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Density Our Strength: The Linear City in Practice

增强我们的优势：线性城市实践



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Abstract | 摘要

Hong Kong is unique as a linear city. More than 7 million people reside, mainly in high-rise buildings, in a series of highly dense coastal settlements. These are well served by a metro and other modes of public transport, contributing to a low car ownership rate. This synergy between density and the metro is essential to Hong Kong's urban sustainability. The limited extent of this dense city helps preserve the natural landscape. In turn, easy access to exceptional country parks renders high density more liveable. But the city faces challenges as it continues to grow. Car ownership has risen at an alarming rate and congestion is worsening. Air pollution continues to plague the city, contributing to thousands of premature deaths per year. Ill-conceived expansion plans threaten to undermine the natural environment.

Transit-oriented development, high density, and limited urban extent together form a sustainable urban model. Let's build on our strengths.

Keywords: Density, Transportation, Urban Design, Urban Planning, Urbanization

香港是一个独一无二的线性城市，居住人口超过700万，主要居住在高层建筑和一些高密度的沿海地区。这些地区有良好的地铁网络和其他公共交通网络，因此汽车保有率较低。密度与地铁之间的协同作用对香港城市的可持续性发展至关重要。此密集型城市有限的扩张幅度有助于保持自然景观。反过来，方便出入独特的郊野公园进一步提高了这座城市高密度的宜居性。但是，随着香港人口的不断增加，香港也面临各种挑战。汽车保有量以惊人的速度迅速增加，交通堵塞现象日益恶化。空气污染持续困扰着这座城市，导致每年有成千上万的人过早死亡。考虑不周的扩张计划带来威胁，破坏自然环境。

以公交为导向的开发、高密度和有限的城市幅度一起构成可持续性发展的城市模式。让我们增强我们的优势。

关键词：密度、交通、城市设计、城市规划、都市化

Introduction

Hong Kong is an internationally unique urban model based on the tripartite tenets of super-high density, transit-oriented development, and limited urban extent. This approach has proven to be a successful formula. Among developed economies, Hong Kong is ranked near the top for public transport modal share and at the bottom for transport fuel consumption and car ownership. Though the city is known internationally for its intense level of urbanisation, it also excels in the conservation of the natural environment.

Hong Kong suffers from a scarcity of land. At the same time, the population is projected to grow significantly and the Hong Kong government intends to supply 480,000 new flats over the next decade. How we grow is integral to ensuring the city's continuing liveability, sustainability, and competitiveness. A dense, transit-oriented model has served the city well to date – let's build on these strengths.

引言

香港以超高密度、公交导向开发和有限的城市幅度三大宗旨，成为国际上独一无二的城市模式。事实证明这是一种成功的发展模式。在发达国家中，香港在公交模式共享方面，排名接近榜首，而运输耗油量和汽车保有量保持最低水平。虽然香港的城市化密集程度闻名于世，但是香港在保护自然环境方面表现卓越。

香港土地资源匮乏。据预计，香港人口将大幅增加。香港政府计划在未来的10年内提供480,000套新公寓。我们如何增长是确保香港持续宜居性、可持续性发展和竞争力不可分割的组成部分。迄今为止，高密度、以公交为导向的模式非常有效——让我们进一步增强这些优势。

在全球范围内，我们以空前的速度向城市化迈进。而中国的城市化比世界上任何地方更加明显，大批人员以势如破竹之势迅速涌入城市。

Globally we edge toward unprecedented urbanisation, and nowhere is this more evident than China, which has seen a migration of people to cities at an immense scale and speed.

The Hong Kong model can serve as a template for sustainable 21st century urban growth in China and throughout the world – it is readily adaptable to a variety of contexts. It is a universally effective response to traffic congestion, infrastructure deficit, air pollution, lack of green space, and other issues that plague the sprawling city. This paper seeks to highlight the relevance of the Hong Kong model at a time of immense change and growth. Density, transit-oriented development, and limited urban extent are integral to the sustainability of any modern city.

The Hong Kong Urban Model

The formula works like this: high population density supports a variety of high-quality public transport options. At the same time, transit-oriented development further encourages transit use, helping reduce congestion and air pollution while improving convenience and liveability (Brown et al. 143). The limited physical spread of the city helps conserve Hong Kong's spectacular natural environment while the linear form of the city is naturally suited to the Mass Transit Railway (MTR) system, reducing reliance on road transport.

The synergy between these three factors is essential to Hong Kong's liveability and urban sustainability (Figure 1).

Emergence of the Linear City

Ironically, this successful urban model emerged as a result of the territory's topographical unsuitability for conventional city-building.

When the British occupied Hong Kong Island in the 19th century, urbanisation was not high on the agenda. The top priority was to establish a regional trading centre, near Canton, and a naval base. Lord Palmerston, the British foreign secretary, famously disparaged the acquisition as “a barren rock with nary a house on it [...] It will never be a mart for trade”.

The island comprised a range of mountains and hills that rose steeply from the sea. The terrain of Kowloon and the New Territories, which were acquired by the British in 1860 and 1898 respectively, looked much the same. From the beginning, reclamation was used to supply buildable land. By levelling hills and pushing the spoil into the sea, a narrow, linear coastal platform was created on the north shore of Hong Kong Island.

Though originally intended to serve as a mercantile “island station,” Hong Kong grew swiftly into a large city, surpassing 250,000 people at the turn of the 20th century. High-

香港城市模式可作为21世纪中国及至全世界城市可持续增长的典范—这种模式很容易适用各种不同的背景环境。对于解决交通拥挤、基础设施不足、空气污染、绿色空间缺乏以及困扰这座急剧扩张的城市的其他问题普遍有效。本文力图突出香港模式在巨大变化和急剧增长时期的相关性。高度密集、以公交为导向的开发、有限的城市幅度对任何现代化城市的可持续性发展是不可或缺的。

香港城市模式

香港城市模式的作用方式如下：高密度的人口推动各种一流的公共交通方案。而以公交为导向的发展促进公交使用，并有助于减少交通拥堵和空气污染，同时还能提高城市的便利性和宜居性（Brown et al. 143）。有限的城市扩张幅度有助于保护香港壮观的自然环境，而香港城城市的线性形状很自然地适合地铁（香港地铁）系统，从而减轻对公路交通的依赖性。

这三个因素之间的协同作用对香港城市的宜居性和城市的可持续性发展是至关重要的（图1）。

线性城市的出现

具有讽刺意味的是，这种成功的城市模式是因香港的地形环境不适合传统的城市建设而产生的。



Figure 1. Hong Kong people enjoy easy access to phenomenal natural landscapes by public transport. (Source: Thomas Brown (Creative Commons))
图1. 香港人通过乘坐公共交通工具，很容易接近并享受迷人的自然景观。（来源：Thomas Brown (Creative Commons)）

risers had yet to proliferate, but the city was still extraordinarily dense as migrant families packed into the shophouses that formed the bulk of Victoria City.

The Hong Kong Tramway, snaking its way from Kennedy Town to Causeway Bay, began operating in 1904. It was later extended to North Point and Shau Kei Wan. Owing to the dense, linear nature of the narrow city, the single line of the tramway sat within walking distance of most of the population. In this way, Hong Kong has been a transit-oriented, linear urban model for more than a century.

Birth of the MTR

Hong Kong's population exploded following the Second World War and the 1949 Chinese revolution. Advances in high-rise building technology, motorised transport, and the construction of new water supply infrastructure north of Kowloon facilitated urban intensification and expansion. Buses first appeared in the 1920s. Double-deckers were introduced in Kowloon in 1949 and became the backbone of the transport network there. Stately ferries carried people and goods between the two halves of the city – Hong Kong Island and Kowloon.

The population jumped from 500,000 (1945) to 1.5 million (1950) and then to more than 3 million by the 1960s. In that decade the government made a concerted effort to open up areas for development. Tsuen Wan and Kwun Tong, the first new towns, were comprehensively planned at the western and eastern linear “wings” of the Kowloon peninsula, respectively. The birth of zoning, which promoted segregation of land uses, placed an increased burden on the transport network as people began to live farther from their workplaces. Meanwhile the bus fleet grew and the roads became saturated. Waiting times for buses could reach three hours. Public transport was the order of the day, used for 94 per cent of trips to work. But the road capacity could not cope with demand and the situation became critical.

Comprehensive transport planning began in the early 1960s and in 1965 the government commissioned a firm to design a mass transport system for the territory. Officials toured various European systems and became convinced that a high-capacity railway was the only solution that could satisfy Hong Kong's enormous appetite for transport. After much deliberation, construction of the Mass Transit Railway (MTR) system began.

19世纪，当英国占领香港岛时，城市化还未作为议事日程上的首要问题。首要的问题是建立一个靠近广州的地区性贸易中心和一个海军基地。当时英国外交大臣帕默斯顿爵士轻蔑地认为香港只是“一块不毛的石头[...]”。它将永远不会成为一个贸易中心”。

香港岛由一系列的山脉和丘陵组成。它们从海面陡峭地拔地而起。九龙和新界（英国分别于1860年和1898年获得）的地形看上去差不多。从一开始，政府通过填海的方式提供建设用地。通过平整山坡丘陵并将弃土推入海中，在香港岛的北岸建成了线性海滨平台。

虽然最初打算将香港建为一个商业性的“岛式站点”，但是香港迅速发展成为一个大都市。20世纪初，人口超过了250,000人。虽然高楼大厦尚未迅猛发展，但是，由于外来家庭挤入临街家庭商店，致使香港非常密集。当时，临街家庭商店是维多利亚市的主要组成部分。

香港电车，从坚尼地城一路蜿蜒到达铜锣湾，于1904年开始投入使用。后来经扩建延伸至北角和筲箕湾。由于香港地形狭窄、人口密集、线性特点，此单条电车线位于多数人的步行距离范围内。这样，香港以公交为导向的线性城市模式延续了一个多世纪。

香港地铁的诞生

在二战和1949年中国革命胜利之后，香港人口激增。高层建筑技术、电动交通的发展以及九龙以北新建的供水基础设施促进了城市密集化和城市扩张进程。20世纪20年代首次出现了公共汽车。双层巴士于1949年引入九龙并成为该地区交通运输的支柱。渡轮在香港的两半部分之间—即香港岛与九龙之间穿梭，运送人员和货物。

在1950年，人口从500,000（1945年）急剧增加到1,500,000。到了60年代增加到3,000,000以上。在那十年间，香港政府一致努力开辟新的发展区域。荃湾和观塘是香港政府分别在九龙半岛的东西线性“双翼”下全面规划的第一批新城镇。分区制的产生促进了土地使用的隔离效果。同时由于人们开始居住在离工作场所较远的地方，所以进一步增加了交通运输网络的负担。另一方，公交车队不断增加，道路越来越饱和。等公交的时间有时可能长达三小时。公共交通变得非常普遍。94%的上班族都搭乘公共交通上下班。但是道路的通行能力无法满足需求，因此形势变得更加严峻。

综合交通规划工作始于60年代初。1965年，香港政府委托一家公司设计香港的公

交系统。有关政府官员参观了各种不同的欧洲系统，确信大容量的地铁是解决香港对交通运输巨大需求的唯一解决方案。在深思熟虑之后，政府决定开始修建地下铁路（香港地铁）系统。

地铁系统的第一条线于1979–1980年开通，连接观塘至中环。通至荃湾的一条延伸线于1982年开通，而港岛线（与旧电车线在香港岛的北海岸平行）于1985年开始投入使用。九广铁路于80年代初改建为电气化的双轨铁路，成为沙田、大埔、上水、粉岭和马鞍山新城镇开发的催化剂。

于是，香港的多数工作场所和住宅区都靠近高频率、高容量和高效率的公交系统。在80年代末，香港地铁是世界上使用最密集的地铁，而现在仍然是交通运输网络的支柱。香港对铁路网络的依赖性提升了生活品质，同时使香港的汽车保有率和碳排放量几十年来一直保持在较低的水平。

在西方国家，以公交为导向的开发（TOD）通常是指任何一个有意围绕一个运输节点而修建的大规模的开发项目，例如一条轻轨或地铁站。香港在密集型开发方面有其独特性。交通运营商（香港地铁公司）常常自己承接开发项目，将所得利润回到系统中。这样，他们常常会在地铁基础设施上直接建造项目。这种情况在其他地方是看不到的。例如，在蓝田地铁站平台上，直接建造了8幢住宅大楼。每幢大楼28层。地铁站以上的空间也用于开发项目：例如，在何东楼站的屋顶，建造了28幢住宅楼，容纳将近20,000人，三个购物中心和一幢写字楼（图2）。

有限的城市幅度

严峻的地形始终限制着香港对城市扩张的敏感性。城市扩张问题几乎困扰着世界上的其他所有城市。城市扩张会导致环境恶化、对汽车的依赖性、空气污染和交通堵塞等问题。1965年，一份有关保护香港乡村自然资源的报告提交给了国际国家公园委员会。最终促使于1973年通过了郊野公园条例。现今，香港75%的地方仍保留着一些乡村风格，而40%的土地受法律保护不得开发。

虽然香港领土狭小，但是香港有多种多样迷人的自然景观。这令香港人感到非常自豪。郊野公园的广阔性和连通性为各种各样的野生动植物提供了宝贵的栖息地。另外，在这些郊野公园里有许多林间小径，便于香港市民在每个周末探险并远离喧嚣的城市生活。

大多数其他全球城市一直无法在互相矛盾的土地利用中实现持久的平衡。在世界城市中，香港居民通常通过公共交通就能够轻松地享受未受破坏的自然景观。这对于

The first leg of the system opened in 1979-80, linking Kwun Tong to Central. An extension to Tsuen Wan opened in 1982 while the Island Line, paralleling the old tramway on the north coast of Hong Kong Island, began service in 1985. The Kowloon-Canton Railway was double-tracked and electrified in the early 1980s and became the catalyst for new town development in Sha Tin, Tai Po, Sheung Shui, Fanling, and Ma On Shan.

With that, most Hong Kong workplaces and residences were in proximity to a high-frequency, high-capacity, and highly efficient mass transit system. By the end of the 1980s the MTR was the most intensively used railway in the world, and it remains the backbone of the transport network today. Hong Kong's reliance on the railway has elevated quality of life and helped keep the city's car ownership rate and carbon footprint low for decades.

In western countries, transit-oriented development (TOD) generally refers to any large-scale development consciously centred upon a transit node, such as a light rail or subway stop. Hong Kong is unique in the intense form of the development, and the fact that the transit operator (the MTR Corporation) often undertakes development itself, putting the profits back into the system. This often entails building directly on top of railway infrastructure to a degree not seen elsewhere. For instance, eight residential towers, each with 28 storeys, stand directly on top of the Lam Tin Station platform. The space above train depots is also used for development: the roof of the Ho Tung Lau Depot, for example, is home to 28 residential blocks housing nearly 20,000 people, three shopping centres, and an office building (Figure 2).

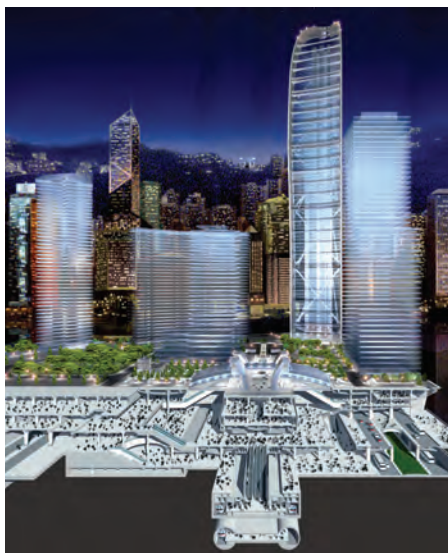


Figure 2. Kowloon Station exemplifies "rail plus property," the Hong Kong TOD model (Source: Farrells)
图2：九龙站是“轨道交通物业”，香港以公交为导向的开发模式的典范。（来源：Farrells）

Limited Urban Extent

Severe topography has always limited Hong Kong's susceptibility to the sort of urban sprawl that plagues nearly all other world cities, contributing to environmental degradation, automobile reliance, air pollution, and traffic congestion. In 1965 a report on the conservation of Hong Kong's countryside was prepared for the International Commission on National Parks. This eventually led to the 1973 passage of the Country Parks Ordinance. Today, 75 per cent of Hong Kong remains some form of countryside, with 40 per cent of land having statutory protection from development.

For a small territory, Hong Kong boasts a stunning diversity of landscapes. The breadth and connectivity of the country parks provides valuable habitat for a wide variety of flora and fauna and hosts a network of trails where Hong Kongers find adventure and escape each weekend.

Most other global cities have been unable to achieve a lasting balance among competing land uses. Among world cities, Hong Kong residents enjoy access to unspoiled natural landscapes with an ease that residents of sprawling London, New York City, or Tokyo could only dream of – often by public transport. This is an essential element of Hong Kong's competitiveness on the world stage. It renders the city's super-high density more liveable (Figure 3).

A Turning Point – at Home and Abroad

But Hong Kong's successful urban model faces increasing challenges, including worsening air

无计划向外扩展蔓延的伦敦、纽约或东京居民来说只能想象而无法实现。这是香港在世界舞台上具有竞争力的必不可少的要素之一。它使香港这座城市的超高密度具有更好的宜居性（图3）。

转折点——国内外

但是香港成功的城市模式面临着越来越多的挑战，其中包括日益恶化的空气污染、迅速增长的私家车保有率以及威胁破坏城市自然景观和成功的城乡平衡的城市扩张。

空气污染

在香港，空气污染日益严重。香港大学进行的一项研究显示在2012年，空气污染已导致3,069人过早死亡，151,300人住院，经济损失高达394亿港元（Lai 2013）。

有人认为空气污染来自于中国大陆的燃煤发电厂和工厂，因此香港对此无能为力。事实上，香港本土的污染源极大地加重了空气污染。大部分的污染来自机动车辆。2007年的一项研究显示香港本土的污染源在很多时候对香港的空气质量产生的影响远大于香港以外的污染源产生的影响（Lau et al. 2007）。

2002年，香港环境保护署和广东省环境保护局进行的一项研究显示香港本地交通是导致空气质量差的重大原因（Mirandilla 2012）。近年来，私家车保有量大幅增加，这令人担忧（图4）。

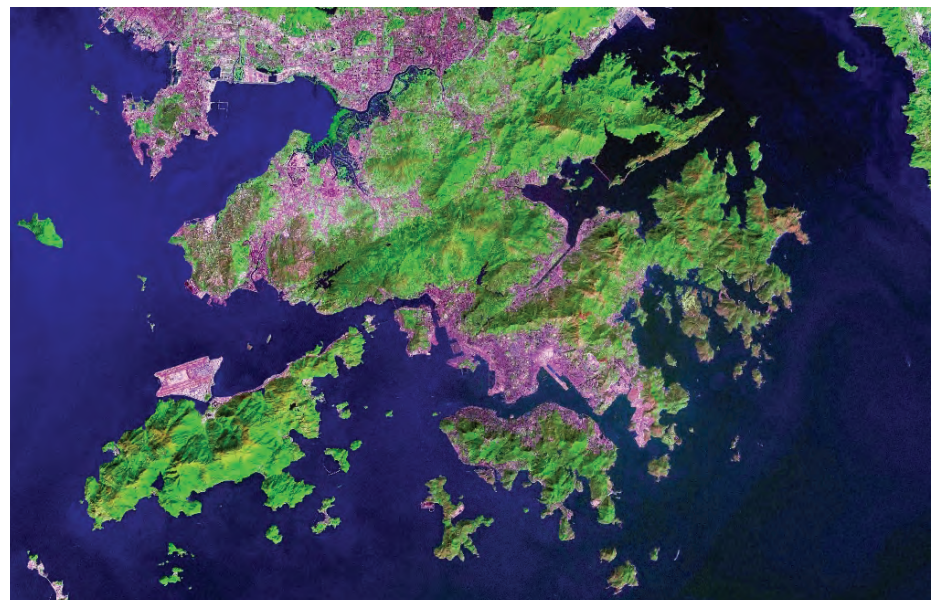


Figure 3. Hong Kong is 75% undeveloped. (Source: NASA (Public domain))
图3：香港75%的面积处于未开发状态。（来源：美国国家航空航天局（公共领域））

pollution, a burgeoning private car ownership rate, and urban sprawl that threatens to undermine the city's natural splendour and successful city-country balance.

Air Pollution

Air pollution is a worsening problem in Hong Kong. A study by the University of Hong Kong suggested that air pollution caused 3,069 premature deaths, 151,300 hospitalisations, and a monetary loss of HK\$39.4 billion in 2012 (Lai 2013).

There exists a perception that this pollution comes from coal-fired power plants and factories in mainland China, and hence that there is not much Hong Kong can do about it. In fact, local sources contribute significantly to air pollution, much of it produced by motor vehicles. A 2007 study suggested that local sources have a stronger bearing, most of the time, on Hong Kong's air quality than do polluters elsewhere in the region (Lau et al. 2007).

A 2002 study by Hong Kong's Environmental Protection Department and the Guangdong Province Environmental Protection Bureau found that local traffic is the biggest contributor to poor air quality (Mirandilla 2012). Worryingly, private car ownership has risen dramatically in recent years (Figure 4).

Private Car Ownership

Owing to its transit-oriented urban model, Hong Kong has one of the lowest car ownership rates among developed economies – less than a tenth that of the United States and half that of Singapore. Many visitors are surprised at the lack of serious traffic congestion. Public transport, heavily subsidised in most other cities, is a profitable venture in Hong Kong, reducing the burden on government coffers. But in a relatively wealthy economy it does not take much for people to adopt car use. If it is easy to drive, people will drive. Likewise, if public transport is not the most convenient and accessible option, people will be more inclined to buy automobiles.

Air pollution is not the only reason why car-oriented planning is inappropriate for Hong Kong. Cars are the least space-efficient form of urban transport, carrying few passengers relative to the amount of road space they occupy. In Hong Kong, buses occupy 20 to 25 per cent of road space but carry 71 per cent of road-based passengers. Meanwhile private cars



Figure 4. Air pollution increasingly threatens our health and quality of life. (Source: Farrells)
图4. 空气污染越来越严重地威胁着我们的健康和生活质量。(来源: Farrells)

私家车保有量

由于以公交为导向的城市模式，因此，在发达国家中，香港的汽车保有率是最低的—不到美国的十分之一，是新加坡的一半。许多国外游客惊奇地发现在香港看不到严重的交通堵塞情况。在其他大多数城市，政府对公共交通给予高额补贴，而在香港，公共交通是一项赢利性的事业，减轻了政府的财政负担。但是在一个相对富裕的经济体中，驾车不会花费人们太多的费用。如果开车容易的话，人们都会选择开车。同样，如果公共交通不是最方便最容易获得的选择方案，人们将更倾向于购买汽车。

以汽车为导向的交通规划不适合香港，而空气污染不是其中的唯一原因。汽车在城市交通中，空间利用效率最低，相对于它们占用的道路空间，汽车搭载的乘客很少。在香港，公共汽车占用20–25%的道路空间，但却承载71%的道路乘客。而私家车占用50%的道路空间，但只承载16%的道路乘客（2014年香港道路交通拥堵研究报告）。因此，私家车不成比例地导致交通拥堵。

另外，香港的道路通行能力和用于修建新公路的空间均有限，而以汽车为导向的基础设施不合理地占用密集的土地。上路的每台新车都会加剧空气污染和交通拥堵。在一个像香港这样密集的小城市，私家车在交通运输网络中不能发挥主要作用。

由于近年来香港政府投入了大量的资金扩建铁路网络，且香港绝大多数人口居住在香港地铁站的步行距离范围以内，所以私家车保有量的增加具有讽刺意义。当包括沙田至中环线、南港岛线和东九龙线在内的新地铁项目一旦完成，这将会扩大地铁的覆盖范围，几乎会将每位香港人覆盖在内。

香港在整个城市范围形成了以公交为导向的开发模式，为全世界树立了最好的榜样。可作为其他地区可持续性发展的典范。放弃这种模式是愚蠢的。精心规划的公共交通网络必须成为所有新城市开发工作不可或缺的一部分。

错误的努力

在寻找解决方案的过程中，一些针对香港空气质量差的指责将矛头直接指向了高楼大厦。因为高楼大厦很容易妨碍密集城市环境中的空气流通。对此，一些社会和政府人士呼吁降低密度，减少楼宇后移量、增加“绿化面积”并采取其他措施改善空气质量。

事实上，这些举措仅仅是治标而不治本，不能解决问题的根本原因（即污染源，包括汽车交通）。降低建筑密度和覆盖率的举措实际上间接地导致空气污染加剧，因为这会削弱公共交通的盈利能力，进而缩小模式的选择范围并降低质量，从而鼓励人们购买私家车。

同时，香港政府实施了许多措施鼓励人们使用电动汽车。截至2016年3月，香港有4,753台私家电动汽车，约占全部私家车数量的0.83%。但是采用电动汽车仍然没有改变在土地严重匮乏的地区，汽车对道路空间极低的利用效率这样一个基本事实。

密集纵向开发是可持续发展之路

城市规划者必须解决问题的根本原因并致力于通过开发适于步行的以公交为导向的城市环境，促进公共交通的使用率。密集型建筑不但可促使各种不同的优质公交服务的产生，而且还可以保护宝贵的乡村土地资源免于被开发。同时，政府当局必须

occupy 50 per cent of road space but carry only 16 per cent of road-based commuters (Report on Study of Road Traffic Congestion in Hong Kong 2014). Private cars thus disproportionately contribute to traffic congestion.

Furthermore, the city has finite road capacity and limited space on which to build new roads, while car-oriented infrastructure is unduly land-intensive. Each new car on the road worsens air pollution and traffic congestion. In a city as dense and small as Hong Kong, private cars simply cannot play a major role in the transport network.

The growth in private car ownership is ironic given that the government has invested heavily in railway network expansion in recent years, and the vast majority of the population lives within walking distance of an MTR station. When completed, new railway projects like the Sha Tin to Central Link, South Island Line, and East Kowloon Line will enlarge the railway catchment to encompass nearly everyone in the city.

Hong Kong is the world's best example of transit-oriented development at the scale of an entire city and can serve as a template for sustainable growth elsewhere. It would be foolish to abandon this model. Well-considered public transport must be integral to all new urban development.

Misguided Efforts

In the search for solutions, some of the blame for Hong Kong's poor air quality has fallen on tall buildings for their tendency to impede airflow in dense urban environments. In response, some in society and government have called for lower densities, building setbacks, increased "greening", and other measures to improve air quality.

In fact, such moves merely address the symptoms, not the root of the problem (i.e., the sources of pollution, including automotive traffic). Moves to decrease building densities and coverage could in fact indirectly worsen air pollution by diminishing the profitability of public transport leading to decreased modal choice, quality, and thereby encouraging the purchase of private cars.

At the same time the government has implemented numerous measures to encourage the use of electric cars. As of March 2016, there were 4,753 private electric cars in Hong Kong, or approximately 0.83 per cent of all private vehicles. But the adoption of electric vehicles still does not address

the fundamental fact that cars are a wildly inefficient use of road space in a territory with a critical shortage of land.

Dense, Vertical Development is the Sustainable Way Forward

Planners must address the root of the problem and aim to promote the use of public transport through the cultivation of walkable, transit-oriented urban environments. Building densely can foster a variety of high-quality public transport services and also spare valuable countryside from development. At the same time, authorities must act decisively to stem the unnecessary uptake of private cars and design the city around people and transport, not highway infrastructure.

Hong Kong is growing and the government intends to ensure a supply of 480,000 new flats within the next decade. But land is scarce. How the city grows – the form of this significant urban expansion – is integral to remaining "Asia's World City" and an attractive place to live.

High-density, transit-oriented development and environmental conservation have served the city well to date. The following case studies, from Farrells' portfolio, illustrate how the "Hong Kong model" may be tailored to a variety of contexts in Hong Kong and mainland China, with a view to demonstrating its applicability around the world.

A Greenfield Site – Kowloon Station

The construction of Hong Kong's new airport broke all records for scale, speed, and innovation. The largest stop along the new airport railway, Kowloon Station, was built on a vast area of reclaimed land in West Kowloon. It included a master plan for a high-density, three-dimensional transit-oriented urban quarter comprising one of the world's largest station air rights developments with a GFA of more than one million square feet. It included hotel, office, and residential towers; a shopping centre; cinemas; an elevated park; bus and taxi stations; and sports and community facilities; all centred on the railway station.

The scheme made provision for pedestrian links, at the first storey, with an unrealised vision called Kowloon Point for which Farrells also developed the master plan. This would have extended the land reclamation further south. Together, the two developments would have created a complete transit-oriented district knit together by an elevated walking network. In

果断地阻止不必要的私家车使用，围绕人和交通运输而不是高速公路基础设施进行城市设计。

香港的人口在不断增长。香港政府打算在未来十年内，确保提供 480,000套新公寓。但是土地仍然稀缺。城市如何发展这一重要的城市扩张形式是保留“亚洲世界都市”和最具吸引力的居住之地不可缺少的一部分。

高密度、以公交为导向的发展和环境保护使我们受益至今。下面这些由Farrells公司提供的案例分析阐明了如何定制“香港模式”以适应香港和中国大陆各种不同的环境，从而证明香港模式在世界各地的适用性。

新开发区 – 九龙站

香港新机场的建设在规模、速度和创新方面均打破了所有记录。作为新机场铁路沿线的最大站点，九龙站建于西九龙区一个广阔的填海土地上，包括一个高密度、三维公交导向的城市区总体规划方案，其中包括世界上最大的车站上盖开发项目之一，总建筑面积为100多万平方英尺，由酒店、写字楼和住宅楼、一个购物中心、多家电影院和一个高架公园、多个公交和出租车站以及运动和社区设施组成。这些均以地铁站为中心。

该设计方案在首层设计了与未实现的九龙角的步行通道。Farrells也制定了九龙角的总体规划方案。这将填海土地进一步向南扩展。这两个项目将打造一个完整的公交导向区，通过高架步行网络将它们连接起来。1997年，维多利亚港的填海问题越来越受到广泛关注，导致政府出台了进一步填海禁令，因此九龙角项目被迫取消。

九龙站是以公交为导向的开发(TOD)的最好典范，使九龙站成为在原本空旷的土地上建造高楼大厦的关注焦点。现在，九龙站开发项目是独立的，相对而言，与香港城市的其他地方分开而来。此高架步行网络是一个预先确定的参数。事实证明，一旦九龙角景观被取消，那么此高架步行网络是不可改变的。现在面临的挑战是将此城区与香港的其他地方融为一体。对人车分离的关注程度也在发生变化。当将行人从街道分流后，人们越来越认为修建高架步行网络是不适合的，因为这种方法倾向于通过减少引人注目的城市景观消除地平面，不鼓励人们步行。

这样，九龙站就产生了。九龙站仍是世界上最宏大的TOD项目。尽管九龙站与九龙其他地方分离，但是相关物业却一直很成功，将方便的香港地铁与中环以至更广阔

1997, when growing concern for the infilling of Victoria Harbour resulted in a ban on further reclamation, Kowloon Point was cancelled.

Kowloon Station exemplifies TOD to the extreme, making the station the focus for super high-rise development on an otherwise empty site. Today the Kowloon Station Development stands alone, relatively disconnected from the rest of the city. The elevated pedestrian network, a predetermined parameter, proved inflexible once the Kowloon Point vision was cancelled, and the challenge is now to integrate this urban quarter with the rest of the city. The preoccupation with segregating cars and people is also changing. Elevated walking networks are increasingly regarded as inappropriate when pedestrians are excluded from street level, as this approach tends to sterilise the ground plane and discourages walking by diminishing the legibility of the urban landscape.

In this way Kowloon Station was a product of its time. But it remains one of the world's most ambitious TODs and despite its physical isolation with the rest of Kowloon the associated property has been most successful given the convenient MTR connection to Central and beyond. The population of nearly 40,000 enjoys sustainable rail transport at their doorstep, helping to reduce car use (Figure 5 & 6).

Urban Renewal – KK100

At the forefront of China's economic rise, Shenzhen has developed at an unprecedented scale and pace. Rapid urban growth has left stranded previously rural villages in the centre

of a city where land supply is dwindling at a corresponding rate.

Occupying 3.6 hectares in a prime urban location, Caiwuwei village comprised a tight cluster of tall houses and tiny alleyways where sunlight and fresh air were restricted and inadequate services and access contributed to decline. A uniquely community-minded regeneration model was devised to overcome fragmentary ownership and enable redevelopment.

Kingkey Development formed a joint development company with villagers, whose homes were reprovisioned in the form of spacious new flats above a landscaped communal podium. In addition, the villagers received second flats for sale or rent ensuring significant financial return for the loss of their former dwellings.

The overall design relates to the urban context through careful consideration of massing and orientation of the podium and towers. Entrances respect surrounding street layouts and improve pedestrian linkage between the development, its surroundings, and the connected metro station. The mega tower addresses the city's vertical dimension with the public realm beginning with the lower level retail, through to commercial offices, and culminating in a hotel topped off with a vast glass-and-steel structure housing the hotel lobby, sky garden, restaurant and bar.

KK100 innovates on the Kowloon Station approach through a ground-based, contextual response to the surrounding mature urban neighbourhood. The redevelopment modal was an equitable means to undertake urban renewal in a transit-oriented, high-density

的范围连接起来。近40,000的人口在其家门口享受可持续发展的铁路运输网络（图5、6）。

城市更新——京基100

作为中国经济崛起的前沿阵地，深圳以前所未有的规模和速度发展。城市的快速发展使以前的农村在城市的中心陷于困境，而城市的土地供应以相应的速度在减少。

蔡屋围村位于主要城市区，占地面积 3.6 公顷，由密集的高层村屋群和小巷子组成，没有充足的阳光和新鲜空气。服务和出入通道不足导致经济衰退。人们设计了一种独特的社区复兴模型以消除零碎的土地所有权问题，实现再开发目的。

京基开发公司与村民成立了一家联合开发公司。将村民原先的房子改换成宽敞的新公寓，底层配有景观公共平台。另外，村民还分到第二套公寓，可出售或出租，确保他们因丢失了原先的住所，而获得可观的经济回报。

整体设计涉及到城市环境，认真考虑群楼和塔楼的规模和走向。入口与周围街道布局相协调并改进开发项目及其周边环境与相连地铁站之间的人行通道。从低层的零售区，到商业办公区，直到顶层的酒店，此超级塔楼彰显了城市的垂直高度和公共领域。在酒店的顶层，建造了宽大的玻璃-钢结构，遮盖住酒店大堂、空中花园、餐厅和酒吧。

通过基于地面的、对周边成熟的城市社区进行充分考虑，在九龙站方法的基础上，对KK100进行了创新。这一重新开发模式是一种公平方式，确保采用以公交为导向的高密度方式对城市进行更新以便提高连通性、可持续性和生活质量（图7）。

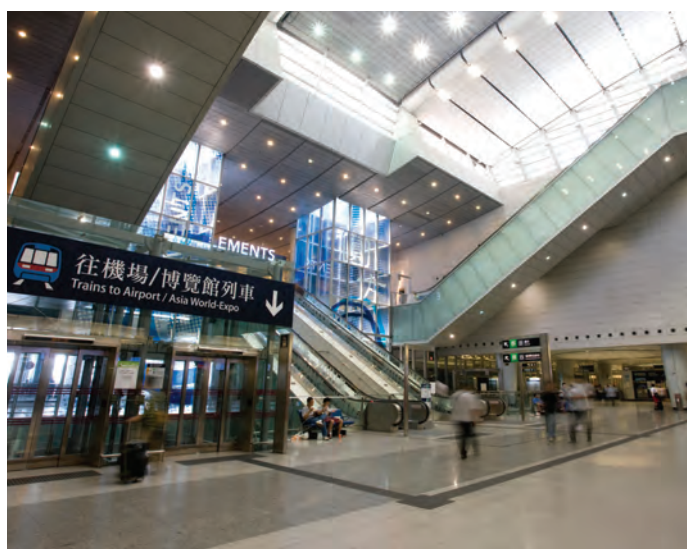


Figure 5. The monumental station hall. (Source: Farrells)
图5. 纪念堂站大厅。（来源：Farrells）



Figure 6. The MTR station was central to a cluster of some of the tallest towers in the city. (Source: Diego Delso (Creative Commons))
图6. 香港地铁站是香港城区一些高楼大厦群的中心。（来源：Diego Delso (Creative Commons)）



Figure 7. KK100 alongside the smaller towers that house the villagers' re-provisioned homes and workplaces. (Source: Farrells)
图7. 京基100与作为村民新居和工作场所的小型塔楼并肩而立。(来源: Farrells)

manner to improve connectivity, sustainability, and quality of life (Figure 7).

Sensitive Intervention in an Old District – Kennedy Town

The West Island Line was an extension of the MTR Island Line to Kennedy Town, located at the westernmost point of Hong Kong Island. The line would help residents reduce reliance on road-based transport, but it demanded a sensitive, holistic community design approach given the district's heritage and strong sense of place. During the public consultation, a key demand emerged for the protection of historic trees growing on old stone retaining walls that would be affected by station construction.

To preserve the tree wall, the proposed station box was moved eastward, onto Smithfield and the site of the Kennedy Town Swimming Pool. A new pool had to open before the existing one could be demolished. The site for the new pool, beside the waterfront, was also a works site for construction of the railway tunnels below. The futuristic form of the new complex is derived from the triangular site, and the roof was opened up to maximise the spectacular harbour views.

Kennedy Town Station takes a more subtle approach to community regeneration, aiming to sensitively blend into the existing urban fabric. Aside from the pool, numerous other community amenities were re-provisioned on top of the station itself, including new sitting-out areas, a children's playground, and sports grounds. This is quite uncommon in Hong Kong where the space is usually given to commercial enterprises. The spaces have been



Figure 8. Re-provisioned sports grounds sit directly above the station, alongside the preserved historic banyan trees. (Source: Farrells)
图8. 重建的运动场直接位于车站的上方, 与受保护的古老榕树并肩而立。(来源: Farrells)



Figure 9. A station entrance and a re-provisioned children's playground. (Source: Farrells)
图9. 车站入口和重建的儿童游乐场。(来源: Farrells)



Figure 10. A rendering of the Kennedy Town Swimming Pool, under construction on an empty lot near the water front. (Source: Farrells)
图10. 在滨水区附近的一块空地上正在建设的坚尼地城游泳馆。(来源: Farrells)

well-used by Kennedy Town residents, young and old, for play and rest. The community could enjoy the benefits of improved connectivity by MTR while also benefitting from improved recreation and leisure offerings. Local walkability improvements were also made to improve access to the station and knit the community together (Figure 8, 9 & 10).

Construction of mass transport is often a highly disruptive, lengthy process. Kennedy Town Station was thread subtly beneath the existing

对旧城区的敏感干预 – 坚尼地城

西港岛线是香港地铁港岛线向坚尼地城的延伸线, 位于香港岛的最西端。此地铁线将有助于减少居民对道路交通的依赖性, 但要求采用一种敏感的整体社区设计方法, 以保护该地区的传统遗产, 增强该地区的强烈存在感。在征询民意期间, 人们提出了保护古老石墙上生长的历史树木的核心要求, 因为车站的建设会影响石墙。

urban fabric, paying deference to Kennedy Town's unique character and enhancing the community amenities on offer.

Conclusion

Transport consumes a great deal of money, land, time, and energy. Countless cities around the world have demonstrated the futility of car-oriented planning. Hong Kong's urban model is a better way, contributing to the city's liveability by enhancing convenience, saving time, promoting car-free lifestyles, and sparing the natural environment from unchecked urban sprawl. The model is pertinent given the continuing urbanisation both in Hong Kong and abroad. In the quest for sustainability we must not lose sight of the bigger picture – that urban sustainability is rooted in responsible land use planning, quality public transport, and walkability.

为了保护树墙，我们将建议的车站向东移动到士美非路上和坚尼地城游泳馆所在地。在现有游泳馆拆毁前新游泳馆必须开放。新游泳馆地址在海滨旁，也是施工地，在其下面修建铁路隧道。新综合体大楼的未来派风格源于三角形场地。楼顶采用开放式以便最大程度地看到壮观的海景。

坚尼地城站采用更微妙的方法来振兴社区，目的是以敏感的方式与现有城市建筑融为一体。除了游泳馆外，在车站的上方还建立了许多其他社区康乐设施，其中包括新建的户外纳凉休息处、一个儿童游乐场和运动场。这在香港是非常罕见的，因为通常会将空间留给商业企业使用。坚尼地城的居民，不分男女老幼，充分有效地利用这些空间进行娱乐和休息。该社区能享受香港地铁改进后的连通性以及改进后的娱乐和休闲设施带来的好处。另外，当地还进行了可步行性改进，以方便人们出入地铁站，另一方面将社区连接起来。

修建公共交通通常要经历一个漫长的过程，会造成很大的破坏。坚尼地城站是在现有城市结构下面巧妙修建的一条线路站点，从而保护坚尼地城独有的文化风格，提供更多的社区康乐设施（图8-10）。

结论

交通运输消耗大量的资金、土地、时间和精力。世界各地无数的城市已证明以汽车为导向的城市规划是徒劳无用的。香港的城市模式是一个更好的方法，通过增强便利性、节省时间、提倡无车的生活方式以及保护自然环境免受盲目的城市扩张的破坏，进一步增强了香港城市的宜居性。此城市模式是适当的，有助于香港和国外城市化的持续发展。为了确保可持续性发展，我们必须着眼于全局。城市可持续发展植根于可靠的土地利用规划、优质的公共交通和可步行性。

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