BRT

中国快速公交发展方向与规划设计导则

BRT development in China and BRT Planning and Design Guidelines

BRT

中国发展快速公交的必要性 The Problem

城市发展需要公共交通的支撑

Urban development needs the support of the public transportation system

交通拥堵
环境恶化
能源危机

交通、环境与能源的巨大压力，使优先发展公共交通从理念逐步转变为政府的公共政策乃至具体行动。

Traffic Congestion, environmental deterioration, and energy crises make public transport systems a priority

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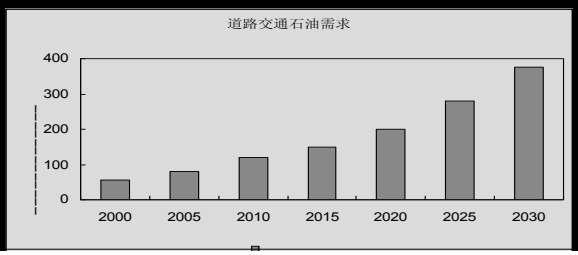
中国发展快速公交的必要性 The Problem

城市发展公共交通应对能源危机的有效手段

目前，道路交通油耗约占全国总油耗的1/3，2020年，交通部门石油消耗量将达到55～60%，届时,我国石油的对外依存度接近60%，成为世界第一大石油进口国。

Public transit is an efficient way to confront the energy crisis

Currently, road traffic consumes 1/3 of China's total petroleum consumption. It will reach to 55~60% by 2020, with imported petroleum reaching 60%.



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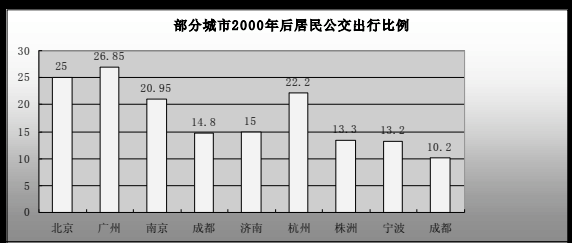
中国发展快速公交的必要性 The Problem

受交通拥挤和传统公交的功能缺陷的影响，导致公交服务水平长期徘徊不前，已经成为持续提高公交分担率的瓶颈。

Traffic congestion and the functional limitations of the regular bus system stunts public transit services, which deters market share increases for public transportation.



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中国发展快速公交的必要性 The Problem

公交发展需要多元化，快速公交是多元化公共交通系统的重要组成部分。

Public transportation development must be multifaceted. BRT is the main component of a diversified public transit system.

快速公交的特点

1）运量大
2）运营速度快
3）布设灵活
4）见效快
5）投资小
6）先进的运营组织管理方法

Characteristics of BRT system

1）Massive capacity
2）High operation speed
3）Flexible layout
4）Quick effectiveness
5）Low investment
6）Advanced operation and organization system

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快速公交在中国的实践 BRT Practice in China

• 2005年12月30日北京南中轴快速公交示范工程全线通车；

• On December 30,2005, Beijing opened its Southern Central Axis demonstration corridor.

• 2005年1月杭州市快速公交一号线的规划和建设启动，2006年4月26日投入试运营。

• In January 2005, Hangzhou began its No.1 BRT Line, which was put into trial operation on April 26, 2006.

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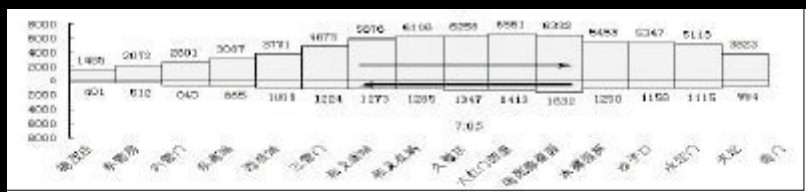
北京首条快速公交示范线路
Beijing's first BRT demonstration

- 全长16.5km，共设车站19座，车速平均22－26公里/小时
- 日客流量超过10万人次，高峰单向断面客流运送达到8500人次/小时；
- 整合2条常规线路，减少配车255部，缓解道路拥堵。

• Total length is 16.5km with 19 stops, average operation speed of 22-26km/h.

• Boarding passenger volume of over 100,000 persons/day. Peak hour volume of over 8,500 persons/h/direction

• Integrates 2 regular bus routes, saves 255 vehicles, mitigates corridor congestion



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中国快速公交的发展方向
BRT development in China

中国快速公交是“介于城市轨道交通和常规公交之间的大运量公共交通方式。”

BRT is “a comprehensive mass transit system between the metro and regular bus **systems**”

“快速公交是享有专有路权，灵活地集成车站、车辆、运营、乘客服务和智能技术等要素，具有快捷、可靠、舒适、低成本特性的大运量公共运输服务系统”。

“BRT features exclusive right-of-way. It flexibly integrates such elements as specifically designed stations, operation systems, customer service systems and ITS, to offer a reliable, speedy, comfortable and low-cost service ”.

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快速公交在中国的分类
BRT Classification in China

- 高级形式：大运量、系统单向单车道1-2万人次/小时、速度在25公里/小时以上、两侧土地开发强度较高；
  - 专有路权、专门设计的具有车外售票功能的车站、交叉口信号优先控制、先进的运行和管理。
  - 北京模式
- 初级形式：低运量、系统单向单车道1万人次/小时以下、速度在20-25公里/小时、两侧土地开发强度中等。
  - 专有路权、专门设计的车站、先进的运行和管理。
  - 昆明模式

- **Advanced form**: large-capacity, system capacity 10,000-20,000 pers/h /lane/dir, operation speed 25Km/hour, intensive development;
  - exclusive right of way, specially-designed stations, pre-boarding ticketing, priority signal control, advanced operations and management.
  - Beijing pattern
- Preliminary form: lower capacity, system capacity under 10,000 pers/h/lane/dir, operation speed 20-25Km/hour, semi-intensive development
  - exclusive ROW, specially-designed stations, advanced operations and management
  - Kunming pattern

BRT

快速公交在中国的功能定位
BRT's Functional Role in China

- 重要的公共交通客运服务方式
  轨道交通系统的延伸、补充、连接和过渡，与轨道交通系统共同架构城市快速公交系统。
- 引导城市土地利用发展，支撑城市新的空间布局
  引导并形成新的客流增长点，引导城市采取集约、高效的城市发展方式，实现TOD的重要手段。
- 提升城市公交服务水平，改善城市形象
  弥补常规公交系统的不足,提高公交的服务水平,新型的车站和车辆设计,增添城市特色。

BRT is:

an important public transit mode; the extension, supplement and connector of the metro and bus system, forming the rapid public transit backbone;

an avenue for consumer market development and land use orientation;

a support for urban spatial strategy;

a way to improve public transport services;

a way to improve a city's image.

BRT

快速公交在中国的适用性
BRT Adaptability in China

- 中国快速公交的推进可以结合城市不同的经济发展水平、不同的空间布局、不同的发展时期和不同的客流走廊，结合城市规划、道路建设或改造计划，设定系统的服务目标，确定需要采用的快速公交的类型。
- 我国众多城市常规公交网络发达，部分城市已经修建地铁，快速公交要充分发挥地面公交的灵活性，与公交专用道、优先道、地铁要形成网络，实现联网运行。

BRT should be carried out according to cities' economies, layout, development stages, passenger flow, and urban plans.

Systematic goals should be set and the type of BRT to be adopted needs to be specified.

BRT needs to give full play to the flexibility of ground public transport, and form a network between bus-exclusive lanes, priority lanes, and the metro.

BRT

BRT发展的政策建议
Policy Recommendation for BRT Development

- 健全发展公共交通及快速公交的法律法规
- 建立公共交通专项基金，保障快速公交规划建设
- 规范快速公交系统规划、设计、建设

- Complete codes and ordinances on public transportation and BRT
- Establish specific funds for public transport, ensure smooth planning and construction of BRT
- Standardize BRT system planning, design, and construction

BRT

快速公交规划设计导则
Planning and Design Guidelines

规划设计导则的目的：

我国城市政府、规划部门以及运营单位都存在对快速公交功能定位上的疑虑，在快速公交适应性的认知上存在分歧。

Purpose of Guidelines

Dispel doubts and unify understanding of the functional role of BRT among by city governments, planning departments and operational units.

BRT

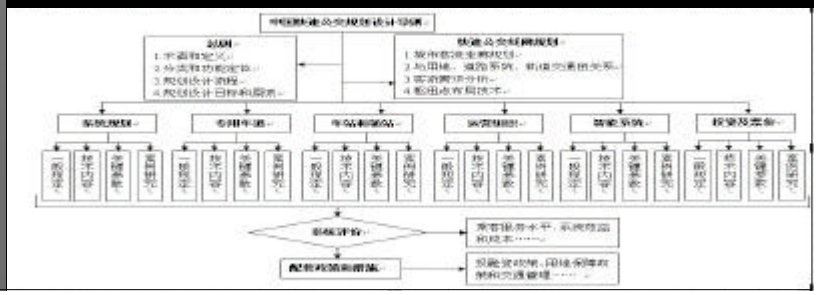
快速公交规划设计导则
Planning and Design Guidelines

规划设计导则的目的：

快速公交规划设计导则旨在制定快速公交规划、设计、建设和运营等方面的规划设计指引，引导快速公交的良性发展

Purpose of Guidelines

To guide BRT planning, design, construction and operation, thus promoting healthy BRT development



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快速公交规划设计导则
Planning and Design Guidelines

规划设计导则框架：

- 系统规划
- 专用车道规划设计
- 车站和场站规划设计
- 运营规划设计（含运营车辆）
- 智能交通规划设计
- 投融资政策和票制票价指引

Framework：Planning and Design of

- System
- Bus-exclusive lanes
- Station and depot
- Operations (Including Fleet)
- ITS
- Financing policy and Ticketing instruction

规划设计导则内容：

- 一般规定
- 主要规划设计内容
- 关键技术指标
- 相关案例

Content：

- General instructions
- Principal planning and design content
- Key technical index
- Case studies

BRT

BRT车道规划设计—一般规定
BRT Bus Exclusive Lane Design — General Instructions

BRT专用车道是为BRT车辆行驶提供道路空间的载体，是系统构建的基本前提和必备要素

BRT-exclusive lanes are a fundamental and necessary component BRT

分类

- 路侧型公交专用道
  - 设置于道路最外侧，利用机非分隔带或非机动车道上下乘客，站台采用侧式
- 路中型公交专用道
  - 设置于道路中央车道，一般通过固定的物理设施来与其他交通分隔，站台可采用岛式或侧式

Classification

- Side bus-exclusive lanes
- central bus-exclusive lanes

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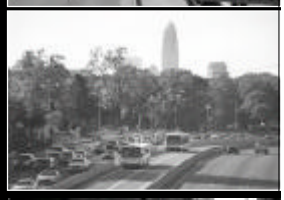
BRT车道规划设计—主要规划设计内容
BRT Bus Exclusive Lane Design:
Principal Planning and Design Content

- 路权分配 / ROW assignment
- 建设模式 / Construction
- 功能规划 / Functional planning
- 通行能力 / Capacity
- 断面选择 / Corridor selection
- 隔离设施 / Barrier facilities
- 车道宽度 / Lane width

BRT

BRT车道规划设计—关键参数及技术要求
BRT Bus Exclusive Lane Design — Key parameters and Technical Requirements

- 建设模式
  - 具有封闭路权的快速公交系统
  - 利用高速路和快速路行驶，灵活设站布设模式
  - 普通的公交专用道或大站快车模式
- Construction mode
  - Closed exclusive ROW BRT system
  - Flexible use of freeways or expressways
  - Regular bus exclusive lane or large-station model



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BRT车道规划设计—关键参数及技术要求

BRT Bus Exclusive Lane Design — Key parameters and Technical Requirements

- 通行能力　Capacity

通行能力计算公式为 $C = \frac{3600}{t} \cdot k$

C—通行能力Capacity，*t*—车头时距Time-headway，*K*—折减系数 Discounting factor

- 下限：比较单车道公交车载客量与小汽车载客量
  单向公交车流量为90辆/小时作为设置专用道的公交车流量下限
- 上限：比较路侧式和路中式专用道通行能力
  路中式专用道通行能力为300～500辆/小时，其运能为18000～30000人/小时；路侧式专用道的通行能力为150～400辆/小时，其运能为9000～24000人/小时。

Lower bound: comparable to single lane carrying capacity for bus and auto

Upper bound: comparable to side exclusive lane and central exclusive lane capacity

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BRT车道规划设计—相关案例

BRT Bus Exclusive Lane Design —Case Study

北京彩色公交专用道-Beijing

基多路中式公交专用道-Quito

昆明路中式专用道-Kunming

BRT

BRT车站规划设计—一般规定
BRT station planning and design — general instructions

- 分类
  ① 中央岛式、路侧式
  ② 普通站、换乘站
- 设施组成
  ① 乘客服务设施
  ② 车辆停靠设施
  ③ 信息服务设施

- Classification
  ① Central Island station、Side station
  ② Conventional station、transfer station
- Facility
  ① Customer service facility
  ② Vehicle berth facility
  ③ Information service facility

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BRT车站规划设计—主要规划设计内容
BRT station planning and design: Principal Content

- 布局规划
- 饱和度
- 详细设计
  ① 子站个数
  ② 子站泊位数
  ③ 泊位间距
  ④ 站区长度
  ⑤ 站区宽度
  ⑥ 站区空间
- 换乘衔接模式

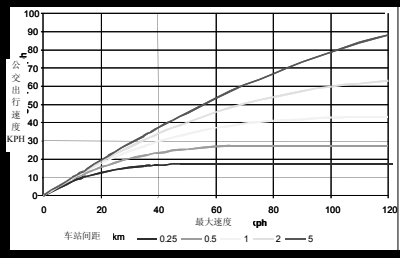
- Layout Planning
- VOC
- Detailed Design Elements
  ① Number of sub-stops
  ② Sub-stop parking
  ③ Parking queue spacing
  ④ Platform length
  ⑤ Platform width
  ⑥ Station spacing
- Transfer modes

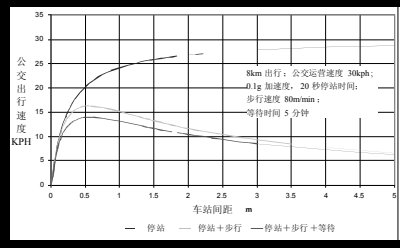
BRT

BRT车站规划设计—关键参数及技术要求
BRT station design-Key parameters and technical requirements

布局规划—站距

- 需要根据客流而定，结合土地利用，在重要客源点设置车站；
- 最合适站距在500米左右，此时乘客旅行时间存在最小值，且当公交站距在400～1000米左右时，乘客的旅行时间最小值变化不大





Station Spacing

- According to passenger volume.
- Minimize travel time: recommend 500m spacing

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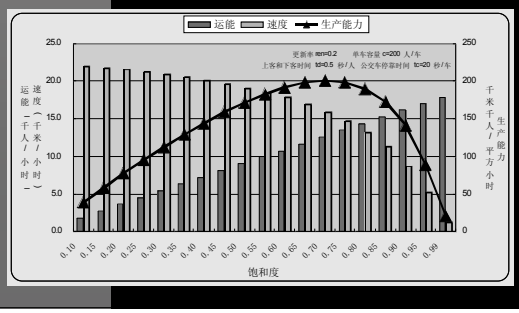
BRT车站规划设计—关键参数及技术要求
BRT station design-Key parameters and technical requirements

- 饱和度饱和度是BRT车站的重要指标，和系统运能、速度以及乘客服务水平紧密相关，可衡量快速公交车站设施供给和交通需求关系。



VOC

- VOC is a key index for BRT station, closely related to system capacity, speed, and customer service level.
- VOC can evaluate the relationship between station supply and traffic demand.

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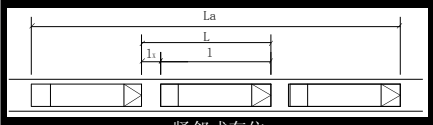
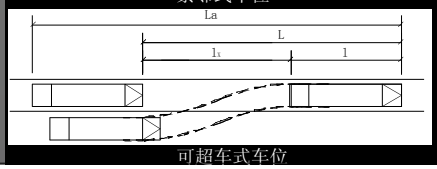
BRT车站规划设计—关键参数及技术要求
BRT station design-Key parameters and technical requirements

■ 详细设计—泊位间距 Detailed Design: Berth spacing

泊位类型 substop type		泊位间距（米）Spacing (M)
紧邻式泊位 Conventional substop	12m普通车 regular bus	2
	18m铰接车 articulated bus	2
可超车式泊位 Overtaking substop	12m普通车 regular bus	11
	18m铰接车 articulated bus	15



紧邻式车位



可超车式车位

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BRT车站规划设计—关键参数及技术要求
BRT station design-Key parameters and technical requirements

■ 详细设计—站区宽度 Detailed Design- Station Width

须进行验票设施宽度验算

$$N_p = \frac{k}{C}(Q_{in} + Q_{out})$$

N_p—验票设施所需数量 number of ticketing machines；
Q_{out}—高峰小时出站乘客数 maximal checking-out passenger number （p/h);
C—相应类型验票设施的通过能力 ticketing machine capacity （p/h）

设施名称 Facility name	人工检票口 manual	自动检票机 automatic ticketing machine			
		三杆式 bar-pattern		门扉式 door-pattern	
		磁卡 magcard	非接触IC卡 contactless IC Card	磁卡 magcard	非接触IC卡 contactless IC Card
每小时通过能力（人次/小时） capacity	2600	1500	1800	1800	2100

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BRT车站规划设计—关键参数及技术要求
BRT station design-Key parameters and technical requirements

- 详细设计—站区空间 **Detailed Design- Platform Space**

由于乘客大量列队式行走和驻足的需求特征，站台应当为乘客提供相应的通行空间和等待空间。
采用行人空间，即密度的倒数作为评价站台空间行人服务水平，流量和间距则作为辅助标准。

Platform must provide enough space for passenger queuing and waiting.

The index of the inverse of pedestrian density is used to evaluate platform service level.

Volume and headway are auxiliary indexes.

步行状态

服务水平	空间 (m^2/人)	流率 (人/min·m)
A	≥3.2	≤23
B	2.3-3.2	23-33
C	1.4-2.3	33-49
D	0.9-1.4	49-66
E	0.5-0.9	66-82
F	≤0.5	不定

驻足等待水平

服务水平	空间 (m^2/人)	间距(m)
A	≥1.2	≥1.2
B	0.9-1.2	1.1-1.2
C	0.7-0.9	0.9-1.1
D	0.3-0.7	0.6-0.9
E	0.2-0.3	≤0.6
F	≤0.2	身体相互接触

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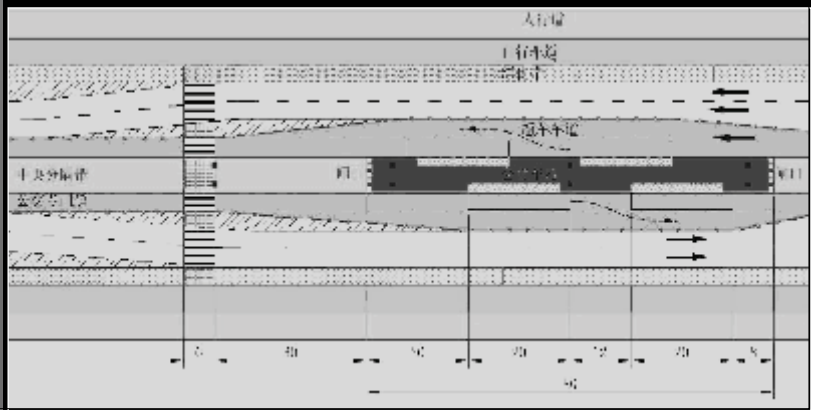
BRT车站规划设计—济南设计案例
Case Study: Ji'nan

- 80米普通站台 共设置2个泊位，最大可同时容纳3辆车

Conventional station, 80m platform, 2 substops, maximum service for 3 vehicles simultaneously



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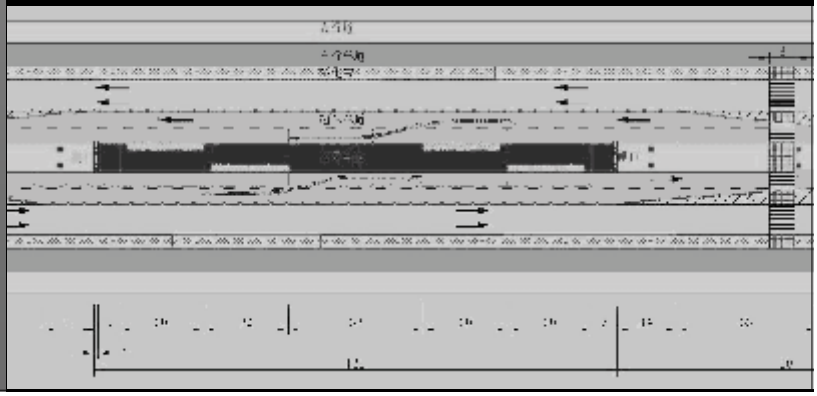
BRT车站规划设计—济南设计案例
Case Study: Ji'nan

- 124米换乘站台 共设置4个泊位，最大可容纳6辆车
- Transfer station with 124 meters platform
- 4 substops, maximum service for 6 vehicles simultaneously



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BRT车站规划设计—相关案例
BRT station design: Case Studies




我国城市公共交通引导城市发展策略研究
Transit Oriented Development Strategy in CHINA

中国城市规划设计研究院交通所, 2007年11月
Urban Transport Institute ,China Academy of Urban Planning and Design (CAUPD), Nov. 2007

研究概况
Overview

定位：立足全国、立足国情、立足政策

研究核心：提出推进公共交通引导城市发展策略的政策框架和建议。

研究计划：调研、问题和因素分析、政策建议

Focus : nation-wide, real conditions

Policy Aim: promote TOD

Process： investigation, policy framework

汇报内容
Content

一、我国TOD发展的特殊性和面临的问题 — Special conditions and problems in China

二、推进TOD发展的政策框架设想 — Policy framework to promote TOD

中国TOD发展特殊性分析
Special Features in China

国际的共识：

- 减少对于小汽车的依赖（原因：能源问题、全球变暖、交通拥挤等等）TOD是有效措施之一

International Consensus

- To decrease reliance on cars (energy, climate change, traffic congestion) TOD is a useful measure

中国TOD发展特殊性分析
Special Features in China

不同的国家和不同的道路
城市空间发展阶段不同

- 机动化发展阶段不同
个人决策的文化背景不同

Different countries，
different measures

- urban spatial development
- motorization
- cultural factors and individual decision-making

中国TOD发展特殊性分析
Special Features in China

第一，城市空间发展阶段
中国：城市空间快速扩展时期；以新建项目为引导
欧美国家：城市空间稳定时期；城市复兴和更新改造

Urban Spatial development Process

CHINA：Rapid expansion and new development

Europe and USA: Stable urban structure, renewal and regeneration

中国TOD发展特殊性分析
Special Features in China

第二，机动化发展阶段　　Motorization

	状态 Status	问题 Problem
中国 China	尚未形成小汽车依赖情形 Not rely on car	如何塑造合理交通结构 How to shape ideal mode
美国 America	过分依赖小汽车 Rely on car very much	困难的转变 Hard U-turn
欧洲 Europe	状态：小汽车依赖在增长 Car relying increasing	平衡公共交通与小汽车 balance PT and car

中国TOD发展特殊性分析
Special Features in China

第三，生活方式和个体决策

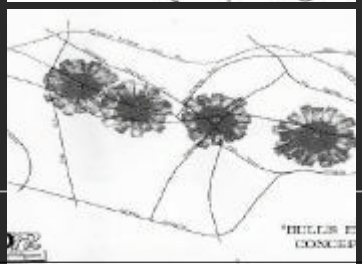
中国：集约化发展，生活方式以集聚性相对较高；

美国：蔓延发展，生活方式以个人自由活动为主；
欧洲：社会活动和个人自由活动相结合的方式。

Lifestyles and individual decisions

China: compact development, social life-style
America: sprawling development, individual life-style
Europe: combines social and individual life-style

美国TOD案例分析——Arlington 地铁走廊
US Case study : Arlington metro corridor



美国TOD案例分析——*Dallas-Fort Worth*
US Case Study: *Dallas-Fort Worth*

Mockingbird 车站
- 211套高档住宅
- 140,000平方英尺办公面积
- 180,000平方英尺零售、剧院和餐馆
- 1,400 停车位。
- 7英亩废弃土地的重新开发利用

Mockingbird Station
- 211 residences
- 140,000 sq ft office space
- 180,000 sq ft retail & restaurant
- 1400 parking
- 7 acres regeneration

国际经验——库里蒂巴
Brazil Case study: Curitiba

库里蒂巴城市经验 1、城市空间结构结合
2、快速公交系统的选择
3、走廊的建设开发模式

Experience in Curitiba
1. City spatial structure
2. BRT
3. Corridor development

TOD定义
Definition of TOD

共性特征

- 混合土地使用：商业和居；
- 高强度土地开发, 车站周围土地开发高于其他区域；
- 以步行、自行车和公交出行为本的设计可达性
- 宜人的步行、自行车出行环境，与公交设施的便捷衔接

Common definition
- Mixed-use, including retail and residences
- Higher density development, nearer the station
- Pedestrian, bicycle, and PT accessible
- High quality environment and access to transit

国内案例 －苏州火车站
Case Study in China－Suzhou Rail Station

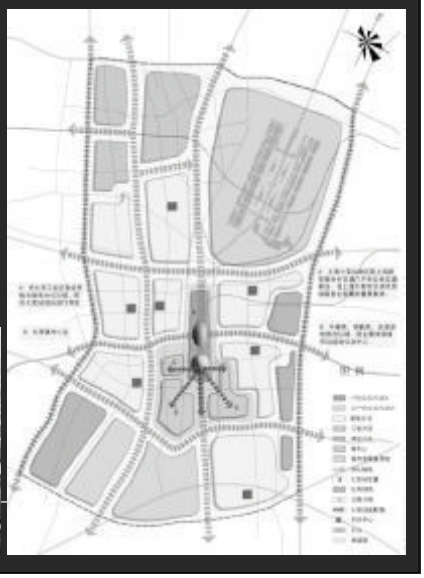
结合规划区交通系统规划，规划苏州北部城市副中心的核心区，以商务金融为主。

High-accessibility, located in district center, near business and banking development areas

国内案例 －上海火车站
Case Study in China－Shanghai Rail Station

- 0.6千米范围－核心枢纽区
- 1.5千米范围－枢纽外围区
- 5.0千米范围－扩散影响区

■Hub: 600m
■Hub periphery: 1.5 km
■ Hub extension: 5.0 km



国内案例 —北京亦庄轨道线
Case Study in China—Yizhuang metro Line

国内案例 —北京亦庄轨道线
Case Study in China—Yizhuang metro Line

空间结构:
两轴
商业服务轴
商务办公轴
四点
四片居住片区

Spatial Structure:
Two axes (retail, office)
Four station points
Four residential areas

国内存在的问题
Current Issues in China

第一，现有规划体系管理结构中，对于公共交通系统与土地利用的结合重视不够。

第二，政策中规划强调的更多的是控制，因此规划和建设之间存在一定的脱节

1. Lack of integration of land-use and transport decisions in planning
2. More focus on regulation, less focus on development in planning policies

国内存在的问题
Current Issues in China

第三，部门分隔引起的协调问题比较大，如铁路和市部门

第四，引导性的财政支出政策不清晰，如：公共服务投资

3. Conflict between departments (e.g. rail and civil)
4. Lack of clear public expenditures, e.g. public service investment

中国TOD发展的任务
Ways to promote TOD in China

第一，中国谈TOD必须与城市空间结构的引导相结合；
第二，中国TOD不能仅仅局限于站点周围项目的引导，必须发挥区域的概念；

First, TOD must guide spatial layout

Second, TOD must not limits its focus to areas immediately surrounding the station

中国TOD发展的任务
Way to promote TOD in China

第三，必须发挥政府的引导作用和公共财政的支持作用

第四，必须找到一条促进建设实施的途径

Third, it is necessary to use government and public finance measures.

Fourth, it is important to find a way to promote district development

中国TOD定位
TOD in China

ＴＯＤ是利用混合用地的合理规划和布局，尽可能减少居民长距离出行，最大程度的提高该区域适合的绿色交通出行方式的可达性，从而充分鼓励居民使用公共交通等绿色交通出行方式的区域规划、设计和开发建设模式。

TOD is a comprehensive model, designed to decrease trip length and improve accessibility and choice of green transport modes.

TOD发展政策框架思路
Policy framework for TOD strategy

第一，将公共交通引导城市发展策略融入规划管理政策之中。

First, incorporate TOD into planning policy.

１）在总体规划阶段，重要的是应该明确公共交通在城市交通战略中的地位，将公共交通支持作为确定市级和区级中心的位置、规模和空间布局结构的重要因素。

In the master plan, include public transport as a key influence on the location, scale, and spatial layout of city districts.

TOD发展政策框架思路
Policy framework for TOD strategy in China

2）详细规划中突出公共交通和土地利用的结合，强调突出公共交通引导发展的落实。
确定建设用地的土地使用强度，并在管制区划和相应的控制指标(建筑密度、建筑高度、容积率、人口容量等)；

■ 确定住房需求/住房政策、建设标准和居住用地布局中，尤其在确定经济适用房、普通商品住房等满足中低收入人群住房需求的居住用地布局及标准中。

Detailed plans should give key role to TOD

• Different control figures for areas with PT support
• Affordable housing locations

TOD发展政策框架思路
Policy framework for TOD strategy in China

第二，建立政府引导的公共交通引导发展行动规划，与政府的行动相结合
如：政府廉租房建设与公共交通结合行动规划
特点：整体性、多方参与、政府引导、短期见效、示范性

Second, promote government-led TOD development plans and implementation through public-private partnerships

Example: transit-supported affordable housing plan

Features: integration, partnership, government-led, implementable, demonstrations

TOD发展政策框架思路
Policy framework for TOD strategy in China

第三，建立政府公共财政资金引导和项目整体利益共享政策

如：公共交通投资、道路基础设施投资、枢纽站点的投资

如：受益与投入的协调政策

Third, promote TOD through public funding and profit-sharing schemes.

Example: public transit fund, hub construction investment

Example: policies to coordinate profits and investment

谢谢！
Thanks!

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Idea of a World Class City in 1965 Was the Suburban Ideal
在1965年，世界一流城市的概念是郊区化

New York sprawled far into the countryside.
纽约向边远的乡村蔓延

ITDP

The result was dependence on automobiles and oil. In the United States …
结果是过度依靠机动车和石油，就像在美国…

- 5% of World Population
- 26% of World Oil Consumption and CO2 Emissions
- Over 90% of Trips made by private car.
- 45% of Trade Deficit is from oil and auto imports.
- 50,000 roadway fatalities a year.
- 占世界5%的人口
- 占世界石油消耗量和CO2排放量的26%
- 90%以上的出行依靠私人小轿车
- 45%的贸易赤字来自石油和汽车进口
- 每年道路交通事故达到50,000起

ITDP

Public spaces were taken over for car parking
公共用地被停车场所取代

Giant Mega Malls like Wall Mart take advantage of low oil prices and government subsidized roads to crush small businesses.
巨型购物中心如沃尔玛借助低油价和政府道路补贴挤垮小商业。

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New Jersey, USA? No! Prague, Czech Republic
美国新泽西？不！
布拉格，捷克

Other cities, like Sao Paulo followed US example:

70% - 80% of CO2 Generated in Sao Paulo is from Traffic

其他城市，如圣保罗照搬了美国模式：

圣保罗70%-80%的CO2排放来自交通部门

The other side of suburbanization is Urban Abandonment

市郊化带来的另一方面是对城市的遗弃

New York City Center Abandonment
1950s to 1980s
纽约城市中心
被遗弃的建筑
50年代到80年代

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New York City, Circa 1980
纽约市，1980年左右

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Times Square, 1985

时代广场，1985

ITDP In the 1990s, China followed the West towards embracing the automobile. But in much higher population density cities and higher social cost

90年代开始，中国开始学习西方国家发展机动车。但是人口密度更高，社会成本也更高。

Would you buy this apartment?
你会买这样的房子吗？

ITDP Tens of thousands of families have to be relocated each time something like this is built.

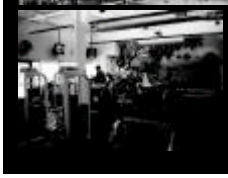
每当修建类似建筑的时候就会有成千上万的人需要被重新安置。

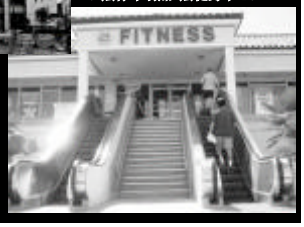
People get no exercise so they drive to exercise gyms.

"Park n Sweat structure"
Atlanta, Georgia
(7 stories of Parking + 2 stories of Fitness)

当人们无处健身的时候，只好开车去找健身房。

乔治亚州亚特兰大市
（7层停车场加2层健身中心）





Cars encroaching on space for people
小轿车侵占原本属于行人的空间

Major Changes in the 21st Century
21世纪主要的改变

- Urban highways torn down
- Riverfronts Rediscovered
- Bus Rapid Transit Sweeps the World.
- Governments shift from suppressing bicycles to promoting them
- Congestion Charging
- Revitalizing Historical Centers
- 城市高速路被拆除
- 河边陆地被重新发现
- 快速公交系统席卷全球
- 政府对自行车的态度由抑制到推动
- 拥堵收费
- 历史中心获得重生

Rivers are Magical Places:
Today in Guangzhou:
河流是神奇的地方：
今天的广州：

Seoul 首尔

1958 to 1966, they covered the river.
1967 to 1976, they built the expressway over it.
It cost over $100 million and took 18 years
1958年到1966年，他们把河流填上。1967年到1976年，他们在上面建造了高速路。历时18年花费超过1亿美元。

Seoul, Sustainable Transport Award
Winner 2006
首尔，2006年获得可持续交通奖

October, 2005, Highway was removed and river was cleaned up.
2005年10月高速路被拆除，河流被清理干净。

The entire city center is revitalized

整个城市获得重生

Once worthless properties
are now being redeveloped
曾经觉得没有价值的东西被重新启用

Property values increased dramatically
房地产价值极大提升

Seoul's new bike path along the river
首尔新建的沿河自行车道

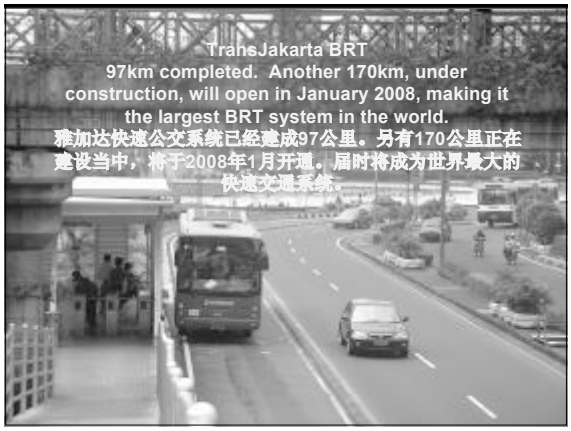
Kyoto's new bike path along the river.
Is this part of the past or part of our future?
京都沿河的新自行车道，这是过去的一部分，这是我的过去还是将来？

Guayaquil, Ecuador:
Winner of the sustainable Transport Award for 2007
瓜亚基尔，厄瓜多尔
2007年获得可持续交通奖

Nice waterfront bikeway in Guangzhou
广州漂亮的沿河自行车道

Rivers are great opportunities:
The Grand Canal today has limited access.
Think big.
Why not a Grand Bike Route along the Grand Canal?
河流可以充分地利用：大运河现在很难接近。让我们想象一下。
为什么不能沿大运河建造一条自行车道路？

TransJakarta BRT
97km completed. Another 170km, under construction, will open in January 2008, making it the largest BRT system in the world.
雅加达快速公交系统已经建成97公里。另有170公里正在建设当中，将于2008年1月开通。届时将成为世界最大的快速交通系统。

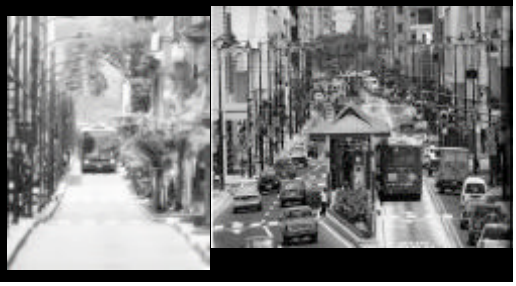


TransJakarta revitalized pedestrian space on the whole corridor.
雅加达快速公交在整个走廊沿线使步行空间得到重生。

Seoul: Sustainable Transport Award Winner 2007:
Low Grade BRT system
首尔：2007年获得可持续交通奖
低端快速公交系统

32

New Wave of BRT in Dense Urban Areas; Quayaquil, Ecuador and Pereira, Colombia
在城市密集区的新一轮快速公交建设：
Quayaquil, 厄瓜多尔和佩雷拉，哥伦比亚



Bogota's "Environment Street"
波哥大的"环境大街"

BRT Transit Malls:
Bogota and
Guangzhou (planned)

Paris 'Mobilien' BRT system has 3 lines, and 150 lines are planned for the greater Paris area by 2020
巴黎的"Mobilien"快速公交系统有三条线，到2020年整个大巴黎区计划达到150条线路

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Paris BRT system shares bus lanes with bicycles
巴黎快速公交系统的公交道与自行车共享

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Paris minibus circulators in the narrow city streets have priority access to some zones
巴黎的小巴在狭窄的道路中运行，
他们有进入某些区域的特权。

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Orange Line BRT Los Angeles
洛杉矶的快速公交橙线

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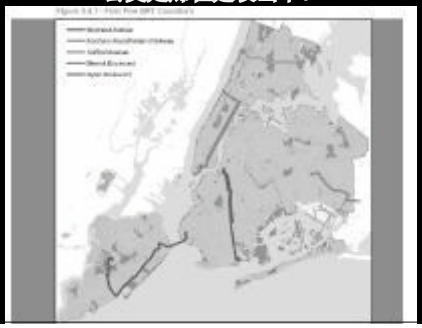
New York City has the Most Massive Metro System in the U.S. But it also has 5 Bus Rapid Transit Corridors under Development
纽约拥有全美国最大的地铁系统，但同时也有5条快速公交走廊在建设当中。



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Guangzhou BRT System:
广州
快速公交系统：

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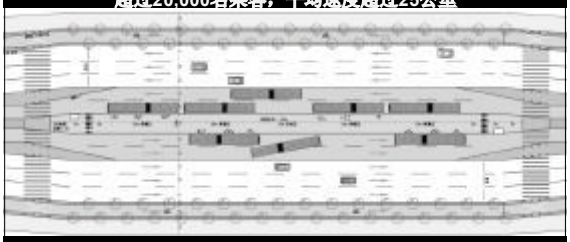
Guangzhou BRT chose very high demand corridor:
广州快速公交选择需求极高的走廊

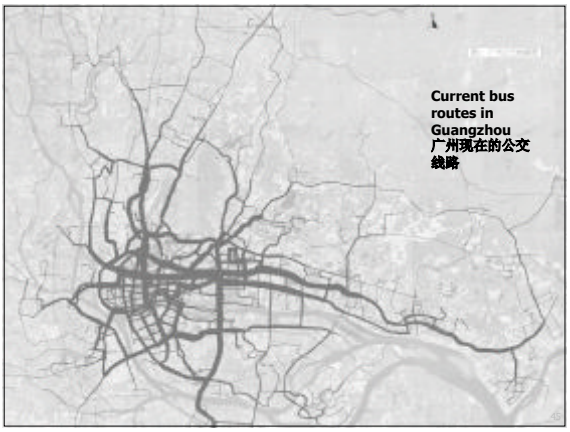
Station design
车站设计

BRT station with substops will accommodate more than 20,000 passengers per hour per direction at average speeds >25kph
拥有多个子站台的快速公交站台每小时单方向可以运送超过20,000名乘客，平均速度超过25公里

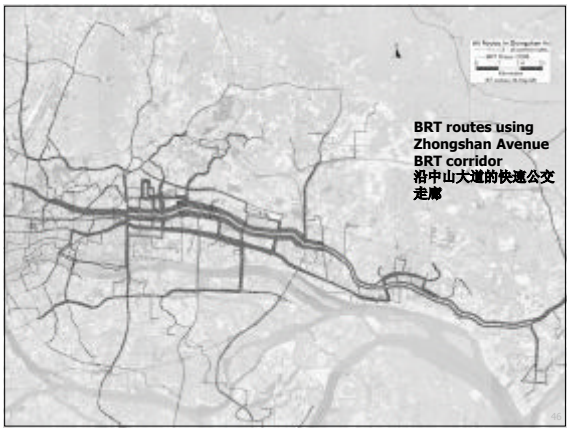


44

Current bus routes in Guangzhou
广州现在的公交线路

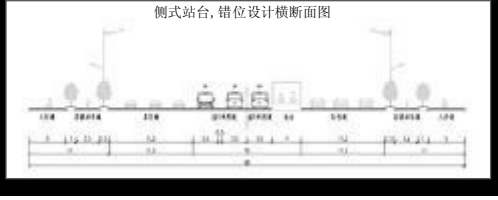


BRT routes using Zhongshan Avenue BRT corridor
沿中山大道的快速公交走廊



Dedicated bike lanes along the corridor
快速公交沿线的自行车道，侧式站台，错位设计横断面图

侧式站台, 错位设计横断面图



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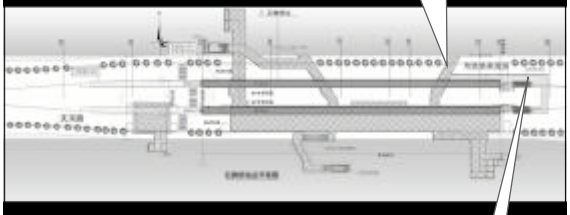
Full integration with the Guangzhou metro
与广州地铁的无缝接驳

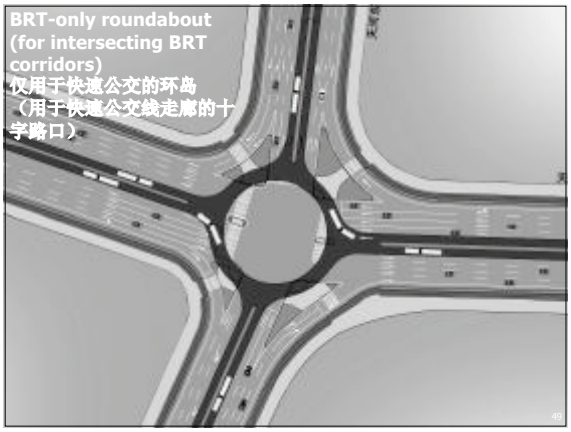
地铁出口通道



换乘通道

48

BRT-only roundabout (for intersecting BRT corridors)
仅用于快速公交的环岛（用于快速公交线走廊的十字路口）



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Curitiba BRT when it was first built
库里屯巴快速公交刚建成时的样子

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Land Use Impacts of Curitiba, Brazil BRT system
巴西库里提巴快速公交系统对土地利用的影响

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Cities which already have or are considering Congestion Charging
已经采用或者正在考虑拥堵收费的城市

- London (implemented) 伦敦（已采用）
- Singapore (implemented) 新加坡（已采用）
- Stockholm (implemented) 斯德哥尔摩（已采用）
- Sao Paulo (study completed) 圣保罗（已全面研究）
- Riga, Latvia (implemented) 拉脱维亚里加 （已采用）
- Oslo, Thronigen, and Bergen, Norway (implemented) 奥奥斯陆，Thronigen和卑尔根（已采用）
- New York (study completed-awaiting approval of State Legislature) 纽约（已全面研究，等待国家立法机构的批准）
- Jakarta (under study) 雅加达（研究中）
- San Francisco (under study) 旧金山（研究中）
- Nanjing, China (under study) 南京（研究中）
- Shenzhen, China (under study) 深圳（研究中）
- Bombay, India (under study) 印度孟买（研究中）

London's Congestion Charging system:
Raises £100 million/year for mass transit and bike lanes
伦敦的拥堵收费系统：
为建设公交系统和自行车道每年筹集1亿英镑

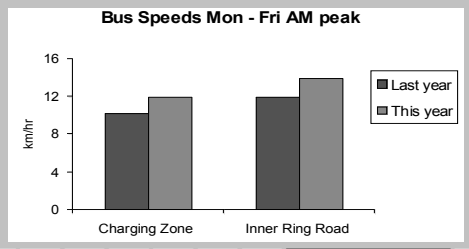
A 21km^2 charging zone with around 200,000 vehicles a day on some of London's most congested streets.

在伦敦最拥堵的大约21平方公里中，每天大约有200,000辆机动车。

The Scheme

55

Peak hour vehicle speeds have increased by almost 20%
高峰时间车速提高了20%

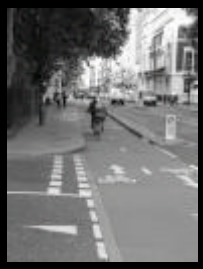


Public Transport

56

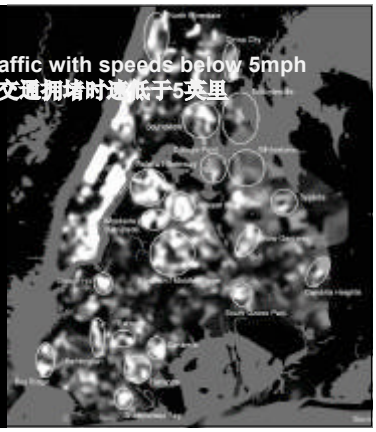
Camera license plate enforcement
使用摄像头将牌照记录下来

Reduction in Traffic was used to Reclaim road space for bicycles and pedestrians
交通拥堵的减少将空间还给了自行车和行人



Stockholm Congestion Charge:
Voters decided to keep the system
斯德哥尔摩拥堵收费：
投票者决定保留这个系统

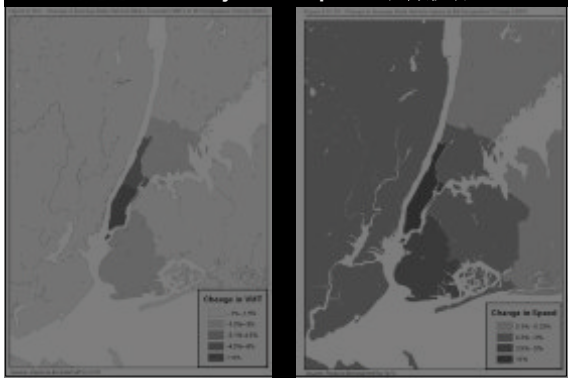
New York traffic with speeds below 5mph
纽约交通拥堵时速低于5英里



2007: New York City Proposes Congestion Charge
2007年纽约提出拥堵收费

- $8 dollars for motorists entering Manhattan south of 86th St.
- $4 if you live inside the zone
- If you pay a bridge toll, it is discounted from the congestion toll
- 6 a.m. to 6 p.m. Residents are not exempt
- Taxis are exempt
- 进入曼哈顿86街以南的汽车交8美元
- 如果住在区域内交4美元
- 如果交了过桥费，可以从拥堵费中扣除
- 从早六点到晚六点 所有居民没有例外
- 可免税

Projected Impacts 项目影响

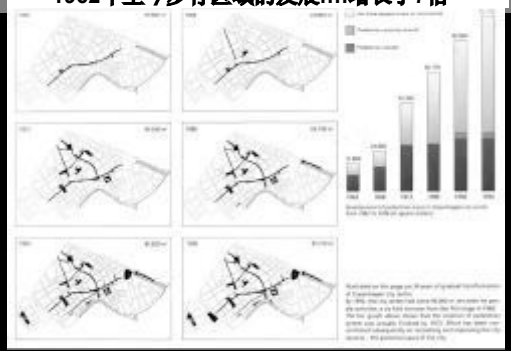


Copenhagen: Pedestrian and bike Use Increased Dramatically
from 1965 to Today
哥本哈根：1965年以来行人和自行车大幅提升

In 1962 all 18 squares were parking lots - now they are all people squares
在1962年所有18个广场都是停车场
- 现在都变成了人们的活动场所

Before 过去 ….and after: A Pedestrian Priority Street ….现在：步行街

The development of pedestrian areas in the city from 1962…….7 times more People Space!
1962年至今步行区域的发展….增长了7倍



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Many great pedestrian zones in China already.
They can be expanded.
中国有很多很好的步行区。它们可以更多。

- Beijing Road, Guangzhou (left)
- Nanjing Road, Shanghai
- Many many others
- 广州北京路
- 上海南京路
- 其它许多

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Wuhan
武汉

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2007 Sustainable Transport Award: Guayaquil, Ecuador
2007年可持续交通奖：瓜亚基尔，厄瓜多尔

Copenhagen Architect Jan Gehl Develops Science of Public Space
哥本哈根建筑师Jan Gehl提出了公共空间科学

- **Small is beautiful 小就是美**
- **Slow is beautiful 慢就是美**
- **Low is beautiful 低就是美**

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FIVE WAYS OF PREVENTING CONTACT BETWEEN PEOPLE
- **WALLS**
- **DISTANCE**
- **SPEED**
- **STACKING ORIENTATION**
- **AWAY**

五种阻碍人们交流的方式:
- **墙**
- **距离**
- **速度**
- **高度差**
- **背向而驰**

FIVE WAYS OF ENEBLING CONTACT BETWEEN PEOPLE
- **NO WALLS**
- **SHORT DIST.**
- **LOW SPEED**
- **NO STACKING ORIENTATION**
- **TOWARDS**

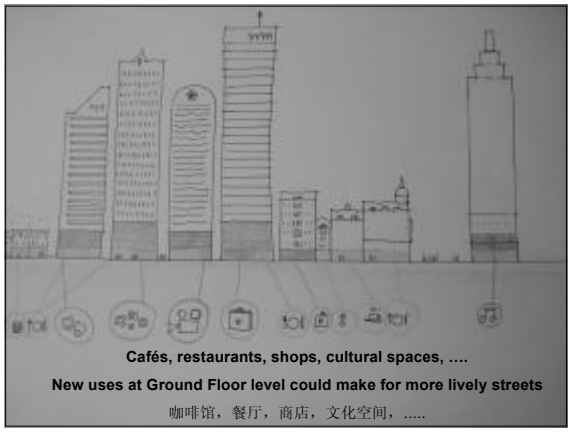
五种让人们交流的方式
- **没有墙**
- **短距离**
- **低速**
- **同一高度**
- **相向而**

ITDP

Jan Gehl and ITDP Evaluate Sao Paulo's failed Pedestrian Zone:
Street façade is not human scale
Jan Gehl和ITDP一起评估圣保罗步行区失败原因：
街道正面不符合人体工程学

Tall, office buildings often don't give much to the street……

高的办公大楼通常不能对街道环境有什么贡献.....



Cafés, restaurants, shops, cultural spaces, ….

New uses at Ground Floor level could make for more lively streets

咖啡馆，餐厅，商店，文化空间，.....

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Adding life to the ground floor of a socialist housing estate, Guangzhou

在广州，使建筑的第一层发挥更多作用。

ITDP

Revitalized Low Income Housing Estate, Guangzhou. Now a popular area for cafes

广州，使低收入社区更富有生气。

现在是知名的咖啡馆聚集区。

Reconstructed Inner Courtyard of Hungarian housing estate

重新建设过的小区内花园

Management of public space is also key to success: times Square Business improvement District

公共区域的管理同样是成功的关键：时代广场商务改进区

Public Private Partnership manages the public space

公众-私人合作企业共同管理公共区域

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Partnership Organizes Special Events
合作企业组织特殊事件

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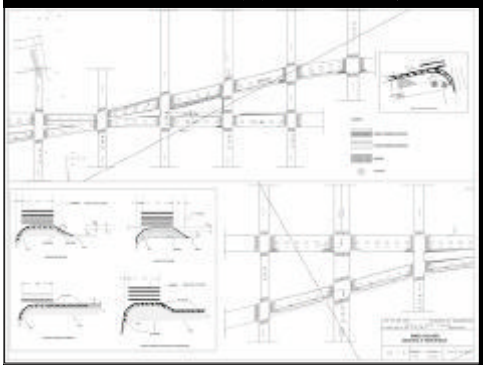
Expanded pedestrian space, Times Square
时代广场扩大的步行区



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Results
结果

- Violent Crime down over 90%
- 50+% increase in property taxes 50+% increase in office space
- 50+% increase in tourists 30% increase in hotel rooms Pedestrian counts up 56% to 100% in spots
- 暴力刑事案件下降90%
- 物业税上涨50%以上
- 办公空间上涨50%以上
- 游客增长50%以上
- 饭店住房率增长30%
- 行人在景点占到56%到100%

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Times Square Today:
A Symbol of New York revival
时代广场的今天：
美国复兴的代表

Shared Streets (guangzhou):
full pedestrianization is not always necessary
混行区（广州）：
完全的步行区不是任何时候都是必要的

Resurfacing signals to drivers to slow down
地表面标志提醒司机慢速行驶

Cars allowed but must behave like visitors
车辆可以通行但是必须象游客一样

de Brinkgood, Netherlands

Odense, Denmark

Victoria, British Colombia, Canada

Source: *Curbless Streets/Shared Space in Urban Contexts, Background, Issues & Examples, July 2007*

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Shortening the number of lanes needed to cross without refuge
缩短的车道数量，横跨无需避难岛

Me
我

Designing streets for slower speeds is better for bicycles than bike lanes on small streets
在狭窄的街道上设计标志慢行对自行车来说比自行车道更好

Recent street planning is all about allowing cars but making them feel uncomfortable, like a smoker on an airplane.
最近道路的设计都是允许小轿车通行但是让他们感到不方便，就象吸烟的人在飞机上。

The Netherlands
荷兰

Pedestrian Facilities for Hilly Cities:
Hong Kong Escalator Spurred Urban Redevelopment
多坡路城市的步行设施：
香港的自动扶梯刺激了城市的发展

2007 Sustainable Transport Award: Guayaquil, Ecuador
2007年可持续城市奖：瓜亚基尔，厄瓜多尔

Santa Ana Hill Restoration Santa Ana
山重建

Hong Kong Elevated Walkways Have Become the heart of social life of public space starved city
香港的扶梯成为这个缺乏公共空间城市的社会生活核心

Split level pedestrian facilities for hilly, high density cities- Hong Kong
多坡路，密度高城市的分层行人步行设施 – 香港

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Bike Facilities: China Still has some of the best facilities in the world. It is something to be proud of, not a cause of shame

自行车设施：中国仍然有很多世界上最好的自行车设施。这是值得骄傲，而不是感到羞愧的。

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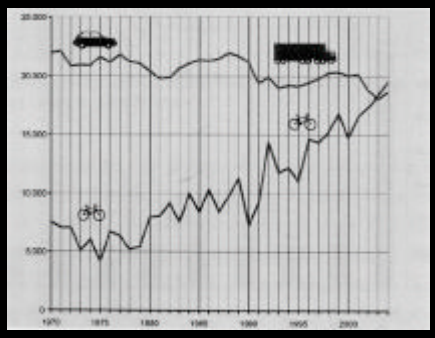
Copenhagen : The Most Bicycle Friendly City in the World: 36% of Trips by Bicycle

哥本哈根：世界最好的自行车友好型城市：36%的出行由自行车实现

ITDP

Increase in Cycling VS. Decrease in Driving

自行车的增加 VS. 驾驶的减少



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PARIS: Sustainable Transport Award Winner 2008

Paris bike sharing attracted 1 million riders in 18 days

6000 parking spots were removed for bike parking

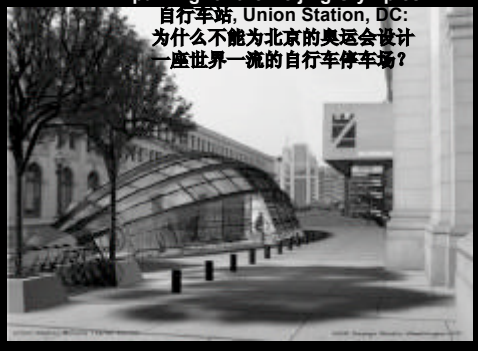
巴黎的自行车共享计划在18天里吸引了100万人

巴黎：2008年可持续交通奖

6000个汽车停车场变成了自行车停车场

ITDP New Bike Station Long Beach
长滩新的自行车站

ITDP Bike Station, Union Station, DC:
Why Not a World Class Architect designing bike parking for the Beijing Olympics?
自行车站, Union Station, DC:
为什么不能为北京的奥运会设计一座世界一流的自行车停车场？



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2006: New York Begins to Change Direction
2006年：纽约开始改变方向

ITDP
New 9th Ave. Bike Lane
First One with Auto parking buffer in New York!
新的第九大道自行车道
纽约第一个拥有自动停车缓冲器的地区

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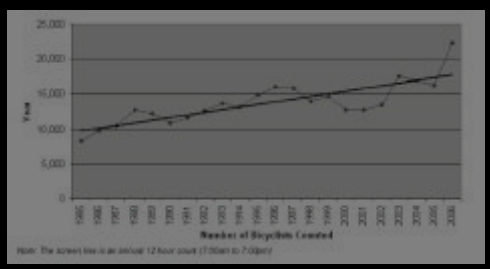
NYC Mayor Bloomberg's 2020 Bike Master Plan: 200 miles of new Grade A facilities
纽约市长2020年自行车计划：200英里且拥有一级设施

ITDP
Bike use has doubled in New York since 1985
自1985年起纽约自行车使用量增长了一倍



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350 km of new bike facilities in Bogota increased bike mode share from 0.5% to 5%
波哥大长达350公里的新自行车设施使自行车出行所占比例增长了0.5%到5%

Former bus passengers saved daily bus fare
过去的公交车乘客采用自行车，节省了车费

China Still Has the Best Bike Facilities in the World
中国仍然拥有全世界最好的自行车设施

ITDP Hangzhou BRT and Bike facilities. The bike facilities are World Class
杭州的快速公交和自行车设施
它的自行车设施是世界一流的

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Fully segregated bicycle infrastructure at major intersections: China is leader in the world
在主要交叉口完全隔离的自行车基础设施：中国世界领先

ITDP Kunming 昆明

ITDP

ITDP

Bogota emulates Chinese fully grade separated bicycle intersections
波哥大效仿中国在交叉口将自行车完全隔离

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World's biggest 'bike box',
Intersection design for high volume bike use: Chengdu
世界最大的"自行车盒子"
为大流量自行车通行设计的交叉路口：成都

ITDP

Well designed intersection for handling huge volumes of bikes: Kunming China is the only country with experience with this level of bike volume
为大流量自行车通行设计的交叉路口：昆明
中国是唯一拥有大流量自行车通行经验的国家

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Reasonable intersection design reduced bike/motorist conflicts
合理的交叉口设计可以减少自行车和机动车的矛盾

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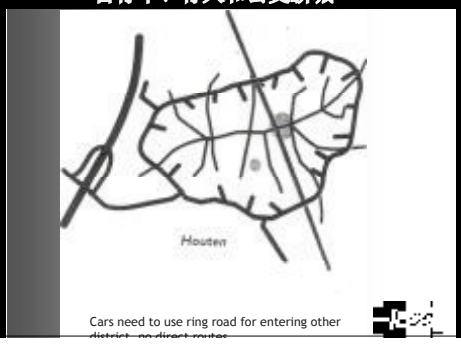
Bicycle, Pedestrian and Transit New Towns
自行车、行人和公交新城



Cars need to use ring road for entering other district, no direct routes

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Dare to Dream:
Rethink Public Space
敢于梦想：
重新思考一下公共空间

Hundertwasser Streetscape
洪德特瓦瑟街景

Public toilet and traffic calming bulb:
Hundertwasser, New Zealand
公共厕所和交通静化中心，新西兰

Re-imaging the Street:

Hundertwasser House, Vienna

重新想象一下街道：
维南

Thank You!
谢谢

The Institute for Transportation and Development Policy
交通和发展政策研究所
www.itdp.org

Bus System Reform in Major Cities in Korea
韩国主要城市的公交改革

Nov. 15, 2007
2007年11月15日

Sangjoo Lee, Ph.D.

Deputy Director, Urban Transportation Policy Team, MOCT, Korea
韩国建设交通部城市交通政策小组副组长

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Contents 内容

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Current Status : South Korea

- **Small area: 99,538 km²** 面积小: 99,538 km²
- **High population density: 492/km2** 人口密度 : 492/km2
- **High increase in no. of cars** 小轿车数量快速增长
- **49% of Koreans live in Seoul Metro Area** 49%的韩国人居住在汉城都会区

Urban Area

- **Decrease in auto speeds** • 机动车行驶速度下降
- **High congestion cost** • 拥堵成本高
- **Air pollution** • 空气污染

Rural Area

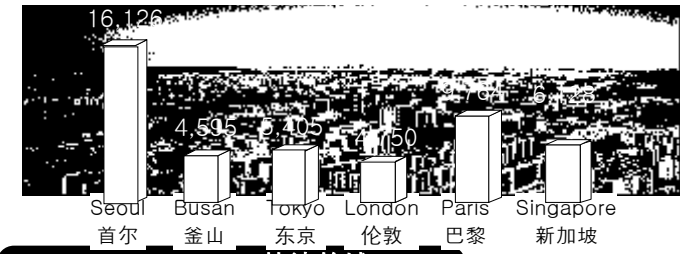
- **Increase no. of elderly** •越来越多的老人们
- **Lower use of public transportation** •低使用公共交通
- **Need of Demand Responsive Transportation** •有需要的需求，顺应交通

MINISTRY OF CONSTRUCTION & TRANSPORTATION

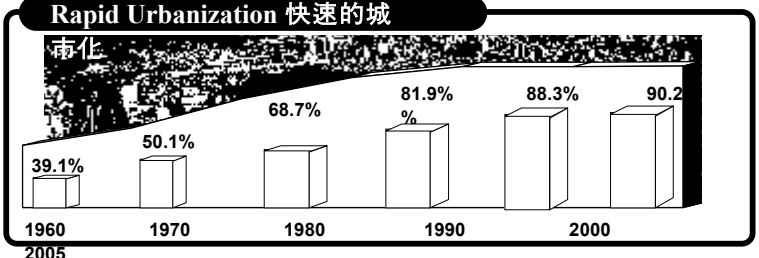
KOREA

Present Status 现状

Comparison of Population Densities 人口密度对比



Rapid Urbanization 快速的城市化



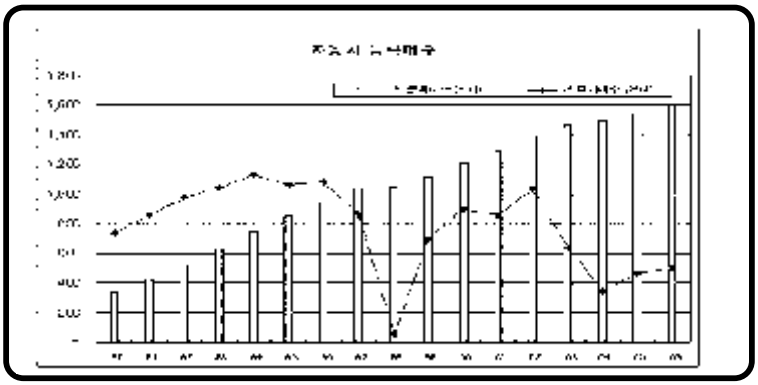
MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Current Status : South Korea

Number of Vehicles

- Annual increase rate recorded a rapid 8% until 2002, a sl ow 3% since 2003

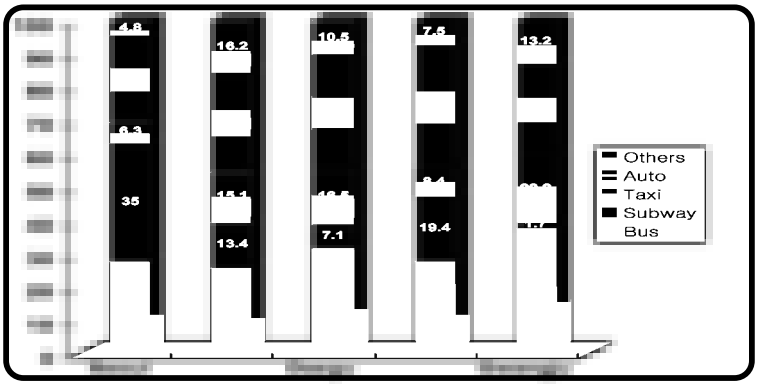


MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Current Status : South Korea

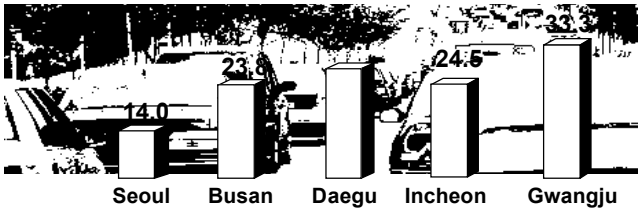
- Share of bus users has decreased over the last 10 years
- Share of bus & subway is about 39-62% in metro cities



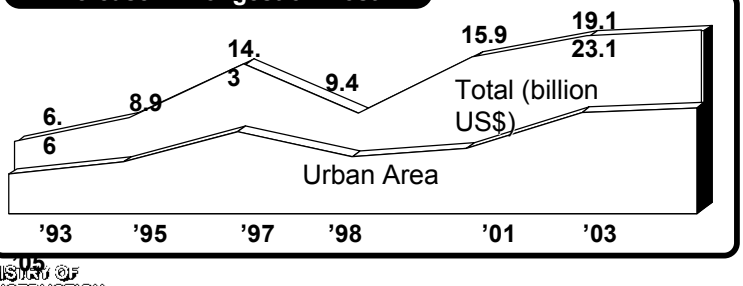
MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Current Status : South Korea



Increase in Congestion Cost



MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Current Status : Seoul

Population & Density

- Population : 10.4 M (SMG Area : 605.52 ㎢)
- Density: 17,000 p/㎢ (1.3 times of Tokyo; Twice of New York)

Transportation in Seoul

❖ Bus	No. of buses : 10,000, No. of routes : 500
❖ Subway	No. of passengers : 5 million per day 350km : 8 lines + Korean Rail Corp.
❖ Taxi	3,500 Vehicles, 4.5 million passengers/ day No. of taxi: 70,000
❖ Car	No. of cars : 3 million, 16km/h average speed in downtown

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Present Status 现状

Decrease in Bus Passengers 公交乘客逐年下降

Financial difficulties in bus companies 公交公司出现财务困难

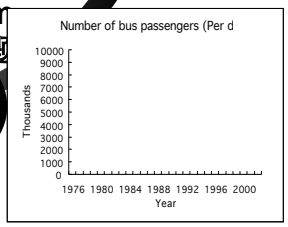
Drop in The number of bus passenge 公交乘客数下降

Public transport in Seoul首尔的公共交通

- Bus industry operated by private company by 2004
  2004年前公交由私人公司运行
- Expansion of metro system
  地铁系统扩展

Problems in Bus system 公交系统的问题

Deterioration Of bus services 公交服务恶化



MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation

■ Bus System Reforms in Seoul

- **Revenue System Change**
- **Bus Routing Change**
- **Change of Color & Function of Bus**
- **New Number System**
- **Fare System Change**
- **Increase of IC Card Usage**
- **Improvement of Bus Facilities**

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation
规划与实施

■ Revenue System Change 收入系统改革

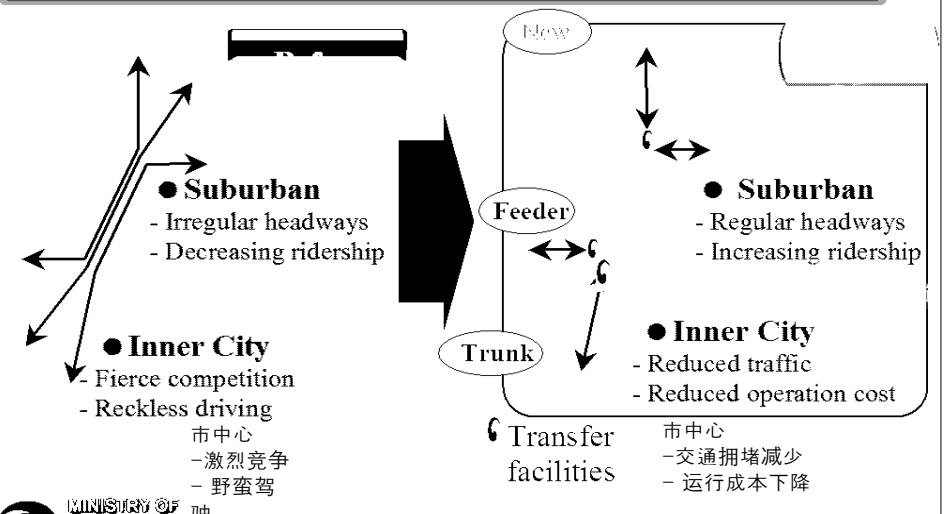
Introduction of bidding main routes
Joint management of revenue
Reform of revenue structure based on operating distance
在主要线路引入竞争
收入的共同管理
收入结构与运行距离挂钩

Previous system过去的系统	New system新的系统
Revenue based on number of passengers of each bus route owned by company 收入与公司拥有所有线路的乘客数量相关	**Revenue based on service distance (Veh-km) : SMG compensates gap between revenue and cost 收入与服务距离（车辆-公里）相关：SMG补贴收入与成本之间的差额**

MINISTRY OF CONSTRUCTION & TRANSPORTATION
KOREA

Planning & Implementation 规划与实施

■ Bus Routing Change 公交线路改革



MINISTRY OF CONSTRUCTION & TRANSPORTATION
KOREA

Planning & Implementation 规划与实施

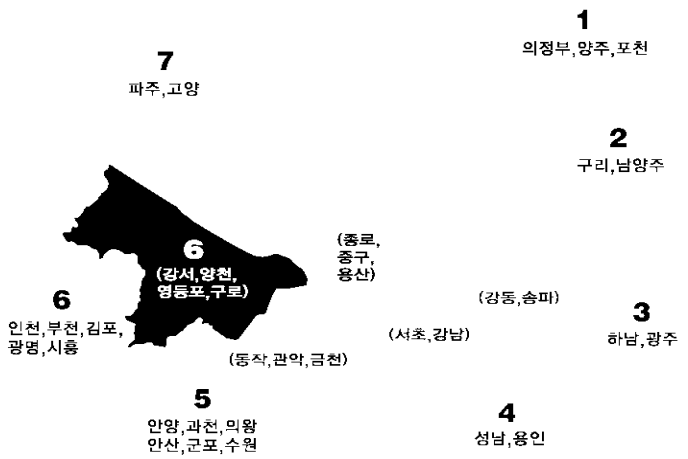
■ Change Color & Function

Regional connection between suburbs and downtown area Ensuring operation speed and punctuality 区域线路--联系城乡 保证运行速度和可靠性	→	Trunk Lines 干线	→ Blue Bus 蓝色
feeder to trunk lines and subways Meeting local traffic demand 给饲线--与干线和地铁联系 满足地方需求	→	Feeder Lines 给饲线	→ GreenBus 绿色
Local lines within the downtown area Serving for business and shopping trips 地方线路--城市中心 服务于商务和购物出行	→	Circular Lines 循环线	→ Yellow Bus 黄色
Express connection between satellite cities and downtown area Absorbing passenger car commuters 快线-联系中心城和卫星城 吸引小汽车出行	→	Wide area Lines 大区线	→ Red bus 红色

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation 规划与实施



MINISTRY OF CONSTRUCTION & TRANSPORTATION

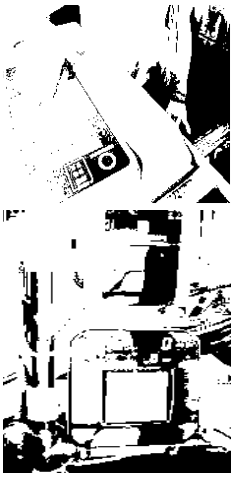
KOREA

Planning & Implementation 规划与实施

■ Change Fare System 票制改变

Distance Based Fare

- Subway : fare according to distance-traveled (basic fare : 800 won up to 12 km; extra fare of 100 won for every additional 6 km)
- Bus : single fare of 800 won
- 地铁：根据行程长度定价
- 12公里以内800韩元，每6公里增加100元
- 公交：单一票制：800韩元



Free of Charge for Transfer 换乘

- Accumulated distance-based fare system (basic fare up to 10km; extra fare for every additional 5 km)
- 累计里程计价系统：基价10公里, 每5公里加费

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation 规划与实施

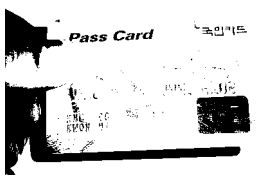
Smart Card IC卡

- 59 million TSCs were issued for bus, subways, taxi, etc.
- Discounts for IC users (Seoul : 10%)
- Standardization of the Security Module of IC in 2008

- 发行5900万张，用于公交、地铁、和出租车
- IC卡打折 (Seoul : 10%)
- 2008年智能卡安全性

Prepaid Card 预付卡

Credit Card 信用卡



MINISTRY OF CONSTRUCTION & TRANSPORTATION

Planning & Implementation 规划与实施

■ Infra-Facilities 基础设施

Bus-priority system 公交优先系统
- Exclusive median bus lane 中央专用道
- Bus-Priority signal system 信号优先系统

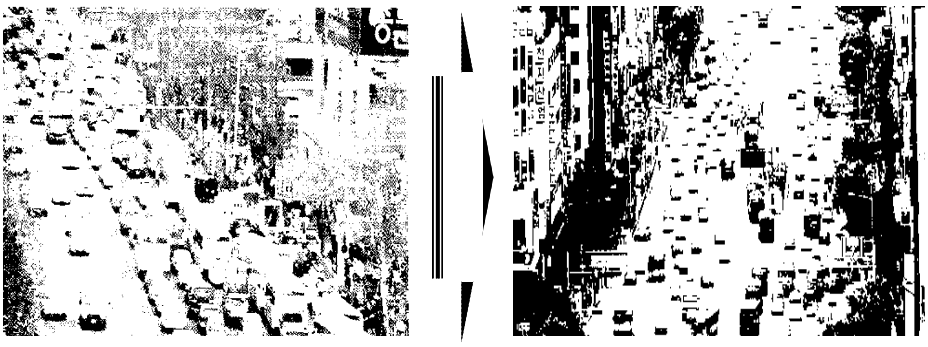
Transfer facility 换乘设施
- Expansion of Transfer center 换乘中心扩展
- Improvement of transfer stations 换乘中心改进
- Transfer parking lot 换乘停车场

Facility and vehicles 车辆和附属设施
- Improving deposits and stations 改善驻车场和车站
- High quality buses 高品质公交车
- Introduction of low-floor, articulated buses 低地板，铰接车

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation 规划与实施

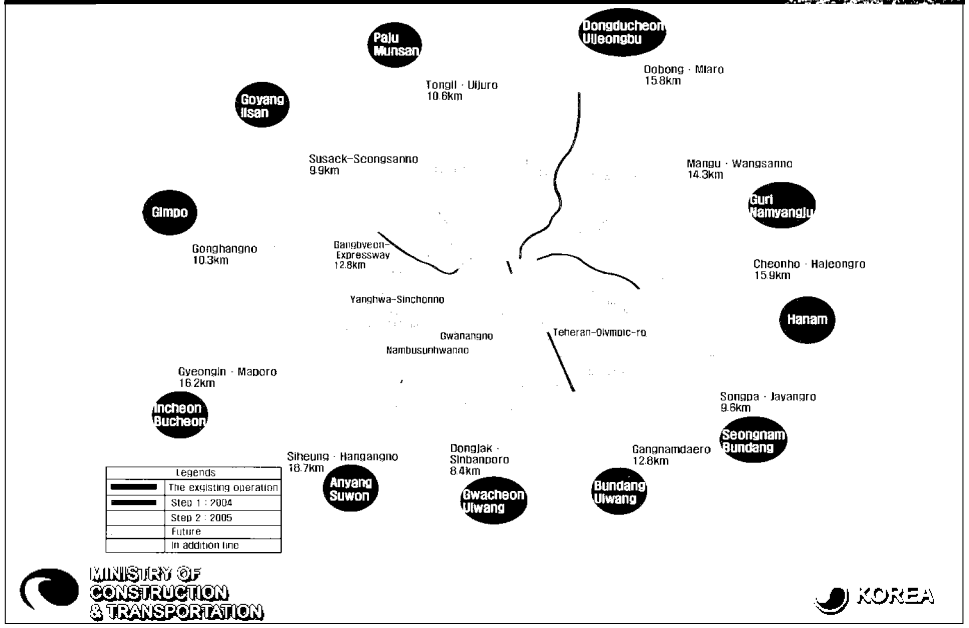


- **Expansion Plan (13 lines/192㎞)** 扩展计划
  - Status of Existing Bus Lanes(2005) 现状
  - **Exclusive median bus lanes: 7 lines/ 84㎞** 中央专用道 **7条/84km**
  - **Curbside bus lanes: 293.6㎞** 边侧专用道：**293.6**公里

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Planning & Implementation 规划与实施



MINISTRY OF CONSTRUCTION & TRANSPORTATION

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Result 成果

■Passengers & Cost 乘客 & 费用

Criteria 标准		Seoul	Daejeon	Daegu	Gwangju
Number of bus passengers (thousand trip per day) 公交出行量	Before	4,870	352.5	657.7	424.4
	After	5,404	392.3	683.6	421.7
	Difference (%)	10.97	11.29	3.94	-0.65
Number of buses 车辆数	Before	7,360	926	1,718	894
	After	7,527	965	1,561	888
	Difference (%)	2.27	4.21	-9.14	-0.67
Standard operation cost (KW/veh/day) 运行费用	Before	415,970	326,088	365,948	363,282
	After	560,485	416,767	463,984	406,010
	Difference (%)	34.74	27.81	26.79	11.76
Operating cost for each passengers (KW/passenger) 乘客出行成本	Before	732	1,062	744	740
	After	781	950	1,050	869
	Difference (%)	6.64	-10.57	41.04	17.51

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Result 成果

■ Smart card, Accident, Satisfaction 智能卡, 事故,

Criteria 标准		Seoul	Daejeon	Daegu	Gwangju
Smart card use (%) 智能卡使用(%)	Before	77.4	44.7	46.0	74.5
	After	88.3	64.5	84.3	80.5
	Difference (%)	14.08	44.30	83.26	8.10
Bus related accident (accident/month) 公交相关的事故	Before	663	671	97	N.A.
	After	466	660	87	N.A.
	Difference (%)	-32.73	-1.64	-10.31	N.A
Passenger's level of satisfaction (%) 乘客满意度 (%)	Before	22.4	13.0	N.A.	N.A.
	After	30.4	29.8	40.6	N.A.
	Difference (%)	35.71	129.23	N.A.	N.A.

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KOREA

Result 成果

■Public Subsidy成果

Criteria		Seoul	Daejeon	Daegu	Gwangju
Public subsidy (KW/day) 公公补贴	Before	174,030,137	12,893,151	28,002,740	12,205,479
	After	534,246,575	70,506,849	140,822,784	49,169,418
	Difference (%)	206.99	446.86	402.89	302.85
Public subsidy for each passenger (KW/person/day) 每个乘客补贴	Before	42	45	33	28
	After	99	180	206	119
	Difference (%)	137.47	296.23	521.24	326.41
Public subsidy for bus (KW/veh./day) 单车补贴	Before	23,645	13,923	16,300	13,653
	After	70,977	73,064	90,213	55,371
	Difference (%)	200.18	424.77	453.46	305.56

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Result 成果

1

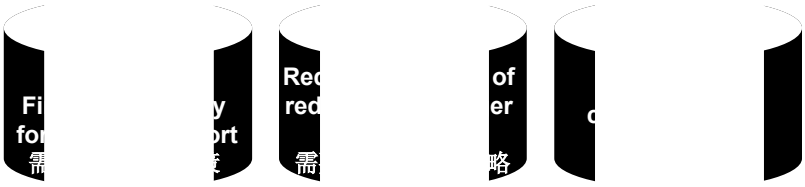
Increase of bus operating cost and public Subsidy
公交运行成本和公众补贴增加

2

Increase of quality of bus service (number of bus users is stable)
服务质量（车辆数没有增加）提高

3

Decrease of motivation to achieve better efficiency in bus operation
提高效率的动力不足



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KOREA

Thank

Urban Transport Policy Team
Ministry of Construction and Transportation
Republic of Korea

MINISTRY OF CONSTRUCTION & TRANSPORTATION

KOREA

Central London Congestion Charging Scheme

伦敦中心区拥堵收费方案

16 November 2007
International Mayors' Forum
on Sustainable Urban Development
Tianjin, China

国际市长论坛-可持续城市发展
中国天津　2007年11月16日

Jeremy Evans
伦敦交通局拥堵收费部交通和技术组主管

Jeremy Evans
Head of Traffic and Technology
Congestion Charging Division
Transport for London

Contents 内容

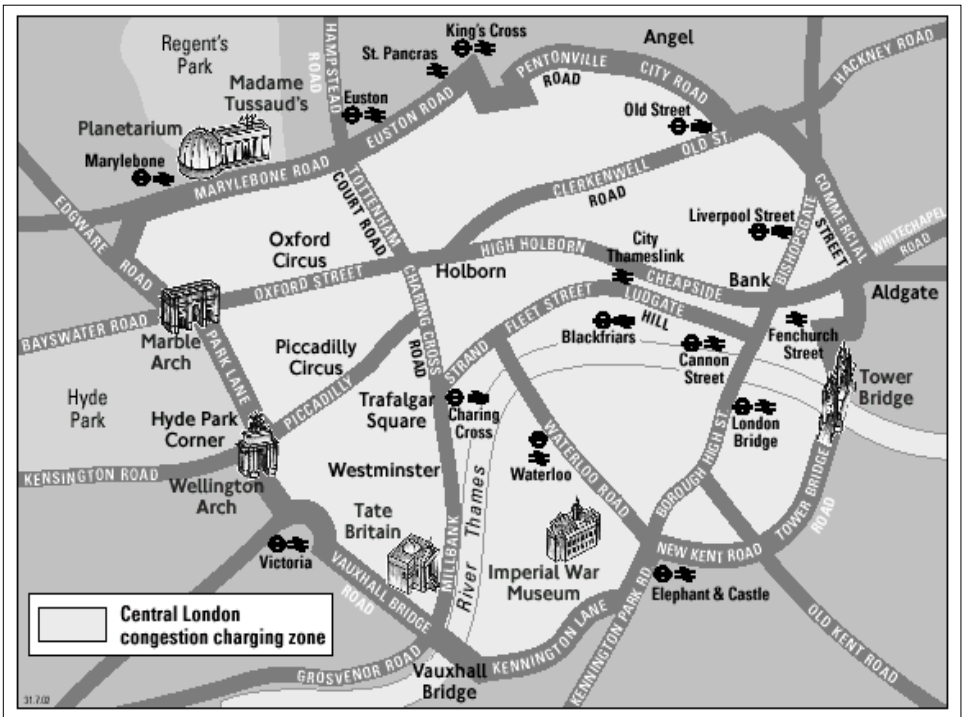
- The Original London Scheme
  原来的拥堵收费方案
- Impacts
  实施效果
- Western Extension
  收费区向西扩展
- Lessons Learnt
  相关经验
- Technology Trials
  技术应用
- Emissions Related Congestion Charging
  基于排放的拥堵收费
- The Low Emission Zone
  低排放区

London's transport Problems
伦敦的交通问题

Central London's Problem
伦敦中心区的问题

- Greater London - largest urban area in Europe, over 7 million population 大伦敦是欧洲最大的城市区，拥有超过7百万的人口
- Central London - 1 million workers, heart of UK business, government, media, heritage
  伦敦中心区则是英国商业、政府、传媒和文化中心,有1百万人在这区域内工作
- Suffered worst traffic congestion in the UK
  在英国交通拥堵状况最严重
  - average traffic speeds 15 km/hr 平均速度在15km/h左右
  - vehicles typically spent half their time in queues
    机动车通常路上的一半时间都在排队
- Congestion increasing, costing people and businesses time and money
  拥堵增加导致人们居住和商业活动时间和经济上的成本都在增加
- General acceptance - 'something must be done'
  大家普遍认为"必须采取某种行动来改变这种状况"

The Original Central London Congestion Charging Zone
伦敦中心区最初收取拥堵费的区域



Choice of Scheme 方案选择

- To tackle all day problems and using the most reliable technology available at the time

  针对全天的问题并应用最可靠的前沿技术
- An area charging scheme covering the whole working day was developed

  制定了包括所有工作日在内的固定区域收费方案
- Effective and feasible to implement in first Mayoral term

  在市长首个任期内能够实施并产生效果
- Proven technology with camera-based enforcement

  采用已经证明成熟的技术并结合摄像来监督实施
- Full choice of payment channels available

  提供各种不同的付费途径
- Allows 'anyone' to enter – no need for on board equipment or registration

  任何人都可以进入，并不需要在车上安装设备或者需要登记

Legislation 立法

- Greater London Authority Act 1999 – established the role and powers of the Mayor and the ability for the Mayor to introduce a Charging Scheme in London

  1999年的大伦敦职权法确立了市长的职责和权力，使得市长能够实施拥堵收费
- The Road User Charging Regulations – specified the exact details of the Enforcement process to issue and pursue penalties for non payment of the charge

  道路使用者收费条例明确了对不支付罚款的人员如何惩罚和实施
- The Congestion Charging Scheme Order – defined the area covered by the Scheme, hours of operation, the charges payable, discounts and exemptions

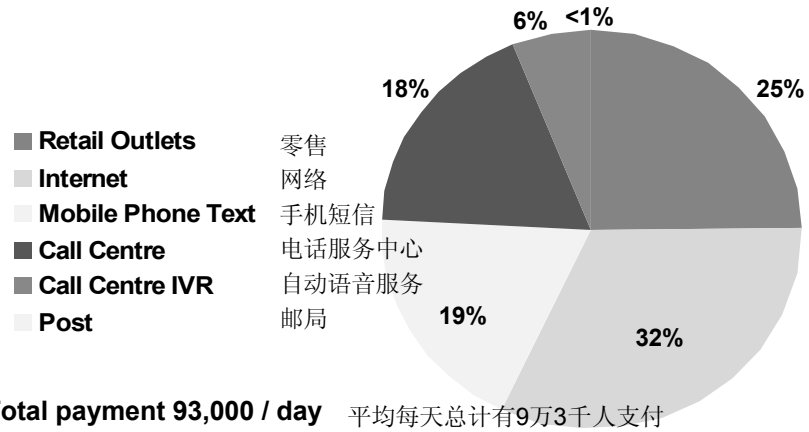
  拥堵收费令确定了收费的区域、时间、付费手段、折扣和免费方案

Charge payment 如何付费

- Daily, weekly, monthly or annual payment, for individual vehicle registration number
  基于每辆车的车牌号码收取一天、一周、一月或一年费用

  T 123 ABC
- Flat charge of £8 per day (120 RMB)
  一天的费用是120元
- Monday - Friday 7am - 6pm (was 7am - 6.30pm up to 19 February 2007)
  周一到周五早7点到晚6点（07年2月19日前曾是早7点到晚6点半）
- Payment up until midnight on day of travel, but
  之前费用必须在半夜前完成支付
- Can now pay next day at a rate of £10 (150 RMB)
  但现在可以第二天再支付，不过费用将增加到150元
- Range of exemptions and discounts including 90% discounts for residents
  免费和折扣方案中包括对居民提供1折优惠

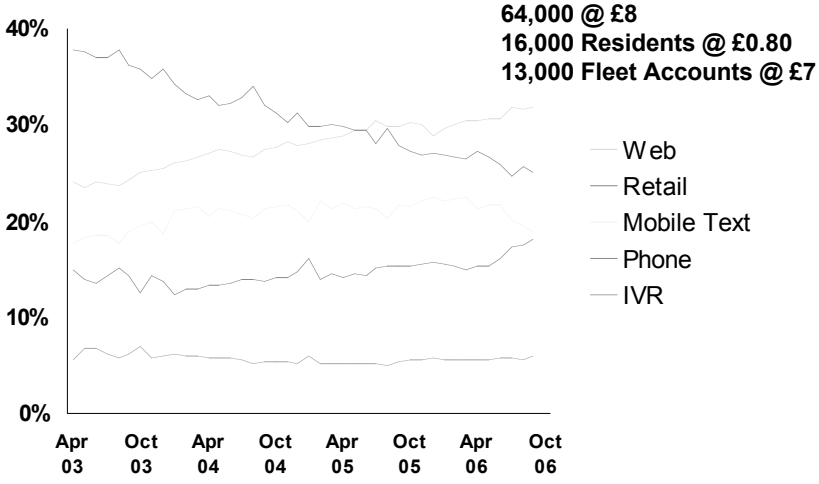
Payment channels September 2006
支付渠道分析 2006年9月



Total payment 93,000 / day 平均每天总计有9万3千人支付
64,000 @ £8 支付120元的有6万4千人
16,000 Residents @ £0.80 支付12元的有1万6千人
13,000 Fleet Accounts @ £7 支付105元（批量车辆）的有1万3千人

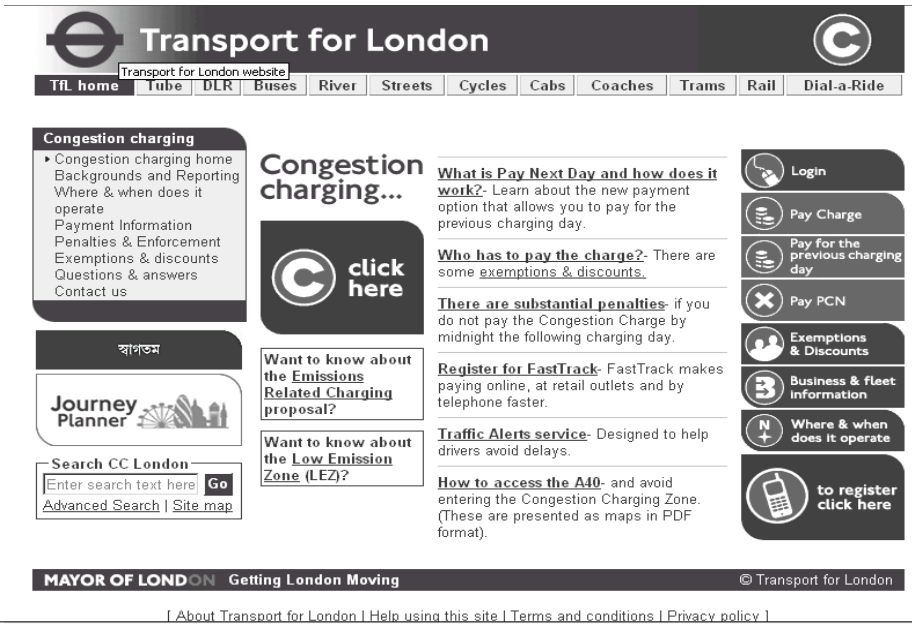
Payment channels: April 2003 – September 2006
支付渠道分析：2003年4月到2006年9月

Total payment 93,000 / day
64,000 @ £8
16,000 Residents @ £0.80
13,000 Fleet Accounts @ £7



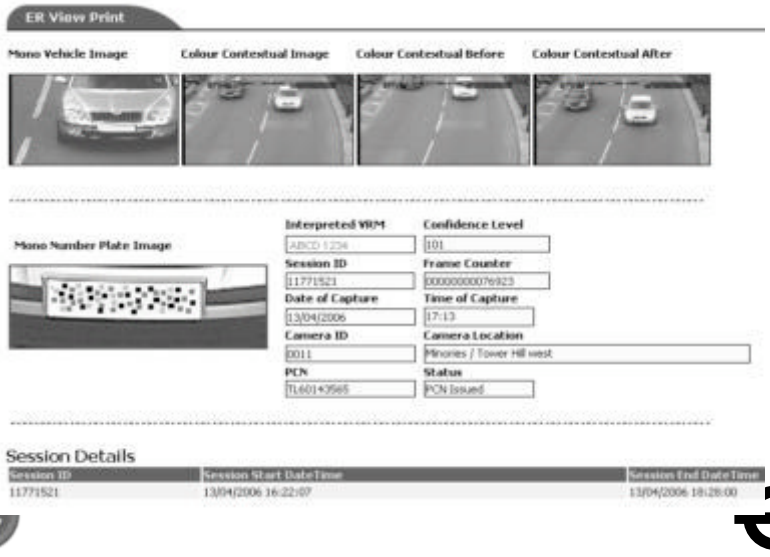
Decrease in SMS reflects introduction of Pay Next Day in June 2006

Web Channel – www.cclondon.com
伦敦交通局网站



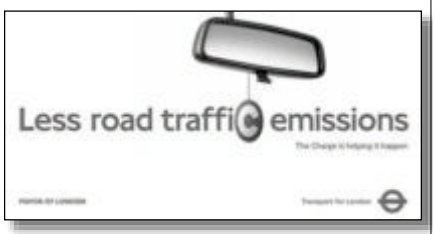
Camera Enforcement
通过摄像监督实施

Camera enforcement
通过摄像监督实施

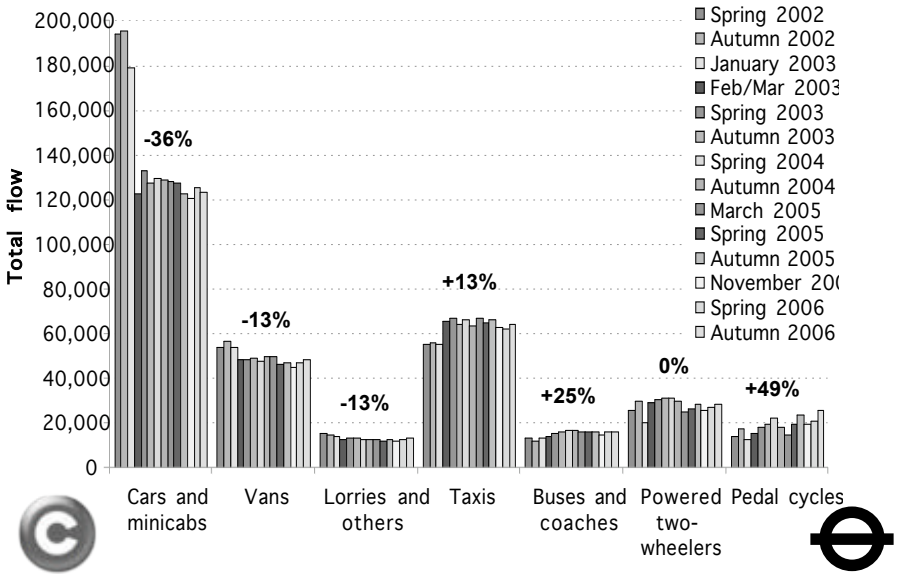


Impacts实施效果

- **£122million (1.8 billion RMB) per annum net revenue reinvested in transport improvements in 05/06**
  05-06年度净利润达到18亿人民币，这些钱又被投入到改善交通系统
- **Traffic entering charging zone reduced by 21%**
  进入拥堵收费区域的交通减少了21%
- **Congestion reduced by 30% in 2003 and still 8% lower than pre Charging levels**
  2003年的拥堵情况相对以前降低了30%，即便今天拥堵仍然比实施收费前降低了8%
- **Environmental changes环境影响**
  - **NO_x down 13%　氮氧化物降低了13%**
  - **PM_{10} down 15%　PM10颗粒物降低了15%**
  - **CO_2 down 16%　二氧化碳降低了16%**
- **Bus patronage up, reliability and journey time improved**
  公交使用人数增加，可靠性和耗费时间都得到改善



Traffic entering the central London charging zone
进入伦敦中心收费区的交通流量
During charging hours (07.00-18.30) 收费时段



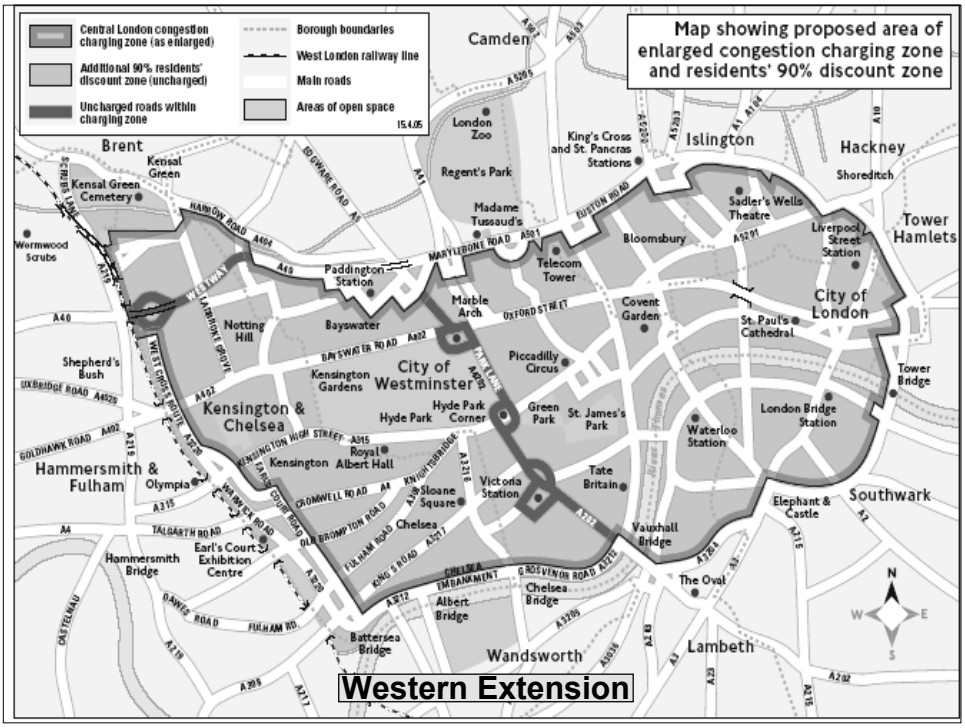
Public Transport, Accidents and Economy
公交、事故和经济

- Bus, Underground and Rail – essentially stable
  公交、地铁和铁路交通基本稳定
- Accidents – further reductions across Greater London with continuing additional Congestion Charging gains
  大伦敦地区事故进一步减少
- Economy – Central London economy doing well伦敦中心城区经济发展良好
  - Confirms pre-eminence of other factors
    确认了其他因素的优秀
  - 3-4 years of data do not suggest significant effects, positive or negative on business performance
    3-4年的数据没有显示对商业好的或者坏的影响

Support for the scheme对计划的支持

- Public opinion was equivocal prior to the introduction of the Central London scheme引入前公众支持度不一
- After its introduction, public opinion shifted decisively in favour of the scheme, with opposition levels falling实施后公众支持增加，反对降低
- Talk of extensions produced a drop in support
  扩大收费区范围的讨论降低支持
- After waning support has picked up following benefits campaign
  通过效果宣传公众支持度回升

	02	Pre-CC		03 Post-CC				05	06
Support	40	38	39	57	50	59	48	40	59
Neither	19	16	18	16	18	15	21	24	12
Oppose	40	43	41	27	31	24	28	35	26



Why an extension to the west?
为什么要向西扩张

- Main concentrations of congestion in central / inner London to the west and south-west of the existing charging zone
  主要拥塞在城市中心的西部和西南部
- High levels of congestion throughout working day
  工作日拥堵严重
  - Intense inter-peak congestion
    高峰期拥堵压力巨大
- Good public transport throughout the area
  该地区公交发达
  - Bus routes and good Underground coverage
    地面公交和地下铁路覆盖
- 60% of incoming trips in morning peak by public transport, of which 20% by bus
  早晨60%进城雏形通过公交，其中公共汽车占20%
- Feasible boundary route for accommodating diverting traffic
  有可行的饶行路线

WEZ Infrastructure
WEZ设施

- New cameras
  新装电子摄像头
- New telecommunications
  新的电信设施

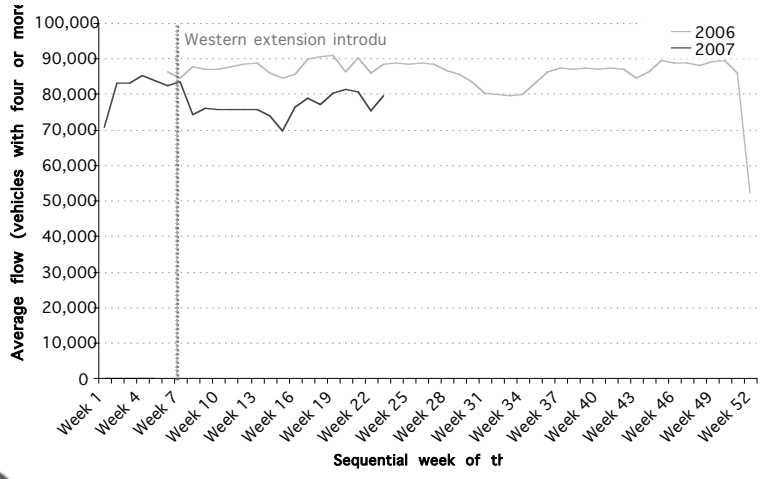
Benefits of WEZ System Architecture
WEZ系统的优点

- Cheaper telecommunications
  低价的电信系统
- Less public nuisance in laying new cable
  铺设新电缆扰民小
- Greater resilience to telecommunications failure
  通讯中断风险低
- DR link to all cameras, and no need to buy duplicate ANPR systems DR
  连接所有摄像头，不另建ANPR系统
- Greater flexibility of location of data centres
  数据中心设置灵活
- Easier future integration with DSRC 'tag and beacon'
  和未来的DSRC容易整合

Western Extension: Early Results
西扩的初步结果

- Automatic traffic counter measurement of traffic volumes: traffic entering zone down 10 - 15%
  自动流量监控：进入收费区流量减少10-15%
- Camera and moving car measurements of congestion
  摄像头和流动车监测拥堵
- Early results encouraging; accord with TfL's expectations
  早期结果显示效果与伦敦交通局预期吻合
- No evidence of operational or traffic problems from the extension
  无证据显示扩大收费区造成运行和交通问题

Inbound Flows进入市区的流量



Central Zone Traffic中心地区流量

- Some evidence of increased traffic entering central zone
  进入中心区的流量有所增加
- Up to 4% against 2006 at one time; now down to 2% extra
  曾经增加4%，目前降到2%
- Partly reflects increased extension residents trips but also partly reflects other factors
  部分因为扩大区居民出行增加，部分为其它原因
- Not yet any evidence of congestion response
  尚未有证据显示对拥堵有影响

Congestion拥堵

- Moving car observer surveys now available (Central zone and Western Extension)
  已有流动观察车调查数据（中心区和西扩区）
- Western Extension congestion down by 20-25% against most appropriate comparison surveys.
  西扩区拥堵减少20-25%
- Central zone congestion in-line with background trend in 2006 – no evidence so far of extension-related trend
  中心区拥堵与2006年背景数据相当-尚未有证据显示与西扩相关的趋势

Summary总结

- Western Extension has resulted in forecast reductions in traffic levels and congestion
  西扩造成的流量较少和堵塞与预期吻合
- Potential negative impacts in the Central zone have not been realised
  没有对中心区造成潜在负面影响
- Traffic on Western Extension boundary has increased, but is within manageable levels
  在西扩区边缘流量增加但尚可接受
- Traffic on free through route is unchanged
  对未收费道路流量影响不大

Latest Monitoring Report
最新监测报告

“Central London Congestion Charging Scheme Impacts Monitoring Fifth Annual Report – June 2007”

第五次伦敦中心堵塞收费影响年度报告-2007年6月

http://www.tfl.gov.uk/assets/downloads/fifth-annual-impacts-monitoring-report-2007-07-07.pdf

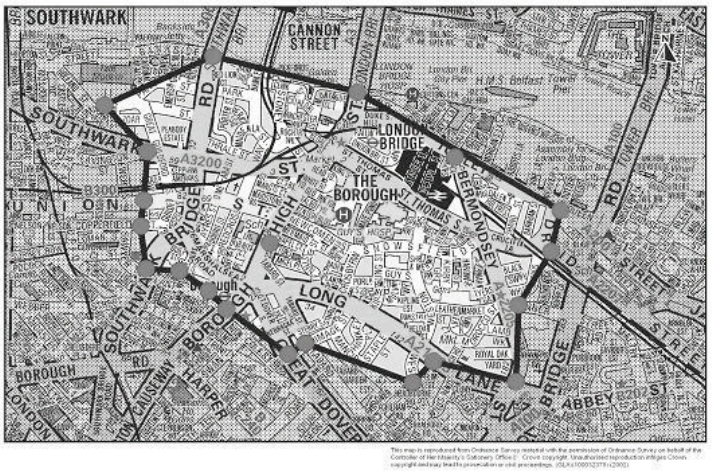
Key lessons learnt主要经验

- Political commitment of Mayor市长的政治承诺
- Effective research and clear policy objectives
  有效的研究和明确的政策目标
- Extensive public consultation and stakeholder engagement
  广泛的公众咨询和参与
- Strong project management有力的项目管理
- Adequate public transport alternatives完善的公交体系
- Effective traffic management有效的交通管理
- Strong public information campaign有力的公众信息宣传
- It works and has public support有效的系统和公众支持
- Need for ongoing customer and impacts monitoring, stakeholder engagement and scheme improvements
  需要实时的效果监测，公众参与和系统改善
- Need for effective contract management 需要有效的合同管理

Technology Trials技术实验

- TfL have conducted extensive technology trials since 2003 to understand how well alternative road user charging technologies will work in the ‘London’ urban environment and when they might readily be available
从2003年起TFL做了大量的技术实验了解多大程度上其他道路使用收费技术可以用于伦敦的城市环境，并且何时可以付诸实施。
- We have tested, new cameras, road side ANPR, DSRC, satellite and mobile tracking systems
测试了新的摄像头，路边ANPR，DSRC，卫星和移动检测系统

TfL Mini Zone Trial Site
出TFL微型区检测点



DSRC Infrastructure
Borough High Street 2006
DSRC系统

试验结论　Conclusions from Trials

至今为止我们总结如下:

- 改进后的摄像头加ANPR的有效方法可以用于简单的收费方案(用在西部外延地区)
- 在敏感的城市区域应用的信标技术，例如根据方向和时间的收费将在短时间内到位 (到2010年).
- 卫星和移动电话定位系统变得更好和更便宜，但是为了能使他能被接受以及在城市内更加准确还有很多工作要做（可能在2010年后）

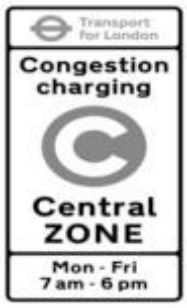
To date we have concluded the following:

- Improved cameras plus ANPR effective solution available now for simple charging schemes (used in the western extension)
- Tag and beacon technology for use in sensitive urban areas for more flexible charging eg charging by direction or time of day can be in place in short term (by 2010).
- Satellite and mobile phone location systems for ‘specific’ link based distance based charging are getting better and cheaper but more still needs to be done to make them more affordable and accurate for use in urban areas (possible post 2010).

技术和方案特点 Technologies and Scheme Features

方案类型 TYPE OF SCHEME 技术 TECHNOLOGY	On Board Unit	单方案地区 Simple area scheme	多方案地区 Multiple simple area schemes	根据时间收费 Variable charging by time of day	根据时间和距离收费 Variable charging by time of day and distance traveled
摄像头/ANPR Camera/ANPR	✗	✓	✗	✗	✗
信标 Tag and Beacon	✓	✓	✓	✓	✗
卫星跟踪 Satellite Tracking	✓	✓	✓	✓	✓

与拥堵收费相关的减排 Emissions Related Congestion Charging

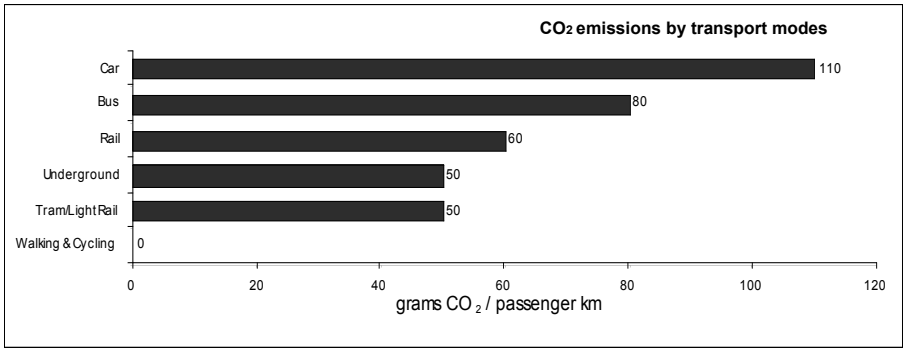


气候变化行动计划 Climate Change Action Plan

- CO_2 与气候变化相关
- 拥堵费已经有助于减少交通拥堵
- 改变伦敦人的出行方式:
  - 改善公共交通
  - 对步行和自行车交通加大投入
- 鼓励驾驶者改为使用排放少的交通工具

- CO_2 contributing to climate change
- Congestion charging already helps by reducing traffic
- Changing the way Londoners travel:
  - Improved public transport
  - Investment in walking and cycling
- Incentivise drivers to switch to less polluting vehicles

提议的内容 Context of Proposals



- 小型汽车 – 每人公里的 CO_2 排放量高
- 通过拥堵收费影响驾驶者的行为

- Cars - high emissions of CO_2 per passenger km
- Influence driver behaviour through Congestion Charging

与排放相关的拥堵收费提案 Emissions related congestion charging proposals

- Primary objective still to reduce congestion in central London
  主要目标依然是减少伦敦中心的拥堵
- Proposed 100% discount for cars emitting 120g/km CO_2 or less – to commence in February 2008
  提议小汽车排放CO_2少于120g/km就给予100％的折扣－2008年2月开始
- Proposed £25 (370 RMB) charge for cars emitting 226g/km CO2 or more – to commence in October 2008
  提议对排放多于226g/km CO2的小汽车收费£25 (370 RMB)－2008年2月开始
- No change to £8 (120 RMB) charge for other cars
  对于其他小汽车收费不变，即 £8 (120 RMB)

更多信息请查询
Find out More at:

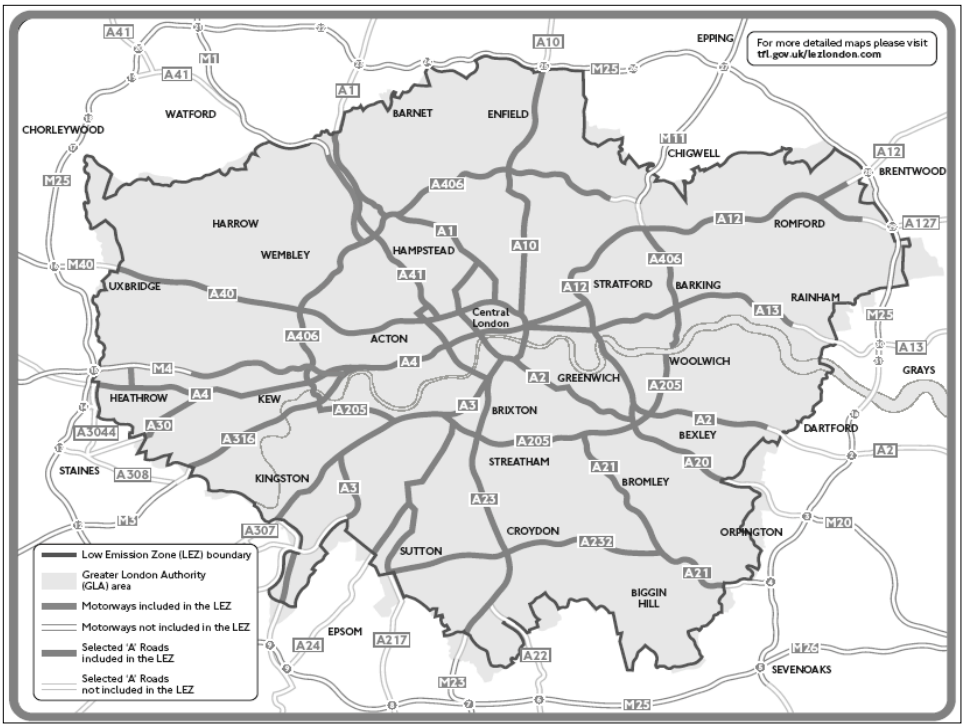
www.tfl.gov.uk/co2charging

低排放地区
The Low Emission Zone

低排放地区概述Overview of Low Emission Zone

- 目的是减少伦敦的个人不环保交通工具的使用
- 重型柴油车从2008年2月4日开始受影响并将阶段性的实施到其他车辆中
- 车辆必须满足具体的排放标准
- 在低排放区使用者可以通过每日支付费用来使用不符合标准的车辆
- 包括伦敦的大部分市区以及高速公路
- 每天全时间运行
- 通过固定和移动的摄像机对不符合的车辆进行重罚

- Aims to discourage most individually polluting vehicles from being driven in London
- Heavy diesel-engine vehicles affected from 4 February 2008, with a phased introduction for other vehicles
- Vehicles have to meet specified emissions standards
- Operators can pay a daily charge to drive non-compliant vehicles in the LEZ
- Covers the majority of Greater London, inc. Motorways
- Operates all day, every day
- Enforced using fixed and mobile cameras with heavy penalties for non-compliance



LEZ涉及的车辆 Vehicles Affected by the LEZ

HGVs >12t 	2008年2月欧III 2012年1月欧IV *颗粒物* Feb 2008 Euro III Jan 2012 Euro IV *for particulates*	大于12吨的重型柴油车 Heavy diesel-engined vehicles >12 tonnes	包括： －货车 －房车 －拖车 Includes: - Goods Vehicles - Motor Caravans - Motorised Horseboxes
HGVs 3.5t > 12t 	2008年2月欧III 2012年1月欧IV *颗粒物* July 2008 Euro III Jan 2012 Euro IV *for particulates*	3.5吨到12吨之间重型柴油车 Heavy diesel-engined vehicles between 3.5 and 12 tonnes	包括： －货车 －房车 －拖车 Includes: Goods Vehicles Motor Caravans Motorised Horseboxes
客车 Buses & Coaches 	2008年2月欧III 2012年1月欧IV *颗粒物* July 2008 Euro III Jan 2012 Euro IV *for particulates*	大于5吨的重型柴油客车 Heavy diesel-engined passenger vehicles > 5 tonne	包括： －大于8座的车辆，加上司机 Includes: - Vehicles with more than eight seats, plus the driver's seat

cont…

LEZ涉及的车辆　　Vehicles Affected by the LEZ

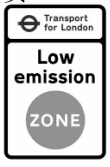
大货车Large Vans 	*颗粒物* 欧III 2010年10月 Oct 2010 Euro III *for particulates*	自重1.205吨到3.5吨之间的柴油车 Diesel-engined vehicles between 1.205 tonnes unladen and 3.5 tonnes	包括： －救护车 －敞篷车 Includes: - Ambulances - Motor Caravans
中客车　Minibuses 	*颗粒物* 欧III 2010年10月 Oct 2010 Euro III *for particulates*	小于5吨的柴油机客车 Diesel-engined passenger vehicles below 5 tonnes	包括： －小于8座的汽车，加上司机 Includes: - Vehicles with less than eight seats, plus the driver's seat

LEZ是如何运行的

- LEZ是一种付费方案－但是可以通过驾驶合乎要求的车避免付费
- 在区域内和入口处有标志
- 通过固定或移动的摄像头对LEZ内的车辆进行监视
- TfL通过一个不符合车辆的登记薄来核查
- 不符合要求的重型车、客车和卡车需要每天付£200 (3000 RMB)
- 每年365天从午夜起计时付费

How will the LEZ operate

- The LEZ is a charging scheme – but most will avoid paying the charge by driving a compliant vehicle
- There will be signs at entry points and in the zone
- Vehicles which are subject to the LEZ are detected using fixed and mobile cameras
- TfL checks vehicle registration against a register of non compliant vehicles
- Non compliant vehicles have to pay a daily charge £200 (3000 RMB) per day for HGV, buses and coaches
- Charging day midnight to midnight, 365 days a year



LEZ的实施

- 不符合的或没有注册的车辆将被贴一个每日罚款的通知：
  - 重型车辆、客车和卡车是£1000 (14800 RMB) (如果14天内支付会减少到 £500 (7400 RMB))

Enforcement of the LEZ

- Vehicles which are non compliant, or which are not on the register will be sent a daily Penalty Charge Notice:
  - £1000 (14800 RMB) (reduced to £500 (7400 RMB) if paid within 14 days) for HGVs, buses & coaches

更多信息请查询
Find out More at:

www.tfl.gov.uk/lezlondon

www.tfl.gov.uk/congestioncharging

Mexico City's Green Plan

Martha Delgado Peralta

Environment Secretary

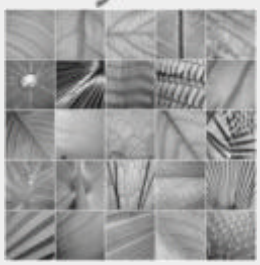
Federal District Government

What is the Green Plan?

The Green Plan is the Mexico City Government's medium-term (15-year) course of action and guideline comprising strategies and actions to foster the city's sustainable development.

"绿色计划"是什么？

"绿色计划"是墨西哥城政府的中期（15 年）行动方针和指导纲领，它包括旨在促进墨西哥城可持续发展的战略和措施。



The Green Plan is a communication mechanism as well. A prompt and simple mechanism to provide society with information on how the government assesses environmentally relevant topics, related goals and the high-impact strategies and actions to accomplish them.

This plan is a live instrument which will be permanently subject to both enhancement and evaluation.

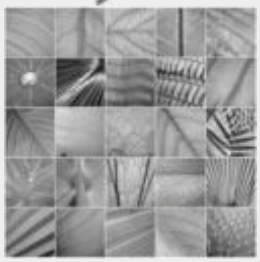
"绿色计划"还是一种沟通机制。通过这种快捷而简单的机制，可以向社会提供下述信息：政府如何评估与环境有关的主题、相关目标以及为了实现这些目标将要采取哪些具有重大影响力的战略和措施。

这个计划并非一成不变，它将始终得到改进和评估。

Mexico City's participating agencies

墨西哥城的参与机构

Chief of Government	政府最高领导
Administration Office	管理办公室
Ministry of Governance	管治部
Ministry of Environment	环境部
Ministry of Urban Development and Housing	城市发展和住宅部
Ministry of Transit and Transportation	公交运输部
Ministry of Public Works and Services	公共工程和服务部
Ministry of Public Security	公共安全部
Ministry of Education	教育部
Ministry of Health	卫生部
Ministry of Social Development	社会发展部
Ministry of Rural Development and Equity	农村发展和权益部
Efficient Use of Energy Coordinating Office	有效用能协调办公室
Historic Downtown Authority	古城保护局



Topics 主题

1. Land and Conservation	1. 土地和保护
2. Habitability and Public Space	2. 居住和公共空间
3. Water	3. 水资源
4. Transportation	4. 交通运输
5. Air	5. 空气
6. Waste	6. 废弃物
7. Climate Change and Energy	7. 气候变化和能源
Transversality	横向战略

Composition of themes and main actions 主题和主要措施的构成

Theme	Number of strategies	Actions	Actions %
Conservation Land	4	19	15
Habitability and public space	3	18	14
Water	5	22	18
Mobility	5	23	18
Air	3	14	11
Waste	4	20	16
Climate Change	3	9	8
Total	27	125	100

主题	战略数	措施数	措施所占百分比
保护土地	4	19	15
居住和公共空间	3	18	14
水资源	5	22	18
机动性	5	23	18
空气	3	14	11
废弃物	4	20	16
气候变化	3	9	8
总计	27	125	100

1. Conservation Land

Objective:
To rescue conservation land as a key space for maintaining the ecological balance of Mexico City.

1. 保护土地

目标:
治理保护用地，并将保护用地作为保持墨西哥城生态平衡的关键区域。

Strategies to carry it out 为此执行的战略

E1	**Zero human settlement growth in conservation lands** (Creation of a specialized surveillance corps for the protection of conservation land, to be launched in 2008)	E1 **保护用地的人口迁入率零增长**（将在 2008 年组建一个专门的监测团队来加强对保护用地的保护）
E2	**Restoration and preservation of ecosystems with high environmental value** (Rescue of the Magdalena and Eslava river basins in order to achieve 100 percent reversal of its environmental deterioration over a six-year period)	E2 **恢复和保护具有高度环境价值的生态系统**（用 6 年时间治理马格达莱纳河和艾斯拉瓦河盆地，以便完全扭转其恶化的环境状况）
E3	**Payment of environmental services as a mechanism to compensate for conservation costs**	E3 **将有偿的环保服务作为补偿相关损失的一种机制**
E4	**Promotion of agricultural-ecosystems and sustainable management of natural resources**	E4 **促进农业生态系统，实现对自然资源的可持续化管理**

2. Habitability and Public Space

Objective:

To recover and create public spaces in order to transform Mexico City into a place suitable for social integration and capable of offering better habitability, comfort, and equity.

2. 居住和公共空间

目标:

收回并开辟公共空间，以便将墨西哥城改变成一个有利于社会融合并且能提供更好的居住条件、舒适度和权益的地方。

Strategies to carry it out **为此执行的战略**

E1	**To implement projects aimed at re-organizing and regulating large public spaces, designed according to sustainability and habitability criteria** (To implement the "Clean Building Guarantee" in all new service facilities and all of those located in major urban corridors; it will be mandatory starting in 2010)	E1 实施旨在重新组织和管理大型公共空间的项目，这些项目将根据可持续性和适合居住性标准来设计（对所有新服务设施和所有位于城市主要通道中的设施实施"建筑物清洁保证"标准；该标准将从 2010 年开始强制执行）
E2	**To recover and improve existing public spaces in order to incorporate them into Integration and Development corridors for recreational and environmental purposes**	E2 收回并改善现有的公共空，以便将它们纳入到出于娱乐和环保目的而创建的综合通道和发展通道中
E3	**To increase green areas and provide public spaces with outdoor furniture and greater accessibility**	增加绿化面积，为公共空间提供户外配套设施，改善公共空间的交通便利度 E3

3. Water

Objective:

To achieve water self-sufficiency and improve water management in Mexico City

3. 水资源

目标:

实现墨西哥城的水资源自足，改善水资源管理

Strategies to carry it out **为此执行的战略**

E1	**To attain a balance of aquifer extraction and replenishment** (Protection of ravines and conservation land; issue of a decree declaring 12 urban ravines as environmentally-valued areas)	E1 实现蓄水层的提取和补给平衡（保护峡谷和保护用地；以法令形式将城区的 12 个峡谷定为具有环保价值的区域）
E2	**To reduce residential water consumption**	E2 减少生活用水量
E3	**To reduce losses in water mains**	E3 减少供水主管道的水损耗
E4	**To increase re-use and treatment of water**	E4 增加水资源的重复利，提
E5	**To create lakesides parks in Tláhuac and Xochimilco** (To recover the lakes and canals system in 250 hectares of Tláhuac and Xochimilco, starting in 2008)	高水处理能力在 Tláhuac 和 Xochimilco 湖修建湖畔公园（恢复 250 公顷的 Tláhuac 和 Xochimilco 湖区旧貌以及运河体系，这将从 2008 年开始） E5

4. Transportation

Objective:

To recover streets and roads for efficient, non-polluting, mass transportation with properly trained drivers, and to promote non-motorized transportation.

4. 交通运输

目标:

为高效、无污染的公共交通运输开辟道路，对驾驶员进行适当培训，提倡非机动方式的交通运输。

	Strategies to carry it out	为此执行的战略
E1	**To encourage efficient, non-polluting, mass transportation with properly trained drivers; and to recover the streets and roads for the majority of the population** (construction of ten corridors, two per year, by 2012).	**鼓励高效、无污染的公共交通运输，对驾驶员进行适当培训；根据大多数人的利益治理街道和道路（到 2012 年修建 10 条通道，每年修建 2 条）.**
E2	**To reduce the number of vehicles in circulation** (Circulation of freight vehicles restricted to specific schedules and routes, depending on their cargo, dimensions and fuel technology, starting in 2009)	**减少流动车辆数量（根据货车的载货类型、载货规模和燃料技术，限制货车只能在规定的时间和按规定的路线出行。这将在 2009 年开始实施）**
E3	**To offer incentives to those who use non-motorized transportation** (To create pedestrian-only zones in historic downtown areas, neighborhoods and villages in all of the 16 delegations (municipalities) of the Federal District by 2010)	**对采用非机动交通运输方式的人员给予奖励（到 2010 年，在古城区和周边区域以及在联邦区的所有 16 个市的村庄中开辟步行区）**

4. Transportation

Objective:

To recover streets and roads for efficient, non-polluting, mass transportation with properly trained drivers, and to promote non-motorized transportation.

4. 交通运输

目标:

为高效、无污染的公共交通运输开辟道路，对驾驶员进行适当培训，提倡非机动方式的交通运输。

	Strategies to carry it out	为此执行的战略
E3	**To offer incentives to those who use non-motorized transportation** (To create pedestrian-only zones in historic downtown areas, neighborhoods and villages in all of the 16 delegations (municipalities) of the Federal District by 2010)	**对采用非机动交通运输方式的人员给予奖励（到 2010 年，在古城区和周边区域以及在联邦区的所有 16 个市的村庄中开辟步行区）**
E4	**To improve transit and traffic** (Intelligent traffic signals installed on all of the city's major arteries over a 36-month period)	**改善路口状况，加强交通流量的疏导（用 36 个月的时间在墨西哥城的所有交通要道安装智能型交通信号灯）**
E5	**To foster transit and pedestrian awareness culture aimed at a more harmonious coexistence** (Installing 8,000 new cameras and 100 radars as surveillance against violations)	**培养交通礼让和行人意识的文明行为，旨在促进更为和谐的共存（新安装 8,000 部摄像机和 100 部雷达用于监测交通违章）**

5. Air

Objective:
To control the most prevalent, noxious atmospheric pollutants (ozone and particulate matter), and to reduce emissions of toxic pollutants.

	Strategies to carry it out		为此执行的战略
E1	**To reduce emissions of pollutants (Replacement of the Mexico City Government's entire official vehicle fleet by less polluting fuel-efficient units by 2012)**	E1	**减少污染物排放 （到 2012 年，墨西哥城政府的所有公务用车都将换上污染较小的节油装置）**
E2	**To increase both passenger and freight transportation efficiency (Replacement of 5,000 minibuses by new units equipped with less polluting technologies and with greater passenger capacity, by 2009)**	E2	**提高客运和货运效率（到 2009 年，5,000 辆小型公共汽车都将换上采用低污染技术的新装置，并将增大它们的客运能力）**
E3	**To enforce the actions proposed by transportation and energy plans, and to measure the benefits yielded by the Green Plan in terms of air quality (Biannual rendering of the effects of the Green Plan's actions and scenarios on air quality)**	E3	**实施交通运输和能源计划所提议的措施，根据空气质量评估“绿色计划”所产生的成效 （一年公布两次绿色计划针对空气质量采取的措施和方案产生的效力）**

5. 空气

目标:
控制最常见的有害空气污染物（臭氧和颗粒物质），减少有毒污染物的排放。

6. Waste

Objective:
To implement comprehensive and sustainable management of solid waste.

	Strategies to carry it out		为此执行的战略
E1	**Enforcement of packing and packaging regulations in order to reduce waste** (To promote new packing and packaging designs using biodegradable and/or easily recyclable materials in order to decrease waste generation)	E1	**通过实施包装管理来减少废弃物（提倡新型包装设计，鼓励使用生物可降解和/或易于回收的材料，以减少废弃物的产生）**
E2	**Enforcement of the garbage separation program in households, businesses, and industrial facilities in order to increase recycling** (from 3 to 30 percent by 2012)	E2	**在家庭、商业和工业设施中实施废弃物分类计划，以增强回收能力（到 2012 年，将废弃物回收率从 3% 提高到 30%）**

6. 废弃物

目标:
对固体废弃物实施综合、可持续性的管理。

6. Waste

Objective:
To implement comprehensive and sustainable management of solid waste.

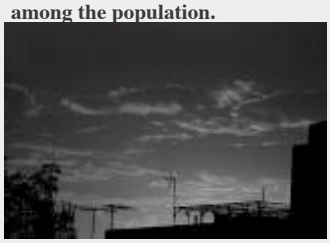
	Strategies to carry it out		为此执行的战略
E3	Fostering commercially-viable recycling operations in order to increase the use of such materials (Large-scale production and use of compost by 2008)	E3	通过促进商业上可行的回收应用，提高回收物质的利用率（到 2008 年将大规模地生产和使用堆肥）
E4	Modernization of waste collection, concentration, transfer, treatment, and disposal methods [Building of a new waste separation plant and modernization of all other plants (2010)]	E4	实现废弃物收集、集中、运输、处理和处置方式的现代化［新建废弃物分离厂，并且实现其他所有工厂的现代化（2010 年）］

6. 废弃物

目标:
对固体废弃物实施综合、可持续性的管理。

7. Climate change and Energy

Objective:
To reduce greenhouse gas emissions, to foster the establishment of renewable energy markets, and to promote adaptations to climate change among the population.



	Strategies to carry it out		为此执行的战略
E1	To deliver the Climate Change Action Plan for Mexico City	E1	颁布墨西哥城的气候变化行动计划
E2	To endorse all actions proposed by the transportation, water, air, public spaces, waste and energy plans aimed at the reduction of greenhouse gas emissions	E2	实施在交通运输、水资源、空气、公共空间、废弃物和能源计划中提出的旨在减少温室气体排放的所有措施
E3	To reduce Mexico City's vulnerability to climate change by implementing measures that allow the general population to adapt to it	E3	通过采取能让所有人逐步适应气候变化的措施，减小气候变化对墨西哥城造成的影响

7. 气候变化和能源

目标:
减少温室气体排放，鼓励创建可再生能源市场，以及增强公众对气候变化的适应性。

Transversality

The achievement of the Green Plan's goals requires to go beyond the technical and operational reach of government's responsibility and tasks.

It requires to develop transversal strategies which longitudinally cross each proposed action.

Thus, we can count on gaining acceptance by society as well as supply of the means and resources necessary to fulfill the goals.

- **Funding**
- **Legal, regulative and institutional framework**
- **Environmental education and public communication**
- **Society participation**
- **Metropolization and regionalization**
- **Transparency and accountability**
- **Monitoring and evaluation**
- **Internationalization**

横向战略

为了实现绿色计划的目标，我们必须在技术和运作上跳出政府的职责和任务范围。

它要求我们制定贯穿在每一项建议措施之中的横向战略。

只有这样，该计划才有可能获得社会的认同，并且才有希望通过群策群力来实现其目标。

- **资金来源**
- **法律、调控和制度框架**
- **环保意识教育和公共宣传**
- **社会参与**
- **大都市化和地区化**
- **透明性和责任机制**
- **监督和评估**
- **国际化**

The Green Plan is a live instrument which must be permanently evaluated and enhanced.

Mexico City's Green Plan Evaluation and Monitoring Board

It will acknowledge and feed-back the programs derived from the Green Plan.

It will reinforce the communication task of promoting the implementation of the Green Plan among the community.

It will evaluate and monitor the actions executed by the Mexico City Government and any other authorities in order to fulfill the Green Plan.

这个"绿色计划"不是一成不变的，必须始终对它进行评估和改进。

墨西哥城绿色计划评估与监督委员会

它将确认源自绿色计划的方案并提供反馈。

它将承担旨在促进绿色计划实施的公众交流任务。

它将评估和监督墨西哥城政府和其他任何机构执行的绿色计划实施措施。

The Green Plan's Evaluation and Monitoring Board

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