Law and the Cultural Heritage Preservation Law, and the Wildlife Protection Unit was set up in November 1993 to be in charge of investigations regarding violations of the Wildlife Conservation Law.<sup>291</sup> Since it was established, the Wildlife Protection Unit has conducted extensive

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<sup>286</sup> *Hong Kong: The Environment*, *supra* note 38.

<sup>287</sup> World Wide Fund for Nature-Hong Kong (WWF-HK), *Land Use Planning in Hong Kong Factsheet No.4*, at <http://www.wwf.org.hk/eng/pdf/references/factsheets/factsheet4.pdf>.

<sup>288</sup> *Wikipedia*, *supra* note 75.

<sup>289</sup> Sneddon, *supra* note 225.

<sup>290</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (2002), *supra* note 114. Taiwan's 19 nature reserves cover 64,477 hectares of land and sea, and the 16 wildlife refuges encompass 25,117 hectares of land and sea, while 1.57 million hectares are national forest reserves. Government Information Office, *Environmental Protection: Habitat Protection*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html>.

<sup>291</sup> Government Information Office, *Environmental Protection: Nature Conservation*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html#6>; Government Information Office, *Environmental Protection: Wildlife Conservation*, *supra* note 174.

undercover operations and overseen investigation into more than 10,640 traditional Chinese pharmacies.<sup>292</sup> In 1997, the Wildlife Protection Unit investigated 37 wildlife related cases, local governments investigated 2,796 wildlife related cases and found 220 violations of the Wildlife Conservation Law, customs officials uncovered 70 cases of wildlife product smuggling, and the Taiwan Forestry Bureau made 212 investigations and seized 2,328 illegal hunting, trapping and fishing gears; in 1999, the Wildlife Protection Unit investigated 63 wildlife related cases, local governments investigated 1,600 wildlife related cases and found 206 violations of the Wildlife Conservation Law, customs officials uncovered 53 cases of wildlife product smuggling, and the Taiwan Forestry Bureau made 504 investigations and seized 3,179 illegal hunting, trapping and fishing gears.<sup>293</sup> In 2000, there were a total of 187 cases involving the Wildlife Conservation Law brought to trial – these cases involved a total of 209 persons, of whom 189 were sentenced, 19 were found not innocent, and 1 was remitted; the Wildlife Protection Unit was so successful that it was able to be dissolved in June 2002, having completed its mission.<sup>294</sup>

### 3. RECYCLING AND WASTE REDUCTION

Hong Kong has a substantial waste recovery industry, including an estimated 200 waste collection companies.<sup>295</sup> The waste materials recovered are export-oriented and include items of high commercial value such as metals, plastics, paper, aluminum, glass, textiles, industrial wastes, and solvents.<sup>296</sup> Approximately 78% of

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<sup>292</sup> Government Information Office, *Environment and Wildlife Protection in Taiwan*, *supra* note 224; Government Information Office, *Issues of Law: Legal Framework*, YEARBOOK OF REPUBLIC OF CHINA (2002), at <http://www.taiwan.com.au/Envtra/Protection/Nature/report02.html>.

<sup>293</sup> Government Information Office, *Issues of Law: Legal Framework*, *supra* note 292; Government Information Office, *Environmental Protection: Wildlife Conservation*, *supra* note 174.

<sup>294</sup> Government Information Office, *Environmental Protection: Nature Conservation*, *supra* note 291; Government Information Office, *Environmental Protection: Wildlife Conservation*, *supra* note 174.

<sup>295</sup> Chadha, *supra* note 122.

<sup>296</sup> *Id.*

construction and demolition material is recovered for recycling, while only 8% of recoverable domestic waste is recycled. Nevertheless, of municipal waste, 80% of metals, 35% of plastics, and 53% of paper products is recovered for recycling.<sup>297</sup> One notable company, Hong Kong & China Gas, was able to recover 390 tons of scrap metal from retired gas appliances and recycle 4 tons of polyfoam packaging during 2003.<sup>298</sup>

Taiwan's EPA estimates that approximately 40% of Taiwan's rubbish is recyclable, and the proportion of total solid waste collected as recyclable waste is rapidly increasing – from 9.8% in 2000 to 12.7% in 2001 to 12.9% in 2003.<sup>299</sup> Taiwan's government encourages recycling to reduce solid waste, and there are recycling programs for various items,<sup>300</sup> including plastics, paper, aluminum, glass, iron, lubricants, used clothing, containers, tires, motor vehicles, electrical appliances, information goods (computers and printers), fluorescent lamp tubes, dry cell batteries, lead acid storage batteries, other metal products,<sup>301</sup> and compact discs (CDs).<sup>302</sup> Local environmental protection bureaus or town public offices must separate and recycle listed items, rather than disposing of them

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<sup>297</sup> *Id.*

<sup>298</sup> Allan Nam, *Green Practices Good for Business*, S. CHINA MORNING POST, Nov. 16, 2004.

<sup>299</sup> Government Information Office, *Environmental Protection: Solid Waste Disposal*, *supra* note 51; Government Information Office, *Environmental Protection: Recycling*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html>.

<sup>300</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (2002), *supra* note 114.

<sup>301</sup> Taiwan Environmental Protection Agency, *Recycle Background*, at <http://www.epa.gov.tw/english/offices/h/recycle4.htm>.

<sup>302</sup> Chiu Yu-Tzu, *Taiwan to Recycle Discarded CDs by Middle Next Year*, *supra* note 112. In 2004, Taiwan implemented regulations for recycling compact discs, which are composed of plastic materials and metals, including aluminum, gold, silver and titanium. Taiwan is the world's largest manufacture of compact discs, producing 5.5 billion discs annually, of which 4.7 billion are for overseas markets and 800 million are sold on the domestic market. One licensed Taiwanese company already produces 400 tons of plastic materials a month from recycled and discarded compact discs, and two other companies have recently applied for similar licenses. *Id.*

together with other municipal waste.<sup>303</sup> Moreover, manufacturers of plastics, paper, aluminum containers, glass, and certain other materials are required to recycle at least half their output.<sup>304</sup> In an effort to decrease street litter, Taiwan has also recently begun a campaign restricting the use of disposable bags, utensils, bowls, cups, food containers and similar items made out of plastic or styrofoam.<sup>305</sup> The amount of recycled household resources rose from 0.48 million metric tons in 1997, to 1.01 million tons by 2001, and up to 1.38 million tons in 2003; there was a corresponding drop in the amount of household waste disposed of, from 8.88 million metric tons in 1997 down to 7.25 million tons in 2001.<sup>306</sup>

In Taiwan, Taipei City implemented a 'Fee Per Package Policy' in July 2000 that requires residents to use designated trash bags purchased from the city government. The policy has served to encourage residents to decrease the amount of trash they produce and to boost their recycling efforts, resulting in a reduction in Taipei's daily trash production by one-third and a corresponding threefold increase in its recyclable waste collection.<sup>307</sup> In late 2003, Taipei City

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<sup>303</sup> Taiwan Environmental Protection Agency, *Recycle Background*, *supra* note 301.

<sup>304</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (2002), *supra* note 114; Government Information Office, *Environmental Protection: Recycling*, *supra* note 299.

<sup>305</sup> These disposable items had been estimated to account for 60,000 metric tons of waste annually. *Taiwan Sweeps Up the Litter*, BBC NEWS, Dec. 31, 2002. Their use, however, has been dramatically reduced by the regulations. Use of plastic bags has dropped 69%, and use of plastic utensils has dropped 90% since the restrictions were implemented. McLaughlin, *supra* note 93. The government's policy limits the use of plastic bags and disposable tableware at food service outlets in government buildings, schools, military establishments, factories, department stores, shopping centers, membership warehouses, supermarkets, convenience stores, food outlets, and fast food restaurants. Government Information Office, *Environmental Protection: Solid Waste Disposal*, TAIWAN YEARBOOK (2005), at <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/p204.html#5>.

<sup>306</sup> Taiwan Environmental Protection Agency, *Recycle Background*, *supra* note 301; Government Information Office, *Environmental Protection: Solid Waste Disposal*, *supra* note 305.

<sup>307</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (2002), *supra* note 114; Government Information Office, *Environmental Protection: Solid Waste Disposal*, *supra* note 305.

implemented a policy for the recycling of household kitchen waste whereby residents must recycle their kitchen waste at the same time they take out their other household rubbish, and with Taipei City's Bureau of Environmental Protection distributing free containers to hold the separated kitchen waste.<sup>308</sup> In January 2005, a new national policy mandating waste separation was implemented in Taiwan whereby household waste is refused by garbage truck workers if it is not properly sorted into three categories: recyclable, food leftovers (used for composting and as pig feed), and general waste, and where violators are subject to fines from NT\$1,200 (US\$35) to NT\$6,000 (US\$175).<sup>309</sup>

#### 4. GREEN CONSUMERISM

Taiwan launched its Green Mark Ecolabeling Program in 1992 to guide consumers in purchasing environmentally friendly products and encourage manufacturers to design and produce them in order to conserve resources, recycle and reduce pollution. The Green Mark is a voluntary and positive ecolabeling program.<sup>310</sup> More than 1,800 products in Taiwan have received the Green Mark label logo.<sup>311</sup> Most licensed manufacturers have reported that the Green Mark label logo is helpful for their company image and for promoting business. Green Mark products are purchased by retail consumers, the industrial sector and the government.<sup>312</sup> In 2002, Taiwan implemented the Resource Recycling and Reuse Act, which among other things, stipulates that the government should engage in 'green purchasing' by granting priority to the procurement of environmentally-friendly Green Mark Ecolabeled products, products manufactured from

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<sup>308</sup> Jewel Huang, *Recycling of Kitchen Wastes Set to Start Soon*, TAIPEI TIMES, Dec. 3, 2003.

<sup>309</sup> *Id.*; Government Information Office, *Environmental Protection: Solid Waste Disposal*, *supra* note 305.

<sup>310</sup> *Taiwan's Green Mark Program*, at <http://www.epa.gov/opptintr/epp/pubs/envlab/taiwan.pdf>.

<sup>311</sup> Chiu Yu-Tzu, *Ecolabeling Fails to Provide Buyers with Ample Goods*, TAIPEI TIMES, Aug. 8, 2003.

<sup>312</sup> *Taiwan's Green Mark Program*, *supra* note 310.

recycled materials, and products made from raw materials including a minimum percentage of renewable resources.<sup>313</sup> The Taiwan government has promoted the purchase of environmentally friendly products within its Cabinet agencies and local governments, who have set goals of spending at least 50% of their budgets allocated for specified products commonly used in government offices on environmentally friendly products.<sup>314</sup>

Manufacturers' green credentials are likewise increasingly swaying Hong Kong consumers' choices.<sup>315</sup> In a 2002 survey of Pearl River Delta residents, 23% of respondents said they would buy green products when available and another 30% said they would buy green products occasionally.<sup>316</sup> Since green products are generally more expensive, only high-income earners could afford to buy them regularly; the frequency of green product purchase matched income distributions in the population. Those who chose to buy green products did so due to their better quality, to benefit the environment, as a good example to their children, and because it was fashionable to do so.<sup>317</sup> In a similar vein, a growing proportion of Hong Kongers are buying organic food products.<sup>318</sup> Hong Kong now uses a 'Green Food Mark' to certify food that is safer, of higher quality and more nutritious, such as organically grown food.<sup>319</sup> In a 2002 survey of Pearl River Delta residents, 47% of respondents said they would always or often buy 'green food' since it is good for their health, good for their children's health, and better for the environment.<sup>320</sup>

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<sup>313</sup> Taiwan Environmental Protection Agency, *Recycle Background*, *supra* note 301.

<sup>314</sup> In fact, Taiwan government offices spent 66% of their budgets (representing NT\$2.65 billion) allocated for the specified products on environmentally friendly products in 2002. Chiu, *Ecolabeling Fails to Provide Buyers with Ample Goods*, *supra* note 311.

<sup>315</sup> Nam, *supra* note 298.

<sup>316</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>317</sup> *Id.*

<sup>318</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

<sup>319</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

Moreover, 12% of Hong Kongers in a 2001 survey had visited an organic farm within the last two years.<sup>321</sup>

Hong Kong residents indicate that they would be willing to purchase more environmentally friendly motor vehicles or take public transport if service convenience and conditions were improved,<sup>322</sup> while 62% of respondents in a 2003 survey indicated that they would be willing to walk longer distances if the pedestrian environment and facilities were improved.<sup>323</sup> Taiwan's EPA provides subsidies to encourage the purchase of fuel efficient and low emission motor vehicles.<sup>324</sup> In 1995, the EPA began collecting a surcharge on fuel in the form of an Air Pollution Control Fee<sup>325</sup> from motor vehicle owners and factories, the funds of which are used to finance local efforts to improve air quality, establish environmental conservation parks, and subsidize the purchase of electric motorcycles and the conversion of taxis to run on clean-burning liquefied petroleum gas.<sup>326</sup>

#### IV. IMPACT ON MAINLAND CHINA

##### A. INDUSTRIAL FLIGHT

Improving environmental conditions in Taiwan and Hong Kong may mean worsening environmental conditions for mainland China, however. Since China's open door policy was adopted during

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<sup>320</sup> *Id.*

<sup>321</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

<sup>322</sup> *Id.*

<sup>323</sup> Hong Kong Census and Statistics Department, *Public Views on Pedestrian Environment* (2003), at [http://www.censtatd.gov.hk/FileManager/EN/Content\\_631/th19\\_pen.pdf](http://www.censtatd.gov.hk/FileManager/EN/Content_631/th19_pen.pdf).

<sup>324</sup> Energy Information Administration, *supra* note 25.

<sup>325</sup> In 2001, NT\$58,000,000 was collected in Air Pollution Control Fees. *Id.*

<sup>326</sup> Government Information Office, *Q & A About the ROC (Taiwan): Environmental Protection* (2002), *supra* note 114; Government Information Office, *Environmental Protection: Air Quality*, *supra* note 96.

the 1980s, Hong Kong's industrial sector has increasingly moved across the border into southern China in search of lower land and labor costs.<sup>327</sup> In fact, 60% of industrial operations in the entire Pearl River Delta are owned by Hong Kongers.<sup>328</sup> Hong Kong manufacturers are moving to cheaper premises with cheaper workers in Guangzhou, and other businesses are moving to Shenzhen.<sup>329</sup> Taiwan also anticipates industrial relocation to mainland China due to lower costs.<sup>330</sup> Yet, industrial growth tends to lead to environmental problems, including air, noise, water and land pollution. For instance, the amount of industrial solid wastes in China is rapidly rising, totaling 660 million tons in 1996 – a 75% increase since 1991.<sup>331</sup> While Hong Kong saw a dramatic reduction in sulfur and other air pollutants associated with factory emissions during the 1990s as industry moved away,<sup>332</sup> nearly 70% of respondents in a 2002 survey of Pearl River Delta residents believed that Hong Kong's industrial relocation had brought pollution across the border into mainland China.<sup>333</sup> Unlike in Taiwan and Hong Kong, citizens of mainland China are not able to stage major protests against government projects that they are opposed to.<sup>334</sup>

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<sup>327</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4; Chadha, *supra* note 122; PBS, *supra* note 26; Chan & Hills, *Conclusions*, *supra* note 195, at 203.

<sup>328</sup> Gentle, *supra* note 188.

<sup>329</sup> Wehner, *supra* note 144.

<sup>330</sup> Taiwan Environmental Action Network, *supra* note 2. Similarly, as Macau's Multi-Fiber Agreement is phased out, much of Macau's textile industry is expected to move to mainland China. Central Intelligence Agency (CIA) World Factbook, *Macau*, May 16, 2006, at <http://www.cia.gov/cia/publications/factbook/geos/mc.html>.

<sup>331</sup> For instance, 40% of mainland China's total land area is affected by acid rain, 78% of China's river sections can no longer be used for drinking purposes, and 50% of urban groundwater is contaminated. Wu & Wang, *supra* note 65, at 199.

<sup>332</sup> Ehrlich, *Record Pollution Chokes SAR*, *supra* note 101.

<sup>333</sup> Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>334</sup> Wehner, *supra* note 144. Only 17% of respondents to a 2002 survey of Pearl River Delta residents had made a complaint about pollution to the

In addition to sending industrial development to the mainland, Taiwan also regularly ships nuclear and radioactive waste to China for disposal.<sup>335</sup> Significant trans-shipments of wastes are also imported into mainland China via Hong Kong and Macau. In increasing amounts every year, China imported a total of 25 million tons of wastes between 1990 and 1995, including oil residue, used plastics, waste copper, waste paper, and waste ropes and cables.<sup>336</sup>

Along with large factories, mainland China has also experienced a sprouting of small enterprises. The size and geographic decentralization of the small-scale township enterprises scattered across villages in mainland China, while playing an important role in the nation's rapid economic growth, have made the effective implementation and regulation of pollution control measures extremely difficult. Many of the rural enterprises may not even be aware that they are in violation of environmental laws.<sup>337</sup> Pollution in China is severe, and industries are rapidly draining natural resources such as farmland, water,<sup>338</sup> wood,<sup>339</sup> and energy.<sup>340</sup> It has been

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government, while 82% had never complained and 1% did not know they should complain to the government. For those who had never complained, most did not know how or where to lodge a complaint and some did not think that the situation would improve even if they did complain. For those that had made complaints, the major reasons relate to wanting to safeguard their personal lives, specifically feeling that pollution affects their health, their family's health, and their work. Civic Exchange, *Attitudes on the Environment: A Survey of Pearl River Delta Residents*, *supra* note 97.

<sup>335</sup> Chow, *supra* note 56, at 272.

<sup>336</sup> Wu & Wang, *supra* note 65, at 205. In 1993, China imported 890,000 tons of waste from Hong Kong and 40,000 tons from Macau, plus an additional 100,000 tons from Taiwan. *Id.* at 206.

<sup>337</sup> Pollution problems are particularly severe among raw materials, power and transportation industries. Chan Wai-fong, *Economic Growth Leaves a Dirty Trail*, S. CHINA MORNING POST, Nov. 29, 1994.

<sup>338</sup> Daniel Kwan, *NPC Calls for Action to Curb Urban Pollution*, S. CHINA MORNING POST, July 4, 1996.

<sup>339</sup> *China's Wood Demand May Hurt Indonesia Forests*, THE STAR (Malaysia), Nov. 29, 2004.

<sup>340</sup> Chan Siu-sin, *Power Crisis Prompts Tough Limits on Usage*, S. CHINA MORNING POST, July 28, 2004.

estimated that US\$300 billion would be required to control industrial pollution and clean up existing polluted sites in mainland China, an expenditure that the nation is not yet in a position to be able to afford to pay.<sup>341</sup> Even if it could pay the clean up costs, China may not necessarily be willing to make the expenditure because of its current emphasis on promoting economic growth.

## B. CONSUMER LIFESTYLE

In addition to industrial flight, Taiwan and Hong Kong are also exporting their consumer lifestyle to the mainland. In mainland China, it has become a status symbol of the newly wealthy to eat endangered species such as pangolin, one of Asia's top five illegally traded animals, the demand for which is skyrocketing despite its being listed as a protected species.<sup>342</sup> A researcher recounts an example: "It's a status symbol, not so much a delicacy; very recently I had a chance to talk to a very young gentleman, maybe 30 years old, educated, he said he ate a lot of pangolins, uncountable number of pangolins just because they are protected and they are wealthy and want to try it, they want to show that they have the money to eat illegal animals."<sup>343</sup> Although the Chinese government in 1989 enacted new wildlife protection laws prohibiting the hunting and trading of endangered animals, enforcement remains lax. "There is little effective control. Hunters told me they shoot anything they see."<sup>344</sup> China has neither the resources<sup>345</sup> nor the political will to mount a sustained enforcement effort, and police officers are all too

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<sup>341</sup> Chan, *supra* note 337. Similarly, China also lacks solid waste treatment capacity such as rubbish handling plants; consequently, a total of 6.49 billion tons of solid waste was stockpiled over 51,680 hectares of land, becoming a major source of pollution. Wu & Wang, *supra* note 65, at 199-200.

<sup>342</sup> In mainland China, where pangolins have for centuries been coveted as food, medicine and aphrodisiacs, the local Chinese pangolin species is virtually extinct so tens of thousands of pangolins are annually smuggled in from Southeast Asian countries such as Indonesia and Malaysia, usually via Hong Kong. Yu, *Pangolins in Peril*, *supra* note 162.

<sup>343</sup> *Id.*

<sup>344</sup> Sachs, *supra* note 23.

<sup>345</sup> Bloch, *supra* note 14, at 623.

often willing to accept bribes. “The coast is crawling with [illegal] trade [in endangered species]. Anything I wanted they could get and could get within a week. All I had to do was order.”<sup>346</sup> And many Chinese, desiring of higher incomes, are eager to supply consumers with whatever they will pay for, irrespective of the legal prohibitions.

Urbanization, capitalism, increasing average household incomes and a rising middle class are all leading to the emergence of individualism and the growth of a consumer ethic in mainland China.<sup>347</sup> For instance, a recent four-day trade fair, jointly organized by the Hong Kong Trade Development Council and the China Council for the Promotion of International Trade, aimed to boost Hong Kong products in mainland China markets by promoting the Hong Kong lifestyle to the mainland’s growing consumer class.<sup>348</sup> Trade officials are particularly targeting mainland China’s 20 to 30-year old professionals, with whom the Hong Kong consumer culture is most popular. Recent market studies in mainland China show annual consumer spending in major cities like Beijing and Shanghai growing at more than 9% per year, with clothing sales in department stores jumping 20% in 2001 alone.<sup>349</sup> Such trends can translate into additional environmental problems. In response to China’s recent severe power crisis brought about by coal, oil and electricity shortages resulting from demand greatly outstripping supply, China’s Premier Wen Jiabao stated that China “must promote conservation, not consumption, and that must remain a policy for the whole country for generations to come.”<sup>350</sup>

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<sup>346</sup> Sachs, *supra* note 23.

<sup>347</sup> Dusty Clayton, *Low Incomes Leave Little to Spare*, S. CHINA MORNING POST, Oct. 2, 1995; Allen T. Cheng & Jane Cai, *US\$1,000 Milestone Signals Rise of the Consumer Class*, S. CHINA MORNING POST, Jan. 21, 2004.

<sup>348</sup> Ray Cheung, *HK’s Fashions are Pitched to Beijing*, S. CHINA MORNING POST, Mar. 25, 2003.

<sup>349</sup> *Id.*

<sup>350</sup> Chan, *supra* note 341.

## V. CONCLUSION

There are some promising signs of increasing environmental awareness and conservation action in Taiwan and Hong Kong. Along with Taiwan's and Hong Kong's economic revolutions, and corresponding rises in income levels and living standards, came social transformations and increased power to the people. These changes, as well as high educational attainment, have heightened the public's recognition of environmental degradation. Consequently, environmentalism has blossomed, and the concept of sustainable development was adopted. "Hong Kongers, who had been notoriously neglectful of environmental quality in their 'borrowed place on borrowed time,' have dramatically changed their views. Once jobs and housing were seen as far more important than environmental issues. Today, a better environment is seen as foundational to a better economy, particularly by younger, more educated age groups....Environmentalism has arrived in post-colonial Hong Kong. The SAR [Special Administrative Region of the People's Republic of China] is home, not waystation."<sup>351</sup> Greater public activism and government response regarding environmental issues such as open space preservation, wildlife protection, and waste reduction has contributed to better quality of life for residents. "The island has become an economic success. It can become an environmental success as well – if business and government decide they want a clean Taiwan."<sup>352</sup>

Today in Taiwan and Hong Kong there is an adherence to the concept of sustainable development, with economic health being seen as intimately linked to environmental health. This has involved a significant shift in thinking away from the old Taiwan or Hong Kong mindset that regarded economic activity as independent of environmental protection<sup>353</sup> to one that sees the economy and environment as intertwined, bound to share the same fate.<sup>354</sup> Such a mindset shift, critical for achieving sustainable development, is finally beginning to occur in Taiwan and Hong Kong. The presiding judge in

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<sup>351</sup> Civic Exchange, *Taking Charge and Cleaning Up*, *supra* note 4.

<sup>352</sup> Moore, *supra* note 117.

<sup>353</sup> Ng, *supra* note 20.

<sup>354</sup> Ferris, *supra* note 3, at 187.

Hong Kong's Victoria Harbour litigation acknowledged the need for sustainable development: "[T]he issue of reclamation has to be approached with sensitivity. A different approach is also called for with the advent of the concept of sustainable development which requires decision-makers to look to the future when contemplating and planning for development....The concept enables the Court to hold a balance between environmental protection and development considerations."<sup>355</sup> In similar fashion, the presiding judge in the Sha Lo Tung litigation summarized Hong Kong's emerging sustainability sentiment: "Inevitably, with the growth of the population, nature has to give way to meet the demand for land to build new towns and other infrastructures. However, it is essential to maintain an ecological balance between development and conservation. After all, mankind is only a part, and a very small part indeed, of nature."<sup>356</sup>

The shift towards sustainability is a welcome one as the old mindset had not only resulted in severe environmental degradation, but had also set the stage for future negative economic consequences. In a recent survey of international business people, India's pollution was ranked worst in Asia, followed by mainland China's, and third by Hong Kong's.<sup>357</sup> Such perceptions can have financial impacts. For instance, an international business conference set to take place in Hong Kong in 2001 was cancelled due to poor air quality resulting from high pollution levels.<sup>358</sup> Environmental problems, particularly those relating to air and water pollution, have been cited as one of the impediments to Hong Kong's development as a great cosmopolitan city.<sup>359</sup> Estimations of air pollution's social and health costs to Hong

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<sup>355</sup> *Society for Protection of the Harbour Ltd. v. Town Planning Bd.*, *supra* note 27, at 49-50.

<sup>356</sup> *Sha Lo Tung Dev. Co. Ltd. v. Chief Executive in Council*, *supra* note 139, at 2.

<sup>357</sup> Kainz, *supra* note 185.

<sup>358</sup> May Sin-Mi Hon, *Air Pollution Drives Away Conference*, S. CHINA MORNING POST, Apr. 10, 2000.

<sup>359</sup> Yi-zheng Joseph Lian, *Competitiveness in Style and Substance: Hong Kong vs. Singapore?*, Hong Kong Update, Center for Strategic and International Studies (CSIS); *see generally* Center for Strategic and International Studies, *supra* note 20.

Kong run into hundreds of millions of dollars.<sup>360</sup> The government and residents have reached the point of being exceedingly worried about the impact of pollution on every aspect of the economy, including tourism. Opines the Hong Kong Tourist Association spokesperson: "Obviously it is our concern that Hong Kong is getting the reputation of having pollution."<sup>361</sup>

The old mindset also has inhibited economic growth. An estimated 30% of Taiwan's rice growing land is contaminated with heavy metals,<sup>362</sup> and 12.5% of all arable land has high concentrations of heavy metals.<sup>363</sup> Such land contamination is directly affecting Taiwan's economic potential.<sup>364</sup> For instance, some developers have found that they cannot build on the sites of old factories because they are too polluted. Taiwan's EPA estimates that cleaning up illegal waste sites could cost \$10 billion, with the actual expense presumably being much higher.<sup>365</sup> Similarly, water pollution is affecting Hong Kong's economy. Beaches are regularly closed due to poor water quality.<sup>366</sup> Red tide blooms have served as a warning that the levels of pollutants in Hong Kong's harbors were exceeding the waters' capacity to absorb them. As a result of toxic red tides, Hong Kong fish farmers lost stocks worth more than \$70 million in April 1998

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<sup>360</sup> Gerry Ball, *Hong Kong's Air, Beach Pollution is Worsening*, S. CHINA MORNING POST, Sept. 2, 2004.

<sup>361</sup> Hon, *supra* note 358.

<sup>362</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>363</sup> Feeley, *supra* note 53, at 915.

<sup>364</sup> Moore, *supra* note 117.

<sup>365</sup> *Id.*

<sup>366</sup> Furlong, *supra* note 84; Ehrlich, *Our Sandy Rubbish Dumps*, *supra* note 84.

(approximately half the sector's annual value),<sup>367</sup> bankrupting some fish farmers.<sup>368</sup>

Taiwan and Hong Kong, however, are each lucky enough to have a well-educated populace with an emerging sense of the virtues of environmental protection as well as a democratic government with ready access to technology and funds that enable it to address its environmental problems. And the indications of an increased emphasis on environmental protection by the two governments are promising. Taiwan's 1987 comprehensive environmental policy plan entitled 'Guidelines for Environmental Policy at the Current Stage' states: "Based upon the long-term interests of the nation, equal effort and care shall be given to both environmental protection and economic development. If there is a severe negative impact on the environment in the course of economic development, priority consideration shall be given to environmental protection."<sup>369</sup> This indicates an increased emphasis on environmental protection by Taiwan's government. In a similar vein, Article 119 of Hong Kong's Basic Law states: "The Government of the Hong Kong SAR shall formulate appropriate policies to promote and co-ordinate the development of various trades such as manufacturing, commerce, tourism, real estate, transport, public utilities, services, agriculture, and fisheries, and pay regard to the protection of the environment."<sup>370</sup> Thus, sustainable development is now finally taking front stage.

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<sup>367</sup> Felix Lo, *Fish Farms on Alert Over Rising Red Tide*, S. CHINA MORNING POST, Sept. 9, 1998. Red tides are caused by toxic algal blooms that feed off of excess nutrients (such as from sewage) and absorb oxygen from the water, and can result in massive fish death. Cheng, *supra* note 84. In 2003, Hong Kong's fish farming sector produced seafood valued at \$121 million, representing 7.3% in value of the total fisheries production. *Id.*

<sup>368</sup> Evans, *supra* note 83.

<sup>369</sup> Taiwan Environmental Action Network, *supra* note 2.

<sup>370</sup> The Basic Law of the Hong Kong Special Administrative Region, art. 119. Furthermore, Hong Kong adopts the concept of sustainable development in its 1997 'Sustainable Development for the 21<sup>st</sup> Century Study' Final Report, which states: "Sustainable development in Hong Kong balances social, economic and environmental needs, both for present and future generations, simultaneously achieving a vibrant economy, social progress and better environmental quality, locally, nationally and internationally, through the efforts of the community and the government." Mottershead, *supra* note 12, at 822.