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Learning from Hong Kong: Why High Density TODs Spell the Future for Asia's Most Populous Cities

以港为鉴：高密度的大众运输导向发展 (TOD) 为何代表亚洲的前景



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Abstract

The paper utilizes examples in Hong Kong and Shanghai to demonstrate why high-density Transit-Oriented Developments (TODs) spell the future for Asia's most populous cities. By using LOHAS Park in Hong Kong and a Shanghai mixed-use development project of Ronald Lu & Partners, this paper shows that TODs are the way forward in Chinese cities to provide a better way of life for the millions projected to swell the populations of major urban centers. It is critical to entrust the masterplanning and designing of these developments to experienced professionals who have proven track records in TODs.

Keywords: Mixed-Used Development, TOD, High-Density, China Urbanization, Sustainability

摘要

本文以香港和上海综合发展项目阐释高密度的大众运输导向发展 (TOD) 为何代表亚洲人口最稠密城市的前景。藉两个吕元祥建筑师事务所旗下项目——香港日出康城及上海综合发展作个案研究，说明TOD项目是中国城市进步的良方，能提供更好的生活方式，惠及无数即将涌入大城市的人口。而委托经验丰富、饶有成就的专业人士，为发展进行整体规划和设计，是至为关键的。

关键词: 综合发展, TOD, 高密度, 中国城市化, 可持续发展

Managing Urban Growth

The concept of living, working and playing within the same spatial footprint has been evolving since nomads began cultivating crops for sustenance. In many European towns, it is still possible to find communities where a single industry sustains the population. Its citizens have little need to venture outside village boundaries (Hohenberg, Paul M. & Hollen, Lynn Lees, 2009). These towns developed as a result of industrialization, with manufacturing by a dominant entrepreneur such as Peugeot upon Sochaux in France or Miele upon Gutersloh in Germany. Generations were employed for the same company in the so called company towns (Borges, Marcelo J. & Torres, Susana B., 2012). As the companies prospered, their employees' specialized expertise became prized. Consequently, there was little need to venture elsewhere to find work.

Urban growth in more recently developed countries tends to coincide with the motor vehicle's dominance. North America's abundance of land made the American dream of everyone owning a house the reality in many cities. However, some have since been plagued with issues such as urban sprawl, crime-plagued central business districts, long commutes for their residents

城市增长的管控 (Urban Growth)

人类在同一片空间下生活、工作、玩耍是固有概念，始自牧民耕作为生起，这个概念不断演变。在许多欧洲城镇中，仍可见一些小城镇仅靠单一工业维持生计，民众亦鲜少要背井离乡地出去工作。(Hohenberg, Paul M. & Hollen, Lynn Lees, 2009) 这些城市因工业化的关系渐由大企业主导，就如法国标致 (Peugeot) 汽车取代索肖 (Sochaux)、德国美诺 (Miele) 取代居特斯洛 (Gutersloh) 一样，当地两代甚至三代家人都会在这些“企业城镇”打工。(Borges, Marcelo J. & Torres, Susana B., 2012) 大企业利润甚丰，员工和其家人在同一企业工作多年，他们的专业备受重视，因此不须冒险去找其他工作。

在一些新晋的发达国家中，城市不断增长，车辆的使用往往随之占具主导。北美土地广阔，“人人有住房”的美国梦得以在许多市镇里成真。然而，当中有的城市饱受各种问题所困，例如出现城市无序扩张 (urban sprawl)，商业中心区犯罪率高企，居民的上下班交通时间延长，生活质量降低。引述拉奎因 (Aprodicio A. Laquian) 于其著作《美国专业团队会议就人口分布、城市化、国内迁徙和国家发展报告》第11页，指出“亚洲国家现在正积极寻求方法，防止类似北美的情况发生。” (Laquian, Aprodicio A., 2008) 前车之鉴，从长远看，北美洲的城市规划 (urban planning) 模式并不适合发展中国家。

and questionable quality of living. With the benefit of hindsight going forward, North American urban planning may not be a suitable model for developing countries. As Aprodicio A. Laquian noted on page 11 in his United Nations Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development report: "Asian planners are now engaged in a hectic race to come with measures to prevent what has happened in North America from happening in Asia." (Laquian, Aprodicio A., 2008)

Yet in Asia, where many countries continue to experience migration from rural to urban areas, urban planning still adopts many North American characteristics. China, currently with a population of 1.38 billion people, has a 50 percent urban and 50 percent rural spread according to United Nations' Department of Economic and Social Affairs' Population Division for Urban and Rural Areas 2011 (United Nation's Department of Economic and Social Affairs, 2011). The percentages will shift over the next decade as another 20 percent of the population makes its way towards its closest urban center in search of better prospects, as outlined by Premier Li Keqiang in his June 2013 speech on China's urbanization patterns. (The Economist, 2014)

If we extrapolate that 20 percent of 1.38 billion is 276 million, which is around 80 percent of the entire United States of America's population (United States Census Bureau, 2014) and these Chinese migrants will head towards the country's 10 largest cities, then each of these cities must absorb another 27.6 million residents. For example, with Shanghai's population now 23 million, the city will double in number if it absorbs the projected surplus. As villages become towns, existing towns will be annexed by its neighboring urban center. The Chinese government is already forming megalopolises around its first tiered cities of Beijing, Shanghai and Guangzhou. Shanghai may soon absorb nearby Suzhou, and Guangzhou is likely to encompass Nansha and Donguan. The expectation is that these cities, and second tiered ones such as Chongqing, Chengdu, Harbin, Tianjin, Shenzhen, Wuhan and Xi'an among others, will most likely be swelling to five or six times their current size. Many Chinese cities are ill-equipped to handle a dramatic rise in population as they were originally planned centuries ago and do not have the adequate infrastructure. The challenge of plugging in modern urban planning concepts to manage urban growth will only increase in complexity.

Despite cautious expansion and infrastructural planning on behalf of the Chinese federal, provincial and municipal governments, China's big cities have seen the lion's share of problems in the last decade as a result of the country's rapid urbanization. All of the fallout associated with North American sprawl have sprung up and multiplied across its urban centers. Life in Chinese cities is now equated with congested transportation arteries, strained energy and communication supply channels, lack of consideration for pedestrians' needs, mere tokens for green spaces and poor air quality. (Zheng & Kahn, 2013) A 2011 IBM survey found that Beijing and Shenzhen were second and third behind Mexico City in terms of commuter misery. (Murphy, Collum, 2014) In February 2014, Greenpeace released a study reporting that the top ten most polluted cities in China contain more than 100 micrograms per cubic meter of PM2.5 pollutant concentrations—far exceeding the national standard of 35 (Tan, Monica, 2012), already a high number compared to Europe's 25 and the United States' 15.

Huge energy and carbon footprints are the two biggest challenges China faces, and it will only worsen if cities continue to be planned around the car. (See Figure 1) Ironically, for a country that was previously synonymous with the bicycle, China's leap to become one of the world's powerhouses has relegated the two wheeled

在亚洲，许多国家持续出现从乡到市的迁徙，其城市规划带有很多北美洲城镇的特色。根据联合国经济及社会理事会《2011年城乡人口分布》(Population Division for Urban and Rural Areas 2011) (United Nation's Department of Economic and Social Affairs, 2011)，中国当前人口数量达13.8亿，城市和乡村各占50%，但此百分比势必变动。根据中国总理李克强于2013年6月发表以中国城市化倾向为题的演讲，未来十年百分之二十的中国人口将移往就近的市区中心地带。(The Economist, 2014)

假设中国13.8亿人口中的20%，即2.76亿人，达美国总人口约百分之八十 (United States Census Bureau, 2014)，将移往中国十大城市，每个城市便须吸纳2,760万名居民。例如上海现时人口为2,300万，如吸纳上述新移民，人口便会增加一倍。随着乡村城市化进程的加快，既有的市镇一并纳入邻近的市区中心地带。中国政府已着手在一线城市组建超级大都会 (megalopolis)，如北京、上海、广州等。(Economist Intelligence Unit, 2012) 上海或将很快吸纳苏州；广州亦势必合并佛山、东莞。预计上述城市，连同重庆、成都、哈尔滨、天津、深圳、武汉、西安等二线城市，规模将会膨胀至现在的5、6倍。大部份城市已规划多时，未有足够基础设施应付急剧的人口增长，就算直接引入现代城市规划概念也只会徒增烦恼。

在中国省级、市级政府调控下，中国各大城市谨慎扩张，扩大基础设施建设基建，但受全国急速城市化影响，过去十年饱受各种问题所困。在北美城市扩张所带来的问题在中国涌现，并向各个城市重镇蔓延。现今中国城市中的生活，已然离不开交通干道挤塞，能源及通讯渠道紧绌，行人需求未获重视，微小的绿化空间形同虚设，恶劣的空气质量。(Zheng & Kahn, 2013) 据2011年IBM调查所得，北京和深圳是继墨西哥市后排名第二和第三的最拥挤的城市。(Murphy, Collum, 2014) 于2014年2月，绿色和平组织发表一项研究，指出在中国污染最严重的十个城市，PM2.5空气污染浓度指数竟超过每立方米100微克，远高于美国(每立方米15微克)、欧洲(每立方米25微克)，甚至国际标准的每立方米35微克。(Tan, Monica, 2012)

巨大的能源消耗和碳排放增加，是中国面对的两大困难；如各城市继续以汽车为中心进行规划，只会令问题更加恶化。(请见图1)更具有讽刺意味的是，像中国这个一谈起便立即联想起自行车的国家，虽贵为全球最有影响力的国家之一，却仍未能摆脱这倒退象征。然而发展是要付出代价的，整个发展过程中城市的私家车比例不断增加，但代价是难以健康、长期地发展。中国等发展中国家的城市如持续按预期的速率增长，就必须另寻市区规划模式。



Figure 1. Serious Traffic Jam in China (Source: Anna Erodesiak)
图1. 中国交通挤塞情况 (出自:Anna Frodesiak)

transportation into a relic of backwardness. Yet progress comes with a price and the country's increasing reliance on the private vehicle is a highly unsustainable way to go forward. Developing countries such as China must look to alternative models for its urban planning if their cities continue to swell at the anticipated rate.

Hong Kong's TOD History

One solution that is already being implemented with varying degrees of success in China is to stack residential and mixed use commercial high-rise developments above transportation arteries and interchanges. Due to China's rapid development in recent years, Transit Oriented Developments (TOD) became the result of accommodating a large number of people and people movers into a small footprint.

Hong Kong, with its unique history of being a British colony at the doorstep to China, has welcomed successive waves of Chinese immigrants for more than 150 years. One of the first TODs erected in Hong Kong is Telford Garden in Kowloon Bay. (See Figure 2) Completed in 1980, it is a 41 residential tower community featuring 4,992 units with commercial, retail, institutional and recreational facilities developed by Mass Transit Railway Corporation (MTRC). It was the rail company's first property development integrating its newly constructed Kwun Tong metro line. Built on a podium, Telford Garden sits above Kowloon Bay depot, the largest rail car storage facility in the entire MTRC system. Along with direct access to the complex via Kowloon Bay metro station via the climate controlled shopping center, Telford Garden's situation beside busy Kwun Tong Road makes it easily fed by public transport. Its success has become a model for other TODs to emulate.

Since Telford Garden, the city has added increasingly more sophisticated TODs including Pacific Place at Admiralty station in the late 1980s, which was designed purely as a commercial hub; the various estates and office complexes above and adjacent to Olympic station at the reclaimed land near Tai Kok Tsui in the late 1990s; and International Commerce Centre at Kowloon station in the 2000s, which consists of a mixture of grade A office tower, a high end retail center, direct rail to the airport, public transportation interchange, intercity coach depot, hotels and various residential developments. (See Figure 3) The overwhelming success of TODs to house people and reduce commute time has led to their planned development on land earmarked as future "new towns". Initially modeled after the British planning concept of satellite cities, new towns were designed to not only resolve the city's population boom but also to stem urban sprawl by containing every facet of living within a community. Both private and public housing developments co-exist in new towns, as well as commercial and industrial enterprises.

香港TOD的历史

解决方法之一，是在交通干道及枢纽上发展住宅及高层商业综合体，现已在中国实行，成效不一。近年中国发展迅速，以小处覆盖范围容纳大量人口和旅客捷运系统的现象，形成大众运输导向发展 (Transit Oriented Development, 下简称为TOD)。

位处中国门户的香港，拥有独特的英殖民地的历史，150多年间吸纳了如潮而至的中国移民。九龙湾的德福花园是香港首批TOD项目之一。(请见图2) 德福花园于1980年落成，共有41座住宅楼宇，包含4,992个单位，配套香港铁路有限公司 (Mass Transit Railway Corporation, MTRC) 发展的商务、零售、公共机构、康乐等方面的设施，为铁路公司首个连结当时新建的地铁观塘线的物业发展项目。德福花园建于平台之上，其下为九龙湾车厂，乃整个香港铁路系统中最大规模的列车存放设施。穿过恒温设计 (climate controlled) 的购物中心及九龙湾铁路站，可直达德福花园楼群；德福花园并位于繁忙的观塘道，公共交通连接便利。其成果已成为其他TOD项目的学习典范。

自德福花园后，香港陆续落成设计渐趋成熟的TOD项目，包括1980年代后期金钟站的太古广场，具备纯商务枢纽设计；另有奥运站上盖及毗连的各式住宅及办公室大楼，位处1990年代后期大角咀填海而成的土地；以及2000年代九龙站的环球金融中心，混合了甲级写字楼、高级购物中心、机场铁路连接、公共运输交汇处、直通巴士站、酒店及多个住宅项目。(请见图3) TOD为许多市民提供住宅，缩减交通时间，成果斐然，造就日后名为“新市镇”的计划发展项目。新市镇模式取自英国“卫星都市 (satellite city)”规划概念，其设计不只为解决香港人口爆炸问题，更兼容并包生活各个方面，从而遏止市区伸延。新市镇中，私人、公共住宅发展并存，商用、工业机构亦然。

个案研究：日出康城

日出康城是香港一大住宅发展项目，亦为新近落成的TOD项目，由吕元祥建筑师事务所筹划。其英文简称“LOHAS”取“Lifestyle Of Health And Sustainability”之首字母，代表健康生活、可持续发展。日出康城由香港铁路有限公司构思，将连接新加入铁路系统的将军澳支线。位处海滨，含50幢住宅大厦，平均50层高，并有面积达45,000平方米的购物中心、五所学校、各种政府及公共机构设施。其下为将军澳车站、将军澳车厂、公共巴士总站，建筑面积达166万平方米。日出康城于2005年设计，预计容纳21,500个家庭或75,000名住户，第一期于2009年落成入住。(请见图4)

2003年，非典型肺炎 (SARS) 于香港爆发。日出康城的建筑设计直接应对，为高密度发展引入更绿化、更优化生活的元素。非典型



Figure 2. Telford Garden and aerial view of MTRC Kowloon Bay Depot (Source: Chong Fat and anonymous)
图2. 德福花园 (出自: Chong Fat and anonymous)



Figure 3. Aerial view of International Commerce Centre and West Kowloon Cultural District (Source: Ronald Lu & Partners)
图3. 九龙站连接 环球贸易广场及西九龙文化区鸟瞰图 (出自: Ronald Lu & Partners)

Case Study: LOHAS Park

LOHAS Park, one of Hong Kong's largest residential developments, is a recently completed TOD masterplanned by Ronald Lu & Partners. An acronym for lifestyle of health and sustainability, LOHAS Park was conceived by MTRC and planned in conjunction with a spur line from the Tsung Kwan O main line, one of the latest MTRC additions to the city's metro system. The seaside site contains 50 residential towers averaging 50 stories in height, a 45,000 square meter shopping center, five schools and various government and institutional facilities. They were planned on top of Tseung Kwan O south station, Tseung Kwan O rail depot and a public bus interchange, with a gross floor area of 1.66 million square meters. LOHAS Park was designed in 2005 for 21,500 families or 75,000 residents, and the first phase was completed for move-in by 2009 (See Figure 4).

In the wake of the 2003 SARS worldwide epidemic originating in Hong Kong, LOHAS Park was a direct response to incorporate greener and more lifestyle oriented elements into a high density development. SARS highlighted the need for local citizens living in cramped quarters to be vigilant about health—and that included more fresh air and regular exercise. The residential towers were planned to be surrounded by pockets of gardens, civic plazas, sports grounds and other recreational facilities. The spaces between the towers were generous to allow the maximum amount of light and air into each building as well as for sunlight to penetrate below to the landscaped deck they rise from. Approximately 130,000 square meters or 40 percent of the site was devoted to green landscaping fed by a 440,000 liter recycled water system. The park's highlights include a 19,000 square meter public park and 300 meter long promenade along the coastline.



Figure 4. Masterplan of LOHAS Park (Source: Ronald Lu & Partners)
图4. 日出康城总规划图(出自:吕元祥建筑师事务所)

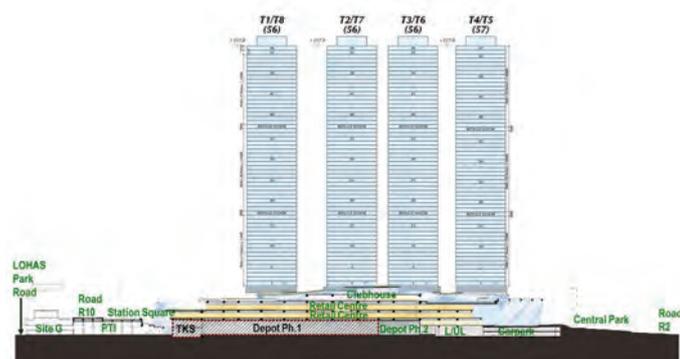


Figure 5. Section Plan of LOHAS Park (Source: Ronald Lu & Partners)
图5. 日出康城剖面图(出自:吕元祥建筑师事务所)

肺炎(SARS)的出现令市民更关注卫生需要—包括新鲜空气和适当运动。因此,日出康城住宅大厦四面以花园、商场、运动场及其他康乐设施围绕,大约130,000平米的绿化面积,绿化率达到40%,并由总容量440,000升可回收循环水系统负责浇灌。大厦之间保留宽阔空间,令每座大厦光线充足、空气流通,阳光亦可照射楼下的园景平台。占地19,000平方米的公园、长达300米的海边漫步道,也是日出康城的卖点。

垂直叠加的空间经过精心规划,令人车得以和谐的共存。许多设施皆由有盖行人通道连接,行人无须横越主要交通干道。下层铁路与公共巴士联运连接,路轨集中于列车厂和巴士总站之间。地面安排了连接铁路站、巴士总站、住宅平台、购物中心的设施,车辆交通则设于上方的公路。顶层为园景平台,具有各式平台、室外广场,供多人进行户外活动。即使香港时有台风、暴雨等恶劣天气,住户仍可前往工作场所、市场而不受天气影响,花园亦得以保存,可随时畅游。(请见图5,6)

日出康城虽称不上完美,但足以证明有了熟悉TOD项目复杂细节的专业人士细心规划,居住在本项目中是可以完全不用私人车辆的。日出康城单靠一个铁路站,便能够容纳57,620名住户。由建筑主要座落于铁路站上盖和车厂,而非天然土壤,加上车厂和车站先于上盖物业完工,因此必须进行详细严谨的规划。在设计初期,须先构思以下内容:稳妥地基及结构荷重;水、电、气、污水处理、排水、生活污水循环再用等基础建设;车站入口;未来的花园空间;纵向运输通道;有盖行人通路网。

日出康城等TOD项目,令香港人均能源消耗比全球其他城市更低(请见图7)。废气排放减少,行人空间增加,散步、休闲更畅快,改善居住者的生活水平。

上海个案研究

吕元祥建筑师事务所目前正为上海建造一个TOD项目,将翻新一地铁站上盖,而该站位于两个地铁线交会处之间,与五条繁忙路线相接。上海地铁站已达329个,并陆续增加,市区扩张幅度惊人,须以富有想象力的解决方法缓解。因此,上海正考虑发展交通枢纽的上盖,一举解决土地供给及交通挤塞问题。

拟发展TOD项目面积达19万平方米,原先布满路轨及车站设施。在土地拍卖前,吕元祥建筑师事务所与顾问团队,已着手为未来发展营造空间。目前的构想是把项目发展成迷你城市,内有各式



Figure 6. Circulation of LOHAS Park showing the convenience of TOD (Source: Ronald Lu & Partners)
图6. 日出康城人流示意图(出自:吕元祥建筑师事务所)

Meticulous vertical stacking allowed for people and transportation to co-exist as efficiently as possible. Pedestrian access to various facilities was planned so that they didn't have to cross any major traffic arteries, as they are linked via covered walkways. Intermodal connectivity between rail and public bus transportation was positioned at below grade, with the rail lines centrally located in between a rail depot and bus terminus. At grade level, access to the rail station, bus terminus, residential podium and shopping center was planned, while vehicular traffic for cars was stacked on top along a road. At the very top is the landscaped podium with its variety of terraces and piazzas to encourage group outdoor activities. In a city with extreme weather conditions such as typhoons and heavy rains, it is possible to go from the home to the office to the market without getting wet yet the gardens are there to be enjoyed when desired. (See Figure 5, 6)

Although far from perfect, LOHAS Park illustrates that through careful planning by experienced professionals well versed in the complexities of TODs, the private car can virtually be eliminated. With one metro station, LOHAS Park is able to accommodate 75,000 people living above it. As most of the buildings sit on top of the station and the depot instead of natural soil, plus the depot and station had to be completed ahead of topside developments, meticulous planning had to be conducted. Proper foundation and structural loadings; utility infrastructure such as water, electricity, gas, sewage, drainage and grey water recycling facilities; station entries; spaces for the planting of future gardens; vertical transportation arteries; and covered pedestrian networks all had to be worked out at a very early stage in the design process.

Due to developments such as LOHAS Park, Hong Kong spends less energy per capita on transportation than any other city in the world by far (See Figure 7). With reduced exhaust emissions and increased spaces designed for pedestrians to enjoy walking and leisure activities, TODs can bolster a better standard of living for its users.

Lessons for Shanghai

Ronald Lu & Partners is currently working on a TOD development in Shanghai to be retrofitted above an existing metro station at the convergence of two rail interchanges connecting five busy lines. With 329 metro stations and growing, Shanghai's urban sprawl is progressing at an alarming rate. Imaginative solutions are required to arrest further urban sprawl. The city is therefore considering covering existing transportation hubs with the vision to resolve both land supply and traffic congestion issues.

The proposed TOD is situated on a 190,000 square meter site originally occupied by an array of rail tracks and station facilities. The consultant team was engaged prior to the land auction to create new spaces for future development. Currently, it is conceived as a mini city with various commercial and residential complexes. These include low and high-rise residences as well as service apartments, low and high-rise combination residential and commercial blocks, office towers, 5-star hotel, and shopping mall with cinema and ice skating rink. There also will be an assortment of public facilities including a museum, leisure and recreation center, city management office, identity card registration center and kindergarten. (See Figure 8,9)

Ronald Lu & Partners, along with a very experience team of consultants all with offices in both Hong Kong and Shanghai, designed the new spatial plane above the stations and rail lines as if it was a natural knoll rising above adjacent lands. The existing station will be entirely encompassed by the planned regional retail center, which will also serve as an all-weather pedestrian hub connecting the various stations,

商用、住宅楼群，包括高低层住宅，配以酒店式住宅单位、高低层商住两用楼宇、办公大楼、五星级酒店及商场(设电影院、溜冰场)，同时安排各种公共设施，包括博物馆、消闲娱乐中心、政府公共服务机关、幼儿园等。(请见图8,9)

吕元祥建筑师事务所联同经验丰富的顾问团队，在香港及上海的办公室为铁路站及各路线上盖设计平面空间，其形仿如自然拔起的小丘。现有的铁路站会完全纳入规划中的区域购物中心，而购

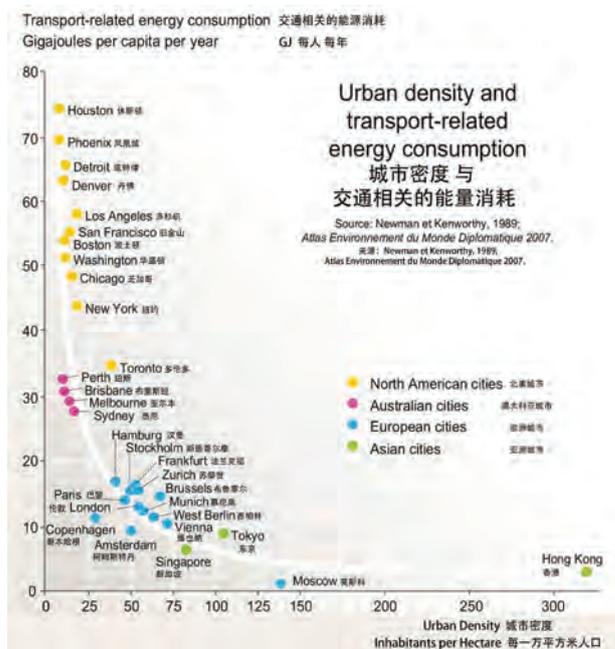


Figure 7. Urban Density and Transport-related Energy consumption Chart (Source: Atlas Environnement du Monde Diplomatique 2007)
图7. 城市密度和与交通相关的能源消耗图 (出自: Atlas Environnement du Monde Diplomatique 2007)



Figure 8. Rendering of RLP's Shanghai TOD Project (Source: Ronald Lu & Partners)
图8. 吕元祥建筑师事务所上海TOD项目效果图 (出自: 吕元祥建筑师事务所)



Figure 9. Masterplan of RLP's Shanghai TOD Project (Source: Ronald Lu & Partners)
图9. 吕元祥建筑师事务所上海TOD项目总规划图 (出自: 吕元祥建筑师事务所)



Figure 10. Section Diagram of RLP's Shanghai TOD Project (Source: Ronald Lu & Partners)
图10. 吕元祥建筑师事务所上海TOD项目剖面图(出自:吕元祥建筑师事务所)

two public transportation interchanges to the north and south, offices, service apartments and hotel towers as well as the residential towers and public institutional facilities. The retail complex will span the entire site along the north-south axis. Along with a north-south road designated for vehicles, the development will aim to reconnect the adjacent township that is currently physically severed by the rail tracks.

The north-south road naturally divides the development into two parcels with distinctive characteristics. The western hemisphere is an active hub and where the current and future station will be situated, along with the retail center, offices, hotel, service apartments, museum, transportation interchanges and many of the public facilities. The eastern hemisphere is a passive hub with mainly residential towers separated by two expansive gardens between them. (see Figure 10)

The mixed use development concept enables its residents to live, work, play and shop without having to invest in a car much less drive one. The scheme helps to attain a win/win solution by alleviating the pressing issues of affordable housing and road traffic congestion, resulting in an overall reduction of carbon footprints. At the same time, it encourages residents to enjoy their living environment more fully and with more time to spend on their pursuits. It is a better quality of life than spending hours on the road stuck in traffic, such as their American counterparts are likely to experience.

Conclusion

To summarize, TODs are the way forward in Chinese cities in order to provide a better way of life for the millions about to swell the populations of major urban centers. It is critical to entrust the masterplan and design of these developments to experienced professionals who have proven track records in TODs. LOHAS Park was a planned on a brand new site where theoretical TOD concepts could be executed. The Shanghai development, on the other hand, is one that has TOD elements plugged into an existing site. While both developments relieve traffic congestion to some extent, LOHAS Park's boundaries meant that expansion would be difficult once capacity was reached and basic service facilities were limited in favor of more commercial enterprises. The Shanghai development includes more ancillary and cultural facilities, such as government offices and museums, allowing its inhabitants to be able to reside within walking distance of everything they need for daily living.

物中心亦设全天候行人枢纽，连接多个车站、直通南北的两大公共交通枢纽、办公室、酒店式住宅单位、酒店大楼、住宅大厦发公共设施。购物中心群落沿南北轴心跨越整个地盘。加上南北车辆公路，此发展项目旨在重新连接原先被铁路相隔的邻近城镇。

南北公路将发展范围分成两个特点截然不同的区域。西边是个繁忙的交通枢纽，现有和未来的车站座落于此，伴随购物中心、办公室、酒店、酒店式住宅单位、博物馆、交通交汇处及多种公共设施。东边则较为宁静，主要包含住宅大楼，大楼之间设置两个环境优美的花园。(请见图10)

综合发展概念令住户无论生活、工作和休闲娱乐，不必购置车辆代步。TOD计划达成双赢的局面，不仅缓解了住房供应紧张、道路挤塞等逼切问题，降低碳排放，同时亦鼓励住户尽情享受生活环境，拥有更多追求理想生活的时间，享有更佳生活质量。

结论

总的来说，TOD项目是中国城市进步的良方，能提供更佳的生活方式，惠及无数行将涌入大城市的人口。为此，委托经验丰富、饶有成就的专业人士，为发展进行整体规划和设计，是至为关键的。日出康城在全新用地进行规划，令原为概念的TOD得以实现。相反，上海的发展项目则把TOD元素融入现有基地。两个发展项目均舒缓了交通挤塞。日出康城的地域局限令我们知道一旦基本设施和容量达至饱和，地区便难以再扩展。上海发展项目加入较多政府部门办公室、博物馆等文化及辅助设施，所有设施均步行可及，满足居民日常需要。

TOD项目专业知识，为急速发展城市带来的关键利益包括：

1. 一应俱全的综合区域，直接连接铁路站和物业，减少使用者通勤时间。
2. 平衡生活、工作、消闲，小区自给自足，生活质素改善。
3. 交通联运，有利于管理高密度发展项目的交通流量，进而减少依赖私家车，降低废气排放量。
4. 保留土地资源，确保绿化空间最大化。
5. 特别设计的平台和绿化空间，更吸引住户散步行走。
6. 家居与工作场所交通更便利。
7. 活化商业地段。

Some of the key benefits that TOD expertise can offer to rapidly developing cities are:

1. Integrated entries provide direct connections between the rail station and property developments, thereby reducing user commute times.
2. Provide synergy between life, work and play for self-contained communities with better quality of life.
3. Manage the flow of high density developments' traffic using intermodal transportation links, thereby reducing the reliance on private cars and exhaust emissions.
4. Conservation of land resources and maximization of open green spaces for users.
5. Increase the walk-ability of neighborhoods with dedicated podiums and green spaces.
6. Better connections between home and work lives.
7. Revitalization of commercial corridors.

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