

**ENVIRONMENTAL POLICY AND
SUSTAINABLE DEVELOPMENT
IN CHINA**

Hong Kong in global context

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plans to expand the airport are exercising the courts and providing fodder for local politicians, and the outgoing chief executive is being pressed to explain, with some difficulty, his government's failure to implement more stringent air quality guidelines. Hong Kong is also a very complex place. Consequently, some readers may find that some of what follows has been overtaken by events. Nevertheless, the book provides a foundation for understanding those events and helping to put them in context—locally, nationally and indeed globally.

The primary audience for this book is undergraduate university students. I have two groups of these students in mind. First, the book can serve as a primary text in courses on environmental policy and sustainable development in Hong Kong and China. Such courses are essential, especially here in Hong Kong where far too little attention has been given at the university level to environmental and sustainability policy. Whereas environment and sustainability are essential (albeit too small) parts of primary and second curricula here, they are not mandatory at most universities. This will have to change if Hong Kong and China more generally are to achieve environmentally sustainable development. Second, the book can serve as a primary or supplemental text for courses on environmental policy, sustainable development, urban sustainability, Asian and China studies, Hong Kong politics and related subjects. The book is also intended for advanced secondary students, particularly those in liberal studies and associated areas. I also hope and expect that the book will be of interest to more general readers who are concerned about environment and sustainability, especially in China and Hong Kong. In many respects, the future of the global environment will depend on the extent to which sustainability is embraced here.

Readers are strongly encouraged to explore other books and materials listed in the references at the end of the book—and indeed to seek out other materials, including those published after this book, to develop a more complete picture of events and their causes. To help readers, particularly students and teachers, get to grips with the issues raised by this book, and more specifically to help a little bit in fostering additional thinking about them, each chapter is followed by a short appendix listing some of the chapter's main objectives, key points and important terms, as well as several discussion questions and additional resources.

In an effort to do a tiny bit more to promote environmental protection and support sustainable development in Hong Kong, and as an expression of my own and my colleagues' appreciation of the important work of local nongovernmental organisations toward this end, all of the royalties from this book will be paid by the publisher directly to WWF (Hong Kong) and Friends of the Earth (Hong Kong).

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Introduction

Since the 1980s, 'sustainable development' has become a watchword for governments, international organisations and businesses. Indeed, the concept has become so widespread as to constitute a 'norm'—albeit one often honoured in the breach—that governments are expected to follow as they work toward enhancing the economic wellbeing of their citizens. At its core, sustainable development is about improving human welfare in ways that do not harm the environment, or more realistically it is about promoting economic development while using natural resources sustainably and minimising harm to ecological systems. Sustainable development was most famously defined in 1987 by the World Commission on Environment and Development, also known as the Brundtland Commission after its chairperson, former Norwegian Prime Minister Gro Harlem Brundtland, as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, 43). According to the Brundtland Commission, sustainable development is premised upon two key ideas: "the concept of 'needs,' in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future goals" (WCED 1987, 43). Sustainable development encompasses questions of human welfare and justice (domestic and international), economic development and environmental health. It cannot be achieved without all of these questions being addressed. In short, according to its advocates, for sustainable development to be realised, economic activity must be managed so as to advance environmental protection and social welfare.

While the idea of sustainable development has spread around the world, the extent to which it has been achieved has varied greatly. Perhaps nowhere is the challenge to its implementation greater than in Asia, where expanding populations and growing economies are putting unprecedented stress on the environment. Asian countries are only now experiencing the levels of economic growth and development witnessed long ago in the world's wealthy countries. The difference is that there are far more people in Asia enjoying the fruits of modernisation than there were at similar stages of development in the West, meaning that the environment is now being depleted and polluted on a scale never experienced in human history. The most visible example of this simultaneous growth and environmental harm can be seen in China, where millions of people are joining the global middle class and adding to local, regional and global environmental burdens. A case in point is Hong Kong, a former British colony that came under Chinese sovereignty in 1997 and which overnight became China's wealthiest

and most modern city—and which the Hong Kong government and its tourist officials refer to as ‘Asia’s world city’. As the former colony of a developed country, Hong Kong has the unique attribute of having enjoyed the fruits of Western development in the past, and some of the benefits of China’s economic rise in the present. It provides a window into the potential for sustainable development in the developing world: if Hong Kong, with its all its wealth and historical advantages, cannot achieve sustainable development, it is hard to have much hope for poorer cities, regions and countries that are only now emerging from histories of economic poverty.

With this in mind, this book uses Hong Kong as a case study for exploring the extent to which the idea of sustainable development can be realised, particularly in China but also in other parts of the developing world. It identifies both barriers to achieving sustainable development and potential resources that might help to carry a sustainability agenda forward in the future. It examines different explanations for why environmental issues come to prominence and why the government and other actors might adopt policies promoting environmentally, socially and economically sustainable development.

Alas, Hong Kong’s people have become all too aware of the city’s environmental shortfalls. This is dramatically demonstrated in the city’s heavily polluted air, revealing the extent to which human activities are harming the environment as well as people’s health, and arguably undermining the local economy as multinational businesses increasingly point to air pollution as a possible reason not to locate their offices in the city. Even this most obvious of environmental problems is not something the Hong Kong government has had much success in tackling. While many factors militate against concerted action against air pollution, as with other challenges to sustainable development, the enormous influence that business interests have over the Hong Kong government makes implementation of policies that bring economic decision making into alignment with environmental and social priorities extremely difficult. While Hong Kong’s poor air quality is probably its most discussed environmental challenges (see Chapter Nine), the local environment has been despoiled in many other ways. Hong Kong’s waterways and coasts are heavily polluted and severely overfished. Hong Kong retains a significant level of biodiversity, but its remaining agricultural land and some of its country parks are damaged by illegal development, rubbish dumps and water pollution (see Chapter Thirteen). Hong Kong’s highly consumerist culture has resulted in the achievement of an unenviable record: Hong Kong now produces the world’s largest amount of household rubbish per capita and ranks very low internationally for its level of waste recycling (Cheung 2010a, 1; see Chapter Eight). Hong Kong also adds to global environmental problems. When its contribution to global warming is assessed on the basis of per capita consumption, Hong Kong emerges as one of the world’s greatest polluters (Hertwich and Peters 2009; see Chapter Eleven).

In addition to these environmental problems, Hong Kong faces many social challenges. Over the last half century its economic growth has been astonishing,

and it has been transformed into a first-world economy. However, this new wealth has not been widely shared; Hong Kong has one of the world’s highest levels of income inequality (UNDP 2009, 195; see Chapter Seven). Taken together, these realities mean that realising sustainable development is an ecological, economic and social challenge for the Hong Kong government and the local community. Nevertheless, despite the many challenges it faces, Hong Kong society has many resources that support sustainability. Measures of ‘human development’ show that Hong Kong people, on average, enjoy good health, long life expectancy and good access to education and social services—notwithstanding the high level of inequality. In 2010, the United Nations Development Programme ranked Hong Kong twenty-first among 169 nations/territories in terms of human development (UNDP, 2010; see Chapter Four).

Linking economic, social and environmental sustainability

Although there is much debate about the concept of sustainable development, and even though the Brundtland Commission’s definition—“development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 43)—contains ambiguities, we can use the Brundtland definition as the reference point throughout this book. The Brundtland Commission was faced with the challenge of balancing the need to address environmental problems against the goal of reducing global poverty. On one hand, economic development seemed necessary to lift communities in the developing world out of poverty. On the other hand, increasing numbers of people had come to suspect that continued economic growth was not consistent with the goal of environmental protection and respect for limits to the earth’s carrying capacity. The question was how to reconcile these conflicting motivations. The Brundtland Commission proposed an elegant compromise via the concept of sustainable development. In essence, the commission proposed that it is possible for economic development to support, rather than detract from, environmental stewardship. Sustainable development was thus an idea that could appeal both to advocates of economic development—even economic growth, from the commission’s perspective—and to environmentalists who believed that social and economic transformation was needed.

The resulting idea of sustainable development has been an enduring rhetorical success, finding its way into the lexicon of government agencies, businesses and civil society. However, while some critics acknowledge that sustainable development is an attractive slogan, they suggest that harmony between environmental protection and economic development is impossible to achieve, let alone harmony with economic growth, (see, for example, Shue 1995, 460). The challenge for governments, businesses and societies is to find ways to ensure that future economic development begins to address the many environmental and social challenges that societies face without undermining existing resources and strengths. This is true in Hong Kong, in China, and throughout the world.

Sustainable development is frequently described as a combination of economic, social and environmental sustainability: this is the Hong Kong government's perspective, at least in principle (see Planning Department 2001a). However, as we see below, these elements are not equal. Sustainable development involves at least two key departures from traditional approaches to development: First, there is a recognition that human development and economic activity proceed within an ecological context. Second, there is an assumption that development policy should not simply promote economic growth; it should also target human needs and social development. The concept of sustainable development therefore seeks to disconnect economic development from growth in resource utilisation, and also to disconnect human development from environmentally harmful economic growth. Growing scientific knowledge concerning environmental dangers, such as those posed by global warming, underscores that human economic activity is currently unsustainable on a global scale. If global pollution and the exploitation of resources do not change, we will jeopardise the earth's capacity to meet the needs of future generations—and very likely even the needs of many people living today. Thus, central to the idea of sustainable development is the understanding that protection of the global environment is an *essential precondition* for the sustainability of human development.

Put another way, sustainable development requires activities to be assessed on the basis of their total social, environmental and economic impact, rather than only on the basis of their economic value. While most people would agree that the purpose of economic development is the advancement of human welfare (although many people are also concerned about the welfare of nonhuman species), this commonsense wisdom is often lost during policy making. For example, the widely used technique of cost-benefit analysis assesses the economic costs and benefits of policy proposals without considering their social and environmental impacts. Environmental impact assessments, if done correctly, aim to remedy this imbalance by also assessing impacts on the environment. Even in Hong Kong, where sustainable development has been implemented much less comprehensively than in many other parts of the world, most major projects are now subject to environmental impact assessments—albeit with many very serious shortcomings in practice (see Chapter Four). Government officials in Hong Kong and elsewhere now routinely invoke the concept of sustainable development, but its actual impact on policies is always in doubt.

Much as in China and in many countries, in 1999 Hong Kong's former chief executive, Tung Chee Hwa, committed Hong Kong to the goal of sustainable development (Tung, 1999). Shortly thereafter, the concept was adopted as a central policy objective of the Hong Kong government (Planning Department, 2001b). However, these commitments have not been fully matched by action. Some progress has been made, to be sure. For example, marine pollution has been addressed through investment in sewage treatment facilities (see Chapter Ten), reliance on coal for electricity generation has been reduced (see Chapter Eleven) and some enhancements to the environmental impact assessment mechanism have

been put in place—although in a landmark case in 2011, the Hong Kong courts indicted the government for failing to consider adequately the environmental impacts in the environmental impact assessments of some major projects (see Chapter Twelve). Generally speaking, however, there is little sign of the Hong Kong government effectively implementing a truly comprehensive sustainable development agenda. Much as in other places around the world, sustainable development is a benchmark that is not always achieved.

Given that Hong Kong is one of the wealthiest communities in the world, an important question is why it has been unable to fulfil the ambition of sustainable development that has percolated around the globe for a quarter century or more. Is the hesitation to develop in ways that are genuinely environmentally sustainable and more sensitive to human welfare a function of economics, politics, history, geography or some other factors? What does the answer tell us about whether and how sustainable development can be implemented in the rest of China, and indeed farther afield, especially throughout the developing world?

Outline of the book

To a significant extent, the concept of sustainable development has become internationalised: all governments claim to promote environmentally sustainable development. This book looks at the extent to which this aspiration for sustainable development has been and can be realised in practice. This is accomplished through a case study of sustainability in the context of one of the world's most important city-regions: Hong Kong. There are few places where the conflict between environment and development is more acute than in China and few places where developed-world affluence and developing-world environmental conditions coexist in such close proximity. China was the first country formally to implement (at least on paper) Agenda 21, the United Nations-endorsed blueprint for local implementation of the sustainable development that was agreed at the 1992 Earth Summit in Rio de Janeiro. In Hong Kong, statute books and administrative processes frequently include measures that mirror the sustainability assessment tools and environmental quality indicators that are widely utilised elsewhere. However, as suggested above, these policy instruments have often failed to do enough to improve environmental outcomes. As in many of other places, weak standards and ineffective compliance mechanisms in Hong Kong, and grossly inadequate enforcement in other parts of China, have frequently blunted the impact of apparently robust sustainability policies.

The chapters that follow identify both barriers to achieving sustainable development and potential resources that might help to carry a sustainability agenda forward in the future. It looks at different explanations for some environmental issues coming to prominence and why government agencies and other actors might adopt policies promoting environmentally sustainable development. Among the factors considered are the influence of history and geography, public attitudes and the role of civil society organisations, increasing affluence amid growing

disparities in wealth, political institutions and entrenched business interests, and global affairs, including international environmental agreements. The book draws lessons from the Hong Kong experience that might be applied in other places, especially other 'world cities.' In so doing, it exposes many of the promises of sustainable development, and some of obstacles to its implementation.

The book is organised into three parts that explore: (1) the concept of sustainable development; (2) the Hong Kong context for sustainable development; and (3) specific environmental policy challenges faced in Hong Kong. To assist teachers and students who might be using the book in courses, assorted learning materials, including lists of objectives, key points, key terms, discussion questions and additional resources follow each chapter. These materials are designed to aid readers in thinking about the issues raised in each chapter, and indeed to help them start moving beyond what is here. The remainder of this chapter summarises the major issues to be explored throughout the book.

Conceptions of sustainable development

Part One (Chapters Two–Four) expands on the concept of sustainable development, discusses its historical context and highlights some of the strategies used to implement it. The importance of sustainable development is further examined in Chapter Two. As suggested above, the concept of sustainable development has been influential in policy debates since at least the 1980s. What *sustainable development* brought to older notions of development was a recognition that economic and human development occurs within an environmental context. The key is to bring environmental, social and economic goals into general harmony. Practical policies for actualising this idea of sustainable development differ among countries, and indeed even within them. In the least-developed countries, strategies for sustainable development should presumably aim for a progressive improvement in human wellbeing through economic development, traditionally assumed to mean economic growth, which benefits the poor. In affluent countries, sustainable development is thought to be less dependent on economic growth. Thus sustainability policies there should presumably focus on environmental conservation and the reduction of environmentally harmful forms of consumption.

The relation between economic growth and environmental protection is highly contested. Much of the debate on these issues has been focused on whether the environmental degradation that comes from economic growth will start to decrease once an economy reaches a certain level of development. This pattern has been observed in some countries and with some forms of pollution. However, when looking at aggregate environmental impact, the improved ecological efficiency of wealthy communities does not compensate for their increasing pollution from growing consumption rates. Indeed, much of environmental impact of consumption by wealthy countries is manifested in poor countries as polluting industries move from the former to the latter. Thus the notion of

sustainable development raises a number of fundamental questions about our common future, especially when we consider the industrial rise of countries such as China and India and the resulting massive environmental destruction. Promoting sustainable development in Hong Kong may be of particular importance given the historical role that Hong Kong has played in bringing new ideas to China. If Hong Kong were to adopt cutting-edge policies and technologies to achieve sustainability, it could lead the way for the rest of China. In so doing it could also provide lessons for implementing sustainable development in other cities and regions. Paradoxically, however, other parts of China are often ahead of Hong Kong with respect to sustainability, meaning that Hong Kong may have as much to learn from China as China has to learn from Hong Kong.

Chapter Three describes the origins of sustainable development and explore some of the critiques of the concept. While the concept of sustainable development is often dated to the Brundtland Commission's 1987 report, *Our common future* (WCED 1987), it is actually a response to older debates. For example, in the late eighteenth century Thomas Malthus warned that unchecked population growth would eventually threaten human survival. Much more recently, fears of overpopulation and unsustainable consumption patterns escalated in the 1960s, resulting in a number of books that criticised modern industrial society. The subsequent 'limits to growth' debate questioned whether Western levels of prosperity could ever become universal without depleting the earth's resources. Scientists predicted that developmental trends would lead to serious and irreversible degradation of ecosystems and natural resources. Unsurprisingly, many developing countries reacted with hostility to such claims. They argued that environmental concerns were less important than the goal of reducing poverty through economic development, and that poverty itself was a major cause of environmental problems because it pushes people to overuse local resources. *Our common future* responded to these debates by tying together concern for the limited carrying capacity of the planet with the social challenges facing humanity. It suggested that developing countries needed to increase their economic activity in order to promote human development, whereas the rich countries needed to focus more on environmental protection and improving social equity.

In contrast, critics argued that economic growth and environmental protection are not complementary in the way that the Brundtland Commission's report suggested. They argued instead that 'de-growth', or at least a 'steady-state economy', is required to protect the natural environment. Others, especially some libertarian economists, have taken yet another view, arguing that further economic growth in the developed world is the best response to scarcity. These tensions have not been fully resolved, and they have resurfaced in recent years in relation to the growing threat of climate change. Meanwhile, economic globalisation has brought new challenges for sustainability because it has become increasingly possible for rich countries to externalise environmental costs. Additionally, on a scholarly level much debate has focused on the moral standing of the natural world, the potential for ecological modernisation and the substitutability of natural

and human capital, as expressed in the tension between 'weak' and 'strong' forms of sustainability.

Implementing sustainable development, the subject of Chapter Four, requires cooperation among a range of actors. In some cases this cooperation must constrain some of those actors from overusing a particular resource, while at other times mechanisms must be found to ensure that each member of a community makes a fair contribution toward a public good. Moreover, different policy responses may be appropriate in different communities and in response to different kinds of challenges. To simplify, there are three sets of ideas for the implementation of sustainable development: (1) that governments should adopt laws and regulations to ensure that people preserve environmental goods; (2) that environmental resources should be privatised so that markets will create incentives for their protection; and (3) that community management offers the most reliable path to sustainable management of environmental resources. Sustainable development also involves non-environmental factors; policy makers must simultaneously address the social, economic and environmental dimensions of meeting the needs of present and future generations.

In order to achieve this goal, new ways to measure, preserve and enhance human development and environmental resources have been developed. These include the use of a 'human development index', which measures levels of health, education and material wellbeing; the development of forms of accounting that recognise both natural and human capital (such as natural resource accounting and triple-bottom-line accounting); adoption of new decision-making rules, such as the precautionary principle (which requires that cost-effective measures to prevent environmental harm should be considered if such harm is anticipated, even if there is a lack of full scientific evidence to that effect) and the polluter-pays principle (which prescribes that polluters, often producers of harmful products, should be required to pay the costs of any damage caused by that pollution); and the development of new standards for governing labour and environmental conditions, often put in place and monitored by nongovernmental organisations (for example, the Forest Stewardship Council to monitor logging practices).

Contexts for sustainable development in China's world city

Part Two of the book (Chapters Five–Eight) examines the Hong Kong context for sustainable development, describing the territory's geography, history, governmental institutions and very high 'ecological footprint'. In many ways Hong Kong is unique, but in others some of its attributes and experiences overlap those of other places in both developed and developing countries. As such, it provides a fascinating case study of the prospects and challenges for sustainable development, especially in Asia. This is revealed in the description of Hong Kong's geography and population in Chapter Five. Physical and urban geography influence the prospects for sustainable development. For example, one quarter of Hong Kong territory is urbanised. Hills, lowlands and coastal geography contribute

to development patterns: urban development mostly takes place in lowlands and coastal areas, while hills and country parks remain relatively free from intensive development. However, over time these geographical features have been heavily modified, with ecosystems destroyed as mountains have been levelled and the sea 'reclaimed' in the name of economic progress. High-density development and the large number of high-rise buildings now make up a 'concrete jungle', although some urban green spaces and some parts of the urban waterfront offer residents occasional relief from city life.

Hong Kong's population density, at 6,500 persons per square kilometre, is high by international standards. What is more, the population is growing, with migration from Mainland China being the primary source of new residents. Hong Kong's population has become decentralised, with population rising the fastest in outlying 'new towns' built in former rural farming areas. The upshot is that Hong Kong's compact urban form is both an environmental blessing and a source of many ecological challenges. While density allows for efficient delivery of services, particularly in highly efficient public transport, it also contributes to problems, notably traffic congestion and roadside air pollution. Just like in other major cities, in Hong Kong climate change, landscapes, built environment and population changes influence environmental quality and sustainable development.

Chapter Six introduces and describes Hong Kong's social, economic and environmental history to help provide further context for understanding sustainable development in the territory. As with other localities, this context is often a key factor in encouraging policies that exacerbate pollution or restrain more environmentally sustainable development. One common narrative of Hong Kong suggests that its history began in the mid-nineteenth century with the British occupation, which turned a 'barren rock' into a thriving commercial entrepôt. However, pre-colonial Hong Kong was not just a barren rock when the British arrived; it was already an established and complex agricultural and fishing community. Its economic and social history began 6,000–7,000 years earlier, when the first settlers probably arrived by sea from somewhere around present-day Vietnam. The Hong Kong region became part of China after being conquered by Han Chinese during the Qin and Han Dynasties (221 BC–AD 220). It remained in Chinese hands until Hong Kong Island was occupied by Britain during the first Opium War of 1840–42. The 1860 Convention of Peking, which concluded the second Opium War, saw Britain secure the Kowloon Peninsula adjacent to Hong Kong Island. A second expansion of the British colony followed in 1898 with a 99-year lease of the so-called New Territories (territory north of Kowloon) and a number of outlying islands.

It was the expiry of the New Territories lease in 1997 that prompted the return or 'handover' of all of Hong Kong from Britain to China. The handover ended a century and a half of British colonial administration, which had been interrupted for only five years during Japan's occupation of the territory during World War II. Colonisation, Japanese occupation, the subsequent post-war immigration of millions of refugees fleeing Communist China, China's economic opening in the

late 1970s and the handover in 1997, alongside escalating pollution and rapid development, have all been key factors contributing to Hong Kong's current social, economic and environmental circumstances. They serve as the unavoidable foundation for potential sustainable development in the future.

Sustainable development is almost always a function, at least in part, of the type and quality of government. As described in Chapter Seven, one important consequence of Hong Kong's history is its form of government and the resulting policy institutions. Since the handover in 1997, Hong Kong's government has been based on its local 'constitution', the Basic Law. Negotiated between the British and the Chinese government before the handover, the Basic Law is premised on a 'one country, two systems' principle whereby Hong Kong is to remain a liberal capitalist society—that is, to retain its local form of government and economy—for 50 years, even though it has become part of Communist-ruled China. While Hong Kong enjoys extensive civil liberties, notably a nominally free press, it is not a true democracy. For example, it lacks universal suffrage. The territory's chief executive and senior civil servants must be approved by Beijing.

Furthermore, while half of the legislature is elected from geographical constituencies, the other half is controlled by special interest groups and corporations—the so-called 'functional constituencies'. Because the passage of laws requires approval of a majority of geographic *and* functional constituency legislators, passing laws to underpin environmental regulations is impossible without the support of at least some of the industries and interests likely to be regulated. The result is very weak regulation compared with many developed-world cities. This sets the backdrop for efforts to implement sustainable development in Hong Kong. The difficult challenge is that progress toward sustainable development requires policy makers to put broad community interests—a healthy environment, social justice and balanced economic policy—above narrow special interests. Undemocratic political institutions diminish the ability to do this.

Part Two of the book concludes with Chapter Eight, which examines Hong Kong's consumption and its environmental footprint. Consumption has a very important role in the social lives and identities of most Hong Kong people, much as in other developed societies. A consumerist culture is so pervasive in the city that most people do not stop to consider the environmental impact of their behaviours or to question whether material consumption makes for a satisfying life. Like most cities, but to an even greater degree, Hong Kong's ecological footprint is much larger than the global average and far exceeds the territory's biological carrying capacity. Vast amounts of energy, food, forestry products and consumer goods are imported from China and overseas to satisfy the appetites of Hong Kong consumers. A major consequence of this consumption is the generation of enormous amounts of waste, which has more than doubled over the last two decades. On a per capita basis, Hong Kong's waste is more than twice that of Japan and South Korea.

The explanation for this high-consumption lifestyle may be found partly in Hong Kong's cultural understandings of the relationship between humanity and

nature: the anthropocentric orientation of Confucian traditions, which place human welfare above that of the environment, may contribute to contemporary environmental problems. Sociological theory suggests that as communities get richer they tend to experience a shift away from materialist values toward 'post-material' concerns, such as quality of life and interest in environmental protection. However, despite years of economic and physical stability, it is questionable whether Hong Kong has witnessed such a shift to post-materialist values. Consumer culture is such a fundamental part of contemporary life that it is hard to imagine that it could change without stronger regulation by the government. If sustainability is to be achieved, it will be necessary to challenge the values and economic model that sustain the prevailing consumerist paradigm.

Challenges of sustainable development

Part Three (Chapters Nine–Thirteen) looks at a series of specific environment-related policy areas, including air, water, energy, climate change, transportation and environmental space. Perhaps no other environmental problem signifies the challenge of implementing sustainable development in Hong Kong more than that of air pollution, which is the subject of Chapter Nine. Hong Kong's high levels of air pollution harm human health and lower the quality of life of every person who is exposed to it—meaning every person living in the territory. During recent years levels of respirable (breathable) suspended particles, which reduce lung function and increase the risk of suffering from asthma and cardiovascular illnesses, measured at Hong Kong's roadsides have been so high that, on most days, air pollution exceeds World Health Organisation standards, and even the Hong Kong government, which tends to downplay the problem, admits that outdoor exercise involves health risks. Hong Kong's air pollution problem is something of a puzzle for observers of sustainable development around the world. Air quality is generally much better in the cities of affluent countries and regions compared to cities in poor countries. As their economies have grown richer, most governments have responded to public demands to address air pollution. Hong Kong is an exception, with air quality remaining persistently low. Although average incomes are high, in 2010 Hong Kong people expressed the highest level of dissatisfaction with air quality anywhere in the world (Duce 2010). Part of this puzzle can be explained by the fact that 60–70% of Hong Kong's overall ambient air pollution (although not its roadside air pollution) originates in Mainland China, so the local government has relatively little control over it. However, *local* shipping and road transportation are together the dominant source of Hong Kong's air pollution on one day in every three. Urban density and limited airflow among congested buildings—the 'street canyon effect'—means that pollution disperses slowly. This suggests that the intense roadside pollution affecting people the most is in large part a consequence of poor urban planning. And, like roadside pollution, ship pollution is emitted quite close to population centres, making its impact on

public health proportionately greater than pollution generated by, for instance, local power stations.

Chapter Ten looks at water supply, water pollution and marine resources in Hong Kong. Hong Kong is faced with a variety of water resource issues. Per capita daily water consumption is higher than in other cities with similar living standards. Most of Hong Kong's domestic water comes from neighbouring Guangdong Province. Dependency on non-local sources and the potential adverse impacts from climate change on water availability bring the long-term sustainability of water supply into question. In addition, Hong Kong's wetlands and marine environment are in jeopardy due to increasing urbanisation. Sewage pollution of the sea remains a problem, despite large and very costly treatment projects. The marine environment is threatened by coastline modifications, and shorelines are heavily modified by reclamation (filling in the sea with earth and rubble) to supply extra land for development. Reclamation work also affects the marine biodiversity of Hong Kong through habitat destruction. Marine biodiversity has been further severely damaged by overfishing and a nearly complete lack of historical regulation of local fisheries. Meanwhile, Hong Kong is one of the world's major seafood consumers and importers. The price people pay for the exploitation of fresh water and the marine environment is much lower than the value of these natural assets to society, suggesting that increasing the cost of water and fish may be one avenue for implementing more sustainable development in this issue area.

Chapter Eleven focuses on energy and climate change. Historically, the energy policy of Hong Kong has been directed at providing reliable access to low-cost power to promote and ensure economic competitiveness. Today, as the social and environmental costs of energy production are becoming more apparent, and as the problem of climate change becomes a more pressing issue, a rethink of energy policy is underway. This is important because Hong Kong makes a disproportionate contribution to climate change both through local greenhouse gas emissions (primarily from electricity generation and combustion of fossil fuels for transportation) and through its population's consumption of imported products, whose manufacture causes pollution elsewhere. While Hong Kong is responsible for a tiny proportion of global greenhouse gas emissions, its per capita contribution to climate change from consumption is among the highest in the world. The future direction of climate change policy in Hong Kong is significant because the territory is one of the richest, most technologically sophisticated and commercially influential parts of China. This is especially important given that China is now the world's largest national source of greenhouse gas emissions, and its territory and people are among the most vulnerable to the effects of climate change. To mitigate climate change, there is a need to rethink current energy policies radically and to focus on both supply-side measures, such as increased use of renewable energy, and demand-side instruments, such as improving energy efficiency and reducing material consumption. If Hong Kong were to take a leading role in this transition, it could potentially be instrumental in the

transformation of China's energy systems. At present, however, the rest of China is ahead of Hong Kong in adopting renewable, less polluting forms of energy.

Transportation, the subject of Chapter Twelve, is an integral part of contemporary life. Yet, transport activities often have negative consequences for human health and the environment. As noted above, in Hong Kong roadside pollution threatens human health. Increasing vehicle numbers and weak fuel standards for the territory's large fleet of buses contribute to harmful emissions. Franchised bus operations are subsidised through an exemption from fuel tax, and bus companies do not pay for road building or maintenance. This puts more environmentally friendly modes of transport, such as rail, at a comparative disadvantage. Despite these problems, the transportation situation in Hong Kong is far better than in many other places thanks to the very high level of patronage of public transport. The city's rail system is a comparatively sustainable transportation mode because of the efficiencies achieved through mass transit (carrying a large number of passengers at the same time) and zero local emissions (emissions are generated at electricity power plants rather than in built-up urban areas, thereby reducing the health impacts). However, construction of rail networks involves environmental tradeoffs. Other forms of transportation, such as aviation, shipping and cross-border road networks, maintain Hong Kong's connections with the rest of the world, yet they are also major contributors to greenhouse gas emissions and environmental degradation. Finding ways to keep people and freight moving, while preserving environmental quality, human health and social welfare, are among the key challenges of sustainable transportation development in Hong Kong and indeed other cities in China and elsewhere.

Chapter Thirteen looks at another sustainability challenge in Hong Kong: environmental spaces. Hong Kong contains some exceptionally dense urban environments, but often these have been poorly planned, resulting in conflicting land uses. Continuous development has meant that many homes suffer from sound and light pollution, and many people have limited access to green space. On the other hand, Hong Kong's extensive country park system is a valuable natural resource that contains significant biodiversity. While development is constantly encroaching on green spaces and threatening the habitat of many species, areas of natural beauty and biodiversity that have been protected by Hong Kong's generally rugged topography do remain. However, there are many environmental threats in Hong Kong's rural areas: incompatible activities that produce soil contamination, water pollution and land degradation; pressure on rural land from demands by indigenous inhabitants of the New Territories to construct houses; and the pressures of waste disposal (legal and illegal), not least the result of waste producers and haulers avoiding waste charges at official landfill sites. Moreover, the government's efforts to minimise rural land administration have often allowed various kinds of illegal development to go unpunished. Meanwhile, pressures from civil society for reform of urban planning rules, and rising public concern about conflicting development in rural areas have prompted some protection of vulnerable environmental spaces.

Conclusion

Hong Kong may provide some useful lessons for realising sustainable development throughout China and globally. To be sure, this Asian 'world city' is still far from achieving the goal of sustainability. What seems beyond doubt is that the global context is vital to what happens: the idea of sustainability, even as conceived in Hong Kong, is imported. It began elsewhere, and just as Hong Kong has long been a conduit for the trade of goods and services, it also trades in ideas from other parts of the world. Sustainability and related policies for environmental protection are no exception. However, this particular import is far from all-powerful. While there have been significant improvements in some areas, many aspects of Hong Kong's local environment are seriously degraded, and local consumption and waste production far exceed levels that can be considered sustainable. Yet, even though Hong Kong's progress toward sustainable development has been disappointing, the concept has still had a significant influence on policy making and debate. One question is, who can participate in that debate, and who has influence over environmental policies? As in other parts of China, in Hong Kong the public has a role even as its preferences are often overwhelmed by the priorities of government departments and special interests determined to promote economic growth at the expense of the environment.

Hong Kong can have a significant influence over China's development. Some aspects of Hong Kong's urban design—such as its density and heavily patronised train services—offer potentially positive models for sustainability. But Hong Kong would probably play a greater role in assisting China's society and economy to implement environmentally sustainable development if it were to do a better job of implementing it locally. For this reason, actualising sustainable development in Hong Kong would not just improve the environment and the health of Hong Kong's people; it would also align Hong Kong with a gathering global trend. The question is whether and how such opportunities might be grasped, and what this tells us about implementing sustainable development in other cities and regions in China and beyond.

Appendix: Thinking about sustainability

Chapter objectives

1. To describe the most common conception of 'sustainable development'.
2. To begin exploring the links between economic, social and environmental sustainability.
3. To begin identifying factors that can promote sustainability in Hong Kong.
4. To begin identifying obstacles to sustainability in Hong Kong.

Key points

1. The concept of sustainable development is commonly defined as development meeting the needs of present generations without undermining the ability of people in the future to meet their needs.
2. Hong Kong as a global megacity offers a fascinating context in which to study sustainable development, especially when considering it as a potential role model for China.
3. The case of Hong Kong illustrates both the possibilities (such as the ability to develop effective mass transit networks) and the problems (such as import dependence and high consumption levels) that dense urban environments create.
4. Sustainability is necessary for broader progress towards protecting the natural environment.

Key terms

- Sustainable development
- Economic sustainability
- Social sustainability
- Environmental sustainability

Discussion questions

1. What does 'sustainable development' mean to you? Can you see examples of it around you?
2. How are economic, social and environmental sustainability linked?
3. What barriers to sustainable development exist in cities such as Hong Kong? What are the potential resources for promoting it?
4. How might the global context matter for sustainable development in China generally and Hong Kong in particular?