BIOS

王明朗 Hardy Wong

- 在环境保护领域的私营和公共部门拥有超过 40 年的专业经验，拥有广泛的全球经验。

He has over 40 years of professional experience with both private and public sectors in the field of environmental protection, with extensive global experience.

- 在政策和计划制定和实施方面具有高水平的技能，具有出色的解决问题和管理问题的能力。

He has highly developed skill in policy and program development and implementation with superior ability for problem solving and issues management.

- 在 1980 年代在加拿大安大略省制定和实施城市固体废物和工业危险废物管理的完整框架以及一系列与废物 3R（减少 、再利用和回收）基础设施和产品管理计划，以及回收行业的能力建设。

Of particular relevance is his work in the development and implementation of a complete framework for the management of municipal solid waste and industrial hazardous waste in the 1980's in the Province of Ontario, Canada, along with a series of institutional structures relating to waste 3R (reduction, reuse and recycling) infrastructures and product stewardship programs, as well as capacity building for recycling industries.

在从加拿大环境部退休后的 15 年里，Hardy 在加拿大和美国担任独立环境顾问，并为多个国际组织提供专业的固体废物管理服务。 在加拿大安大略省环境部任职期间，Hardy 担任过多个高级管理职位，包括废物管理处主任和区域运营主任。 Hardy 还曾担任加拿大市政基础设施的基础设施开发项目总监。

For the past 15 years since his retirement from the Ministry of Environment in Canada, he worked as an independent environmental consultant in Canada, the US, as well as providing specialized solid waste management services to a number of international organizations. During his time with the Ontario Ministry of Environment, Canada, Hardy Wong has held a number of senior level executive positions, including Director, Waste Management Branch and Director of Regional Operations. Hardy has also served as Project Director for Infrastructure Development, for Municipal Infrastructure in Canada.

ADB TA-9611 PRC

生活垃圾区域统筹管理的国际经验
International Experience on Regional Waste Management Structures

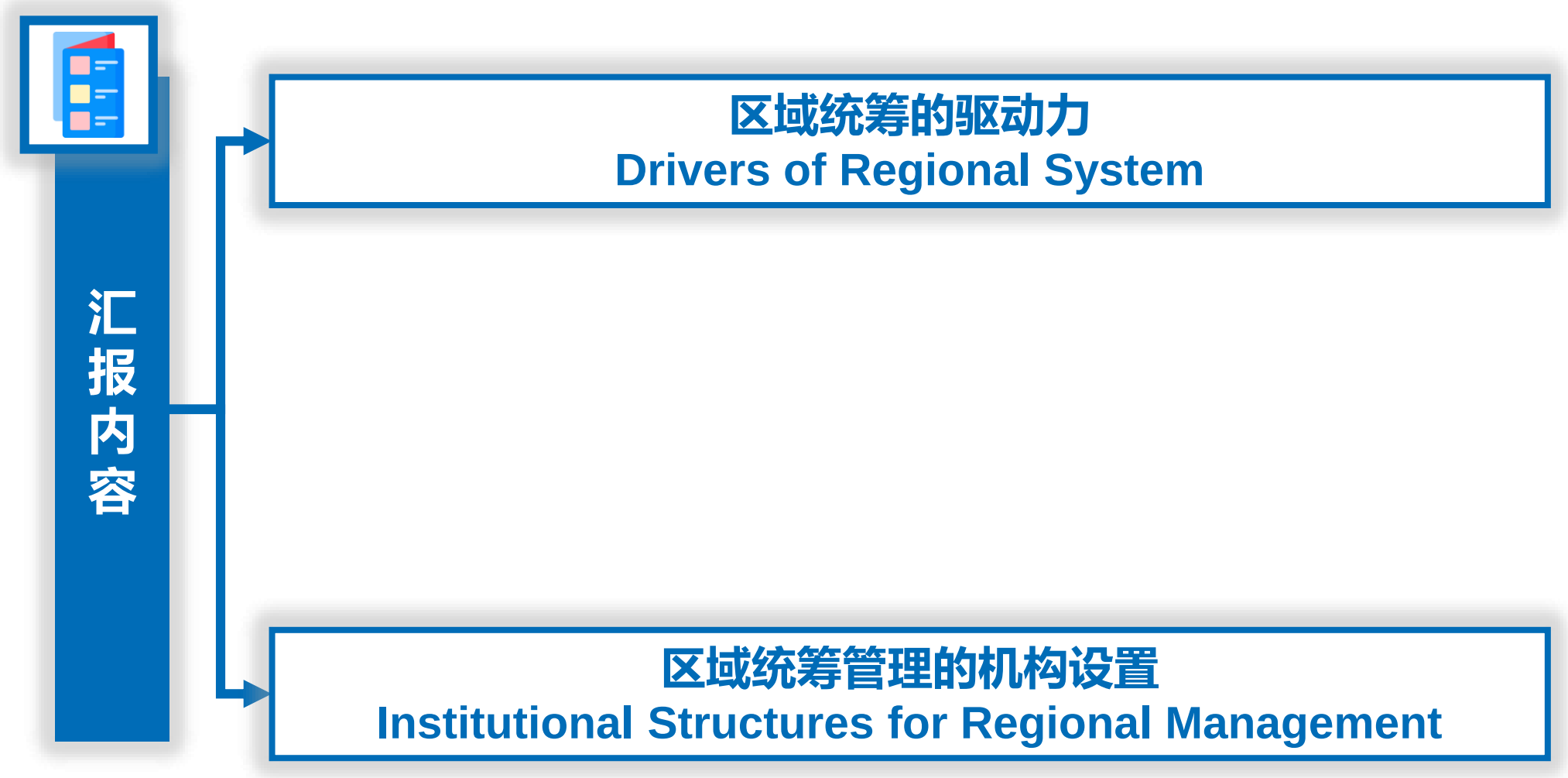
——特点及案例
Features & Characteristics

汇报人： Hardy M. Wong

时　间： 2022年8月25日　　August 25, 2022

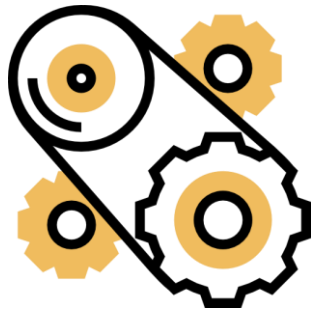
中国城市建设研究院有限公司
CHINA URBAN CONSTRUCTION DESIGN & RESEARCH INSTITUTE CO.,LTD.

汇报内容
CONTENT



1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM

驱动力
Drivers



运维成本和效率
Operating Cost & Efficiency

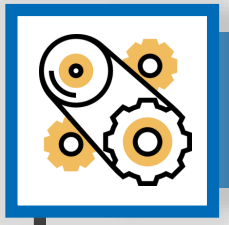
环境影响
Environmental Concerns & Necessity

规划及选址
Planning & Siting

技术和专业知识
Technologies & Expertise

私营企业的参与(PPP模式)
Private Service Provider (PPP)

1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM



运维成本和效率
Cost & Efficiency

- **区域统筹模式具有规模效益**

Economy of Scale

- **相比于传统模式，区域统筹模式的单位投资与运行成本更低，体现在：**

Less Capital Investment & Operating Costs

贷（借）款费用
Borrowing Costs
私企作为固废管理服务供应商（市场化）
Private Service Providers - contracts

- **区域统筹模式下，固废管理操作流程与计划的制定将基于实际垃圾的地域分布特征，而非行政边界要求。**

Operations Plan will be Designed Based on Geographic Distribution of Residents, not Political boundaries.

1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM

运维成本和效率
Cost & Efficiency

1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM

环境影响
Environmental Concerns & Necessity

- **随着城市化的发展，垃圾焚烧厂和填埋场的选址愈加困难**

Lack of suitable sites for SWM facilities – landfills or WTE – increasing urbanization;

- **垃圾处理设施的运行率（运行效率）低；**

Under utilization of facilities & equipment – inefficient operation;

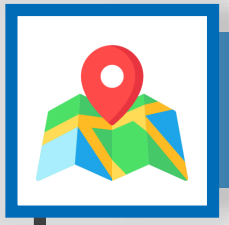
- **自然条件限制——环境质量的要求限制了垃圾处理设施的建设**

Natural geography or conditions – natural ground characteristics or setting amenable for SWM facilities;

- **需要法律、行政、机构的合理设置**

Requires appropriate legal, administrative & institutional arrangements .

1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM



设施选址
Facility Siting

•最重要的影响因素：公众反对，土地资源竞争；

Most Difficult Issue - public opposition, competing land uses

•环评中对选址的要求：环境敏感区域等；

Site Selection in EIA – Constrain Mapping

•选址周围的自然特征：水文条件、空气质量、土地利用等；

Natural Characteristics of the site – Hydrogeological Conditions & Air Emission & land uses in vicinity

•造成选址区域拥有比其他地区更高环境安保标准的因素。

Resulting in some areas are more suitable than others with natural environmental safeguards.

1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM

技术和专业知识
Technology & Expertise

大多数地区的政府机构不具备专业的固废管理的技术和专业知识：

Most individual area municipalities lack specialized SWM expertise：

- 垃圾填埋场、焚烧设施、材料回收设施在近几十年迅速发展。
- Landfills, WTEs and MRFs are developed to last decades
- 在全运营周期管理垃圾项目方面没有足够的经验
- Once in a life-time project – no experience

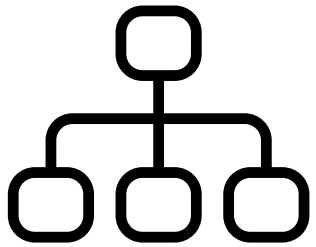
1. 区域统筹的驱动力
DRIVERS OF REGIONAL SYSTEM

私营企业的参与（PPP模式）
Private Service Provider

- **规模经济**
  Economy of Scale
- **单一的合同来源**
  Single Source of Contract
- **私企可带来更专业的知识和管理**
  Expertise & Management
- **易实现设施的最佳运行条件-设计容量**
  Optimal Operating Condition – Design Capacity
- **丰富的融资方式可为设施成本提供支持**
  Options for financing Capital Costs
- **实现资产管理和人力资源的有效管理**
  Easier Management – Asset Management & HR
- **合同管理形式减少了法规执行的工作量**
  Less legal compliance requirements: Regulatory Enforcement vs. Contract Management

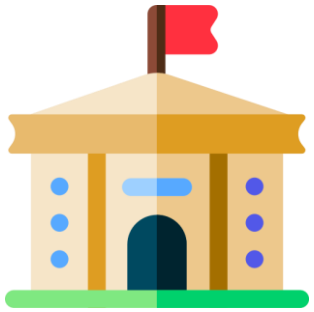
2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

机构设置类型
Institutional Structures



由上级政府主管
Upper Tier Municipality

管理协会形式（理事会）
Board of Management



特定的机构负责
Designated SWM Authority

外部供应商（私企）
Private / External Service Provider

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

➢ 机构设置的基础——法律规范框架
PRE-REQUISITE——REGULATORY FRAMEWORK

法律规范框架 Regulatory Framework

设施建设的批复
Regulatory - Facility Approval

该职责属于环保局还是土地管理局？ 由省级批复，还是市级批复?

EPB / Land Bureau - Province, Municipality

设施管辖权
Jurisdictional

- 一个区（或县）能否拥有位于另一个区（或县）的固废管理设施?

Can one District (or County) own SWM facility located in another District, or County?

- 私人固废管理公司能否拥有固废管理设施（是否只能运营）？

Can Private SWM companies own SWM facilities?

- 此类设施是否可接受来自另一个管辖区的废物?
- Can such facility accept waste from another jurisdiction

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管
Upper Tier Municipal Authority

•该机构设施模式最为方便，上级政府本身就具备区域内的管辖权

Most Convenient - Existing Jurisdiction & Mandate / Authority

•该模式内，上级政府将为其下级市建设区域统筹的垃圾管理设施

Regional Facilities serving several lower tier municipalities

•实现更好的规划和选址，共享垃圾填埋场、垃圾处理厂、材料回收厂等设施

Better Planning & Siting – shared facilities - landfills, WTEs, Composting Sites, MRF / Recycling plants…

•建设一个综合的垃圾收集系统-提高设备利用率

One Integrated Collection System – Equipment Utilization Rate

•该模式通用于城市级、市区级、县级、镇级等…

City vs. Districts vs. Counties vs. Towns…

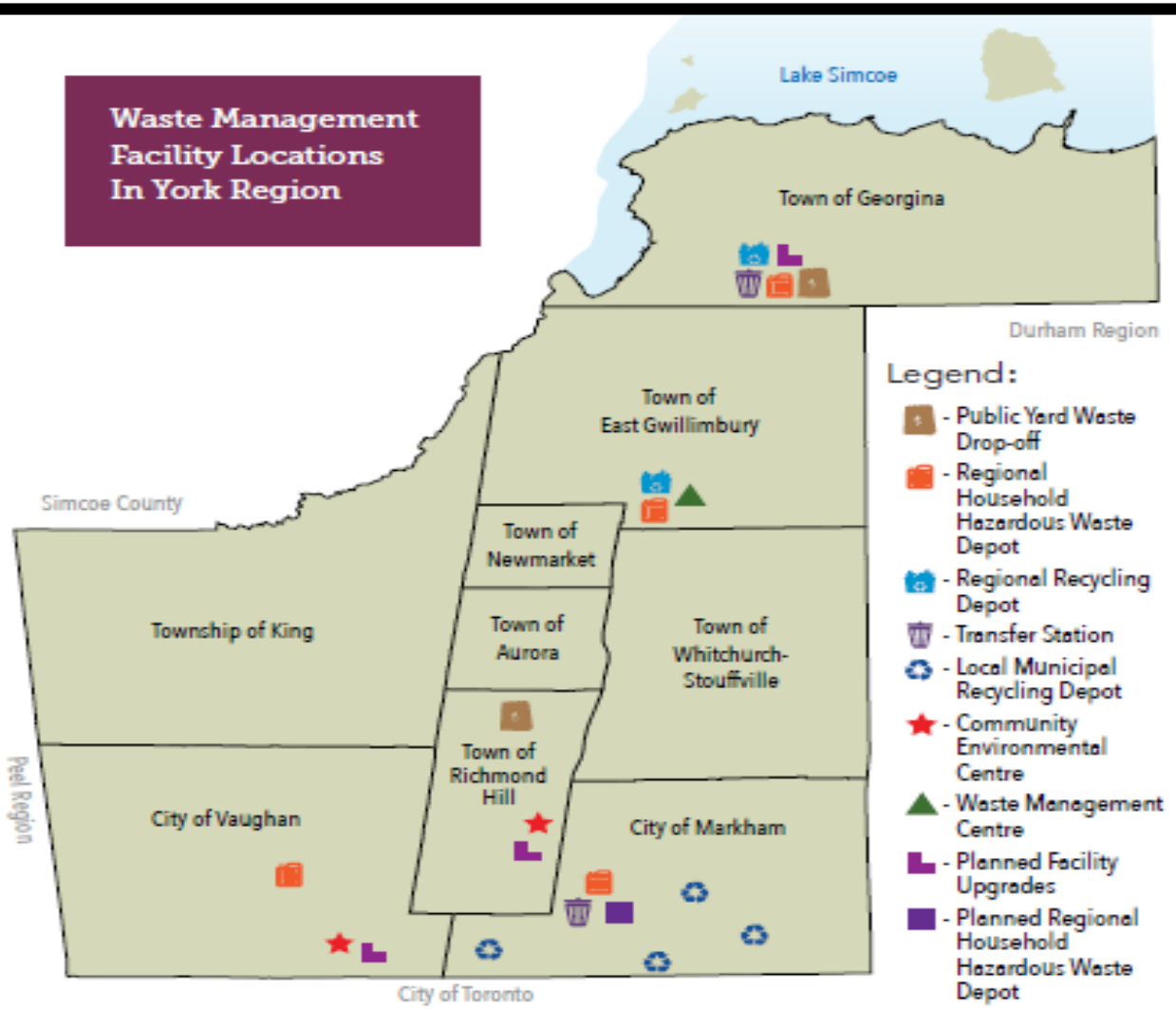
2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管-案例分析
Upper Tier Municipal Authority

Durham区域 (8个下属区域)
Regional Municipality of Durham 8 separate area municipalities

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管-案例分析
Upper Tier Municipal Authority



York区域(9个下属区域)

Regional Municipality of York 9 Lower Tier Area Municipalities

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管-案例分析
Upper Tier Municipal Authority

以上两个地区共享一个垃圾焚烧厂（位于Durham），该厂由一家私人企业运营

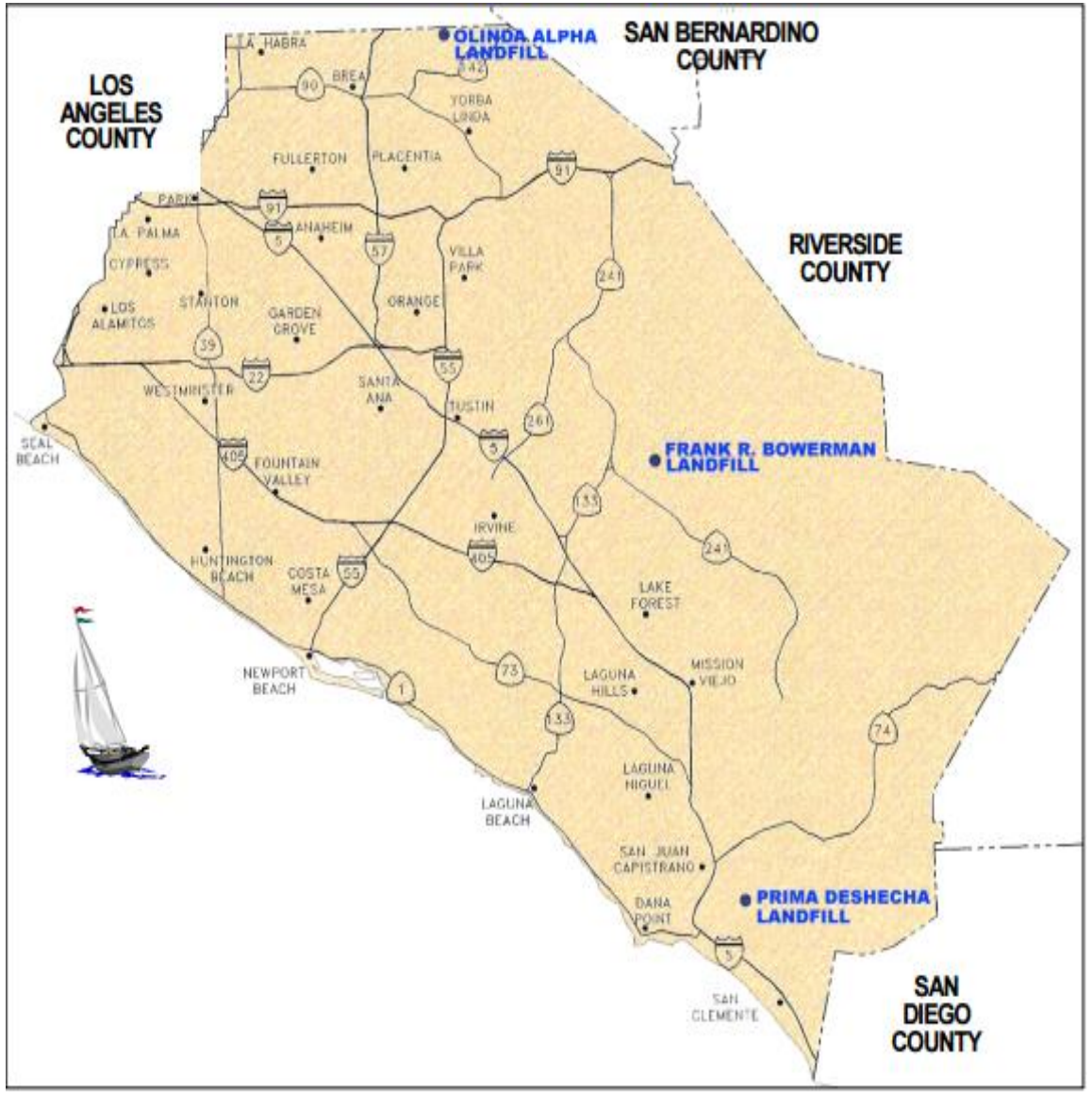
These 2 Regions Share one WTE Located in Durham, operated by Private Contractor

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管-案例分析
Upper Tier Municipal Authority

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管-案例分析
Upper Tier Municipal Authority



2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

由上级政府主管——案例分析
美国加利福尼亚州奥兰治县
Upper Tier Municipal Authority——Orange County, Calif, US

•奥兰治县是负责生活垃圾区域统筹的上层机构

Orange County is an Upper Tier Municipality

•该县内配备一个垃圾处理系统，可为县内34个城市提供固废处理服务

A solid waste disposal system for County's 34 cities.

•系统内的3个垃圾填埋场的垃圾填埋量达4百万吨/年，属于加利福尼亚州最大的填埋厂

•3 landfills operated are among the largest in the State of California – annual quantity > 4 million metric tons.

•1994年申请破产（160万美元）

1994 – Bankruptcy ($1.6 M USD)

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

联合协会的管理形式
Joint Board of Management

- **美国加利福尼亚州奥兰治县采用了垃圾管理协会形式**

  Orange County, California US – Waste Management Commission

- **通过法律、合同、承诺等形式实现协会功能**

  Functions on agreements / by-laws

- **该协会作为市一级的准政府机构-由参与市的市政府资助**

  A Quasi-Government Body at the municipal level - Financed by participating municipalities

- **该协会具有类似市政部门的职能**

  Functions similar to a municipal department

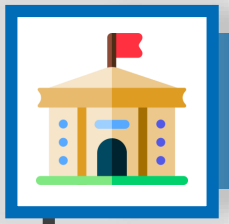
- **具备有限的专业知识**

  Limited Expertise

- **具有一定的政治影响**

  Political Influence

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT



特定的机构负责
Designated SWM Authority

•该机构类似公司结构——为独立运营的机构单位

Structured as a Corporation – Operates Independently

•机构具备专业人员

Professional Staff with Expertise

•机构配备独立的财务会计制度

Independent & Separate Financing & Accounting System

•该机构的董事会由参与区域统筹的各市政当局担任-可能频繁更换

Board of Director may represent municipalities – may change frequent

•机构运作中可能会受到一定的政治影响。

•May subject to political Influence in its operation.

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

外部供应商（私企）
Private Service Provider – Contracting out

•一般具有专业知识，包括：设计建设运营（DBO），资产管理，运维，设备的规范使用，人力资源

Specialized Expertise - DBO; Asset Management, Bench Marking, Maintenance, Equipment Utilization, HR

•灵活的盈利办法——可降低垃圾管理的单位成本

Flexible Financing – Less Capital Requirement from Municipalities

•规范执行标准的知识产出

Knowledge of Regulatory Compliance

•标准作业指导书（SOP文件系统）

SOP – documentation

•竞争性的投标

Competitive Bids

•合同管理——绩效监测等

Contract Management – Performance Monitoring

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

案例分析
Case Study

- 加拿大大温哥华地区

Greater Vancouver Area Canada

- 具有一个行政机关
- Administrative Authority
- 垃圾管理方面具有7个垃圾转运站

7 Transfer Stations

- 每年处理250万吨垃圾

2.5 million metric tons annually

- 在供水、污水等方面也有区域统筹

Services – Water Supply, Sewer, SWM

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

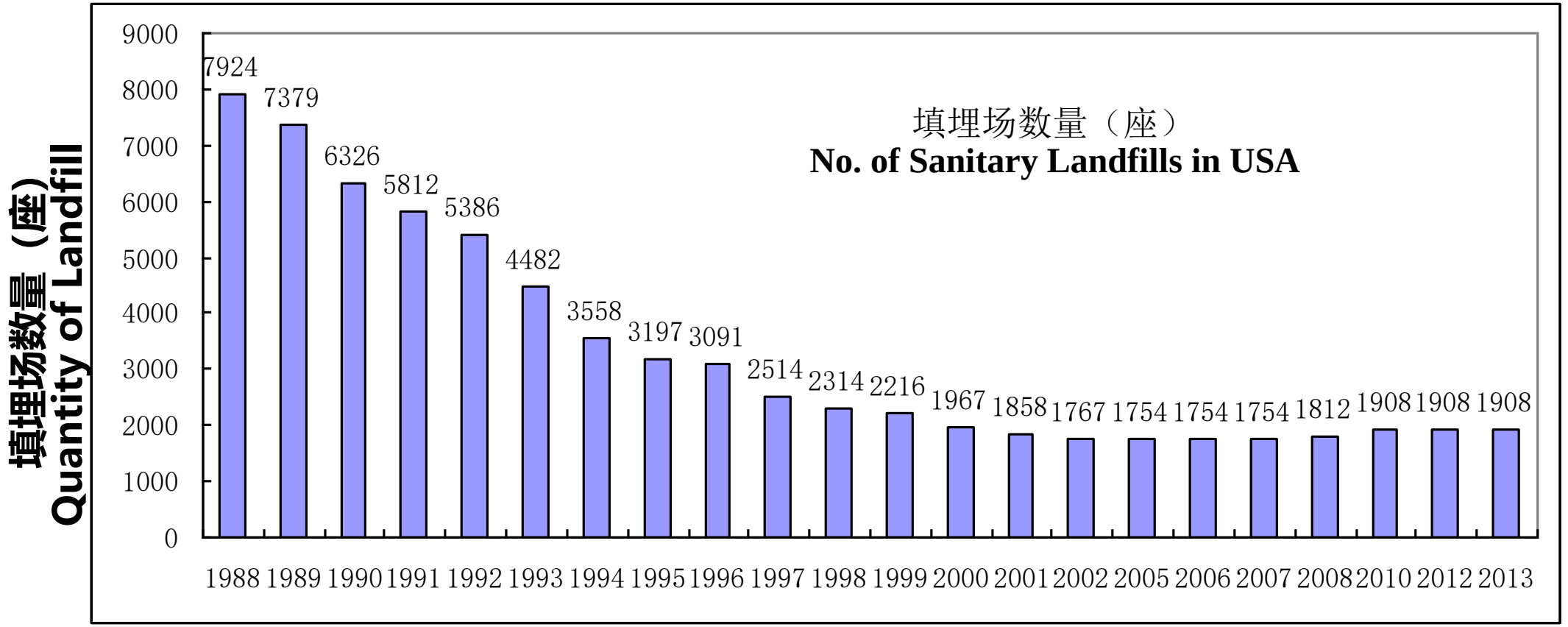
案例分析
Case Study

SWM Facilities GVA

设施 Facility	垃圾处理能力(2015) Tonnes Managed (2015)
Cache Creek 填埋场 Cache Creek Landfill	200,000
Vancouver 填埋场 Vancouver Landfill	426,000
Burnaby 垃圾焚烧厂 Burnaby EFW	285,000
总垃圾处理量 Total Waste Disposed	1,221,000

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

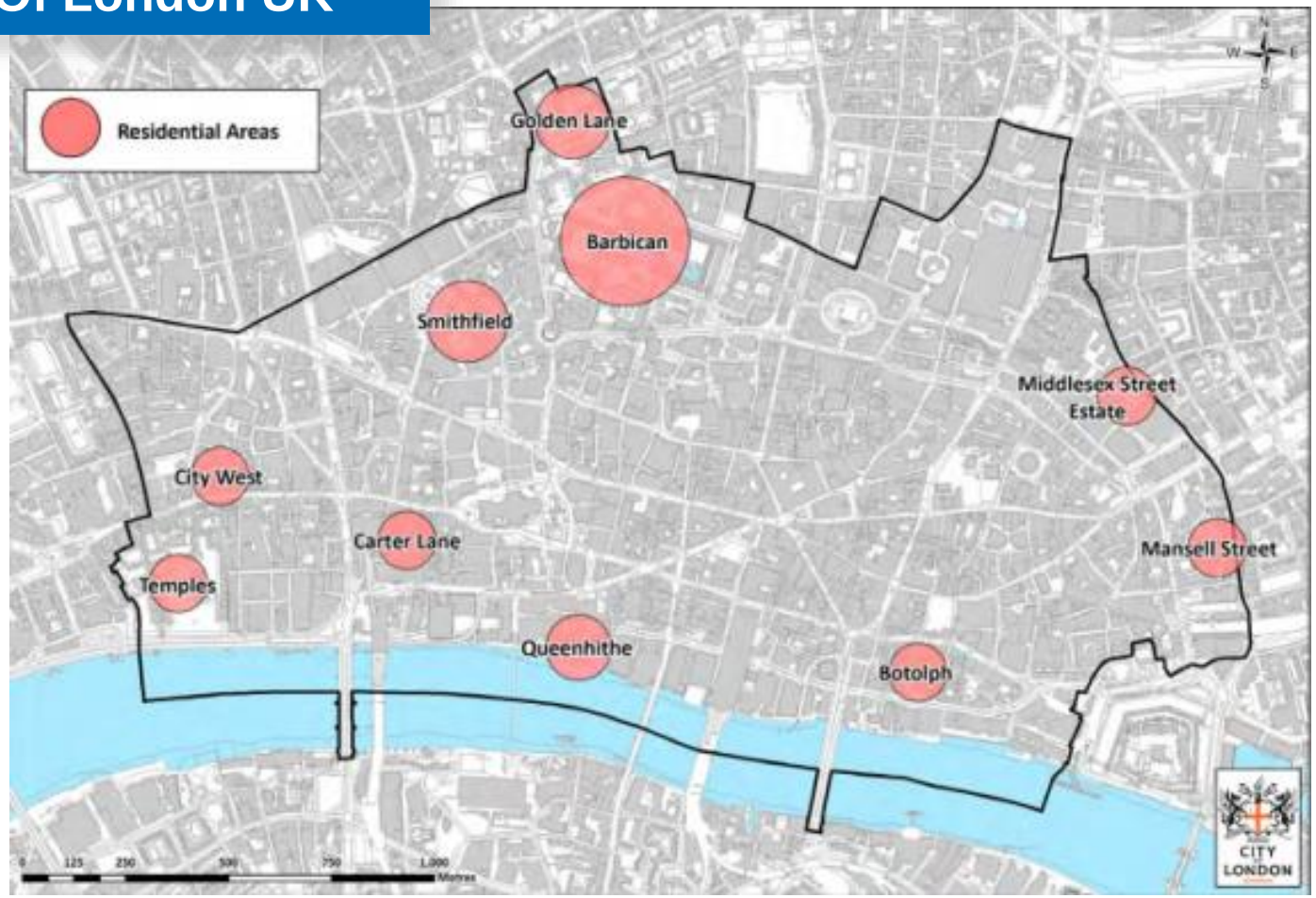
案例分析
Case Study



美国填埋场数量 No. of Sanitary Landfills in USA

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

案例分析——伦敦区域
Case Study——City Of London UK



2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

案例分析——大伦敦区域
Case Study——City Of London UK

- 具有33个行政独立的“市“

33 Separate Administrative ”municipalities”

- 每年共产生2200万吨垃圾

22 million tons in GLA,

- 伦敦市内仅60万吨垃圾

600 k tons in London

City of London within Greater London

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

建厂土地的批准和征用
Site Approval & Land Acquisition

- **一个市政府或私营部门经营者在另一个市使用土地的可能性。**

Ability to Acquire Land for Waste Management Facilities in one municipality by another municipal government or a private sector operator – Sites to receive waste from other administrative regions.

- **废物管理设施的审批机构，是地方环保局、土地局、市政府？环评委员会可起到什么样的作用?**

Approval Authority for Waste Management Facilities – local EPB, Land Bureau, Municipal Governments. EIA Board?

2. 区域统筹管理的机构设置
INSTITUTIONAL STRUCTURES FOR REGIONAL MANAGEMENT

区域统筹管理系统的发展
Development of Regional Systems

•已发展多年

Over Many Years

•具有规模经济效益，更低的运营成本

Economy of Scale – Lower Operating Cost

•具有一定的环境效益，区域统筹模式下可建造更少和更大的设施，同事更好地完成技术应用及管理

Environmental Benefits – Less and larger Better-Operated Facilities with proper Technologies & Management

•潜在污染源较少。

Less sources of potential environmental concerns – sources of contamination.

•通过长期监测，控制污染物对健康的影响

Long Term Monitoring – potential contaminating life

THANKS!