Expert framing:
Neighbourhood Emissions Assessments

Langue | Language: ENG

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Why emissions assessment is needed

为何需要排放评估指南

Assessment overview
评估概述

An emissions assessment can be used to ==better understand and manage the emissions that occur== across the neighbourhood or that result from a particular action.

　　排放评估有助于更好地了解和管理社区排放量或某一特定行动产生的排放量。

The ==results== of the assessment can be used to ==determine the pathway to achieving net zero== by selecting actions that enable net zero.

　　评估结果可用于选择实现净零排放的行动，并确定实现净零排放的途径。

Consistent framework
提供统一的框架

With a growing global interest in neighbourhoods and increasing awareness of greenwashing, evidence-based decision-making is essential for achieving ambitious net zero targets.

随着全球对社区的关注与日俱增，对"漂绿"行为的认识不断提高，以证据为基础的决策对于实现雄心勃勃的净零排放目标至关重要。

Cities need a common approach to undertaking neighbourhood emissions assessments, to demonstrate significant and long-lasting emissions reductions that align with a 1.5°C future.

城市需要统一的方法来开展社区排放评估，以展示与 1.5°C 未来相一致的显著而持久的减排效果。

绿色繁荣社区
实现净零排放的途径：打造"15分钟生活圈"

社区排放评估
通过雄心勃勃的减排实现净零排放

Read the guidance here
点击这里查看指南

Guidance contents
指南目录

Chapter 1

Introduction

Chapter 2: Definitions

Emissions categories

Net zero neighbourhood

Chapter 3: Assessment framework

Five steps to an emissions assessment for:

Whole neighbourhood

Individual action

Chapter 4: Case study: using the assessment framework

Examples applying the emissions assessment framework

Key concepts
主要概念

Emissions categories
排放类型

Operational
运营排放

Annual emissions due to energy used in buildings, public spaces and transportation, or from processing waste.

　　建筑、公共场所和交通用能或废物处理产生的年排放量。

Embodied
隐含排放

All emissions from any construction activity over the lifecycle of either buildings or infrastructure.

　　建筑或基础设施生命周期内任何施工活动产生的所有排放量。

Consumption
消费排放

The emissions impact of the goods and services people in the neighbourhood consume.
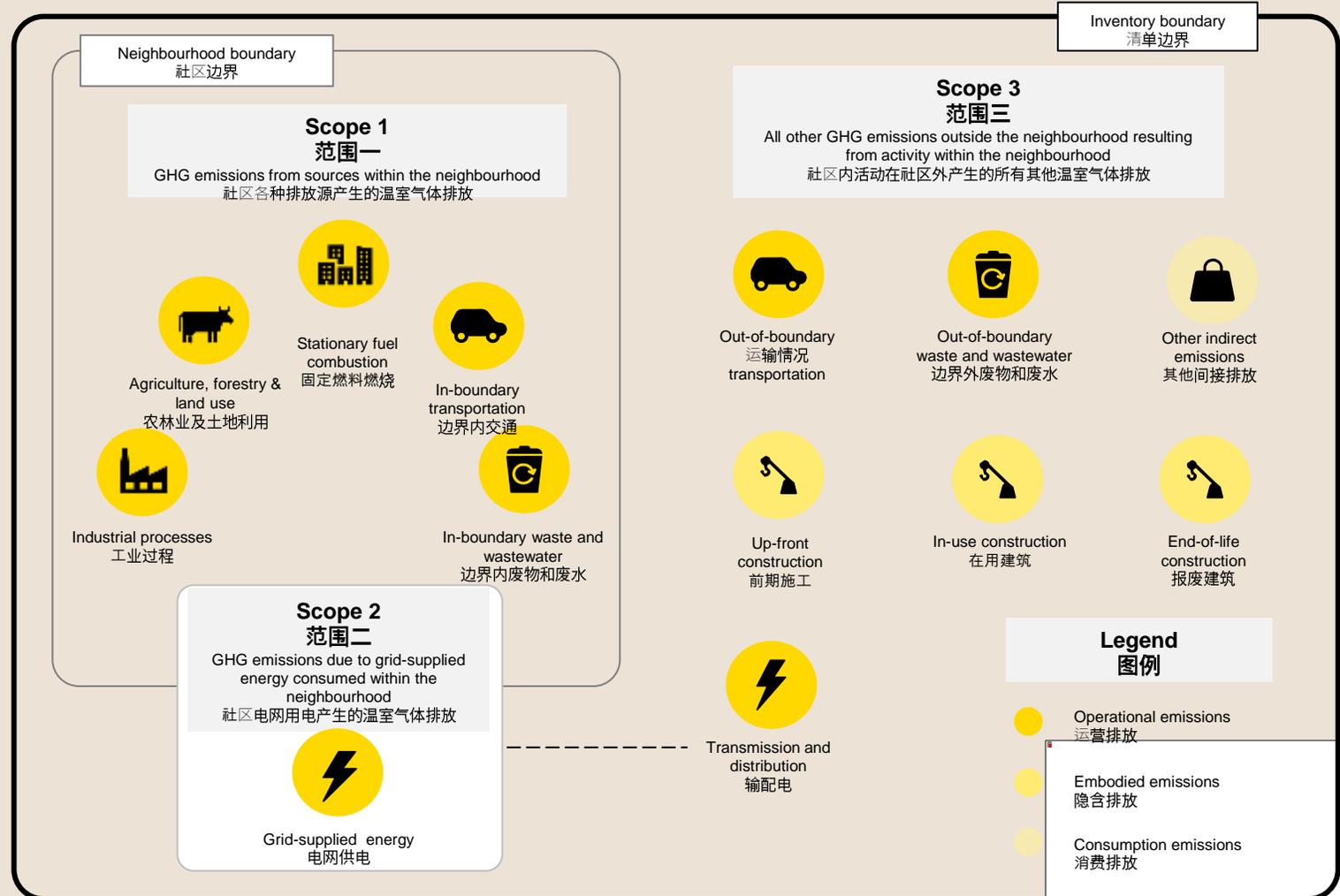
　　社区居民商品和服务消费产生的排放影响。

Emissions sources
排放源

The GHG Protocol for Communities aligns with city-wide inventories and groups emissions into scopes, depending on where the emissions occur relative to the geographic boundary of the neighbourhood.

《社区温室气体议定书》与全市清单保持一致，并根据相对于社区地理边界的排放位置，将排放划分为不同范围。

Under each scope, emissions are reported according to the source.

每种范围下的排放，按照排放源进行报告。

Inventory boundary
清单边界

Neighbourhood boundary
社区边界

Scope 1
范围一
GHG emissions from sources within the neighbourhood
社区各种排放源产生的温室气体排放

Stationary fuel combustion
固定燃料燃烧

Agriculture, forestry & land use
农林业及土地利用

In-boundary transportation
边界内交通

Industrial processes
工业过程

In-boundary waste and wastewater
边界内废物和废水

Scope 2
范围二
GHG emissions due to grid-supplied energy consumed within the neighbourhood
社区电网用电产生的温室气体排放

Grid-supplied energy
电网供电

Scope 3
范围三
All other GHG emissions outside the neighbourhood resulting from activity within the neighbourhood
社区内活动在社区外产生的所有其他温室气体排放

Out-of-boundary
运输情况
transportation

Out-of-boundary waste and wastewater
边界外废物和废水

Other indirect emissions
其他间接排放

Up-front construction
前期施工

In-use construction
在用建筑

End-of-life construction
报废建筑

Transmission and distribution
输配电

Legend
图例

Operational emissions
运营排放

Embodied emissions
隐含排放

Consumption emissions
消费排放

Factors impacting emissions
影响排放的因素

There is a range of factors that contribute to the emissions profile of the neighbourhood.
有许多因素会影响社区的排放量。

Land Use
土地利用
Zoning, density, activity distribution and the types of shops and businesses located in the area.
分区、密度、活动分布以及当地商店和企业类型。

Transport & Streets
交通及街道
Public and active transport infrastructure, space allocated to car parking, and last-mile infrastructure.
公共和主动交通基础设施、分配给停车场的空间以及最后一英里基础设施。

Built Environment
建筑环境
Type and scale of buildings, green infrastructure and carbon sequestration opportunities, such as tree coverage, healthy water and soils.
建筑类型和规模、绿色基础设施和固碳机会（如树木覆盖率）、水土健康状况。

Utilities & Materials
公用设施和材料
Sources of energy (e.g. renewable energy) and energy efficiency, management of waste, local sourcing of materials (e.g. wood), conservation and recycling of water
能源来源（如可再生能源）和能源效率、废物管理、就地取材（如木材）、节约用水和循环用水。

Regulatory
监管
Requirements and standards, plans and policy, at a local, metropolitan, state and national level.
地方、大都市、州和国家层面的要求和标准、计划和政策。

Targeting net zero
以净零排放为目标

Net zero enabled
促成净零排放

The period between when a net zero target is set and achieved. The rate of decarbonization sets a clear direction of travel along the pathway to net zero.
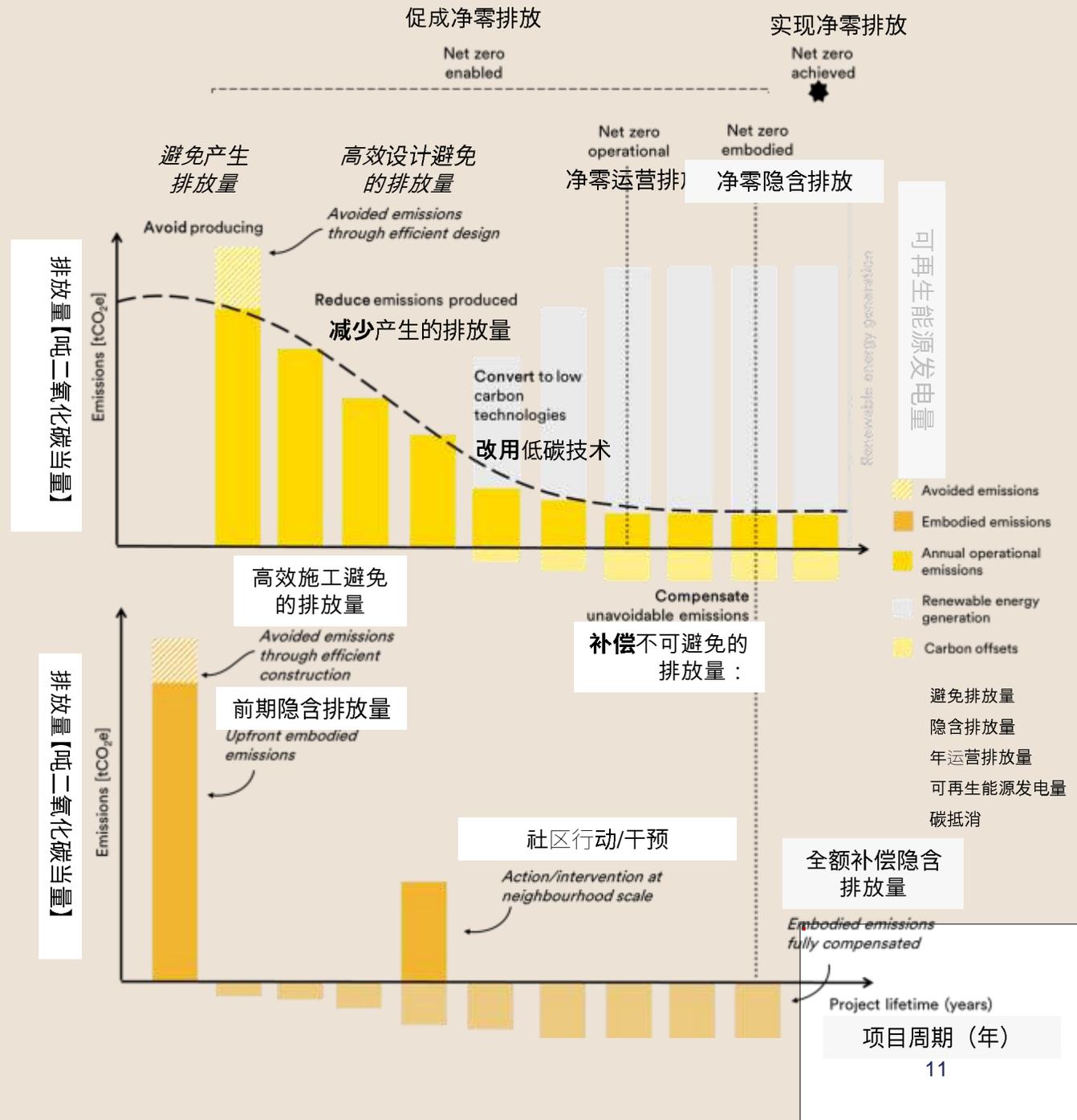
从设定净零排放目标到实现净零排放的时期。脱碳速度将为实现净零排放的途径指明方向。

Net zero achieved
实现净零排放

The period after the net emissions are reduced to zero. This is achieved through drastic and long-lasting emissions reductions within the neighbourhood, and permanently offsetting any residual emissions.

净排放量降为零之后的时期。要实现这一目标，就必须大幅、长期减少社区排放，并永久抵消任何残余排放。

促成净零排放
Net zero enabled

实现净零排放
Net zero achieved

Net zero operational
Net zero embodied

净零运营排放
净零隐含排放

避免产生排放量
Avoid producing

高效设计避免的排放量
Avoided emissions through efficient design

Reduce emissions produced
减少产生的排放量

Convert to low carbon technologies
改用低碳技术

排放量【吨二氧化碳当量】 Emissions [tCO2e]

可再生能源发电量 Renewable energy generation

- Avoided emissions
- Embodied emissions
- Annual operational emissions
- Renewable energy generation
- Carbon offsets

高效施工避免的排放量
Avoided emissions through efficient construction

前期隐含排放量
Upfront embodied emissions

补偿不可避免的排放量：
Compensate unavoidable emissions

社区行动/干预
Action/intervention at neighbourhood scale

全额补偿隐含排放量
Embodied emissions fully compensated

避免排放量
隐含排放量
年运营排放量
可再生能源发电量
碳抵消

排放量【吨二氧化碳当量】 Emissions [tCO2e]

Project lifetime (years)
项目周期（年）

11

Achieving net zero
实现净零排放

Operational
运营排放

Prioritise measures that reduce energy demand to ensure high energy efficiency. The energy supplied to meet the remaining demand must be from 100% renewable sources.

优先采取措施减少能源需求，提高能源效率。满足剩余需求的能源供应必须100%采用可再生能源。

Embodied
隐含排放

Achieve maximum embodied carbon reductions, for example through material selection in construction and/or renovation, with full compensation for any residual emissions.
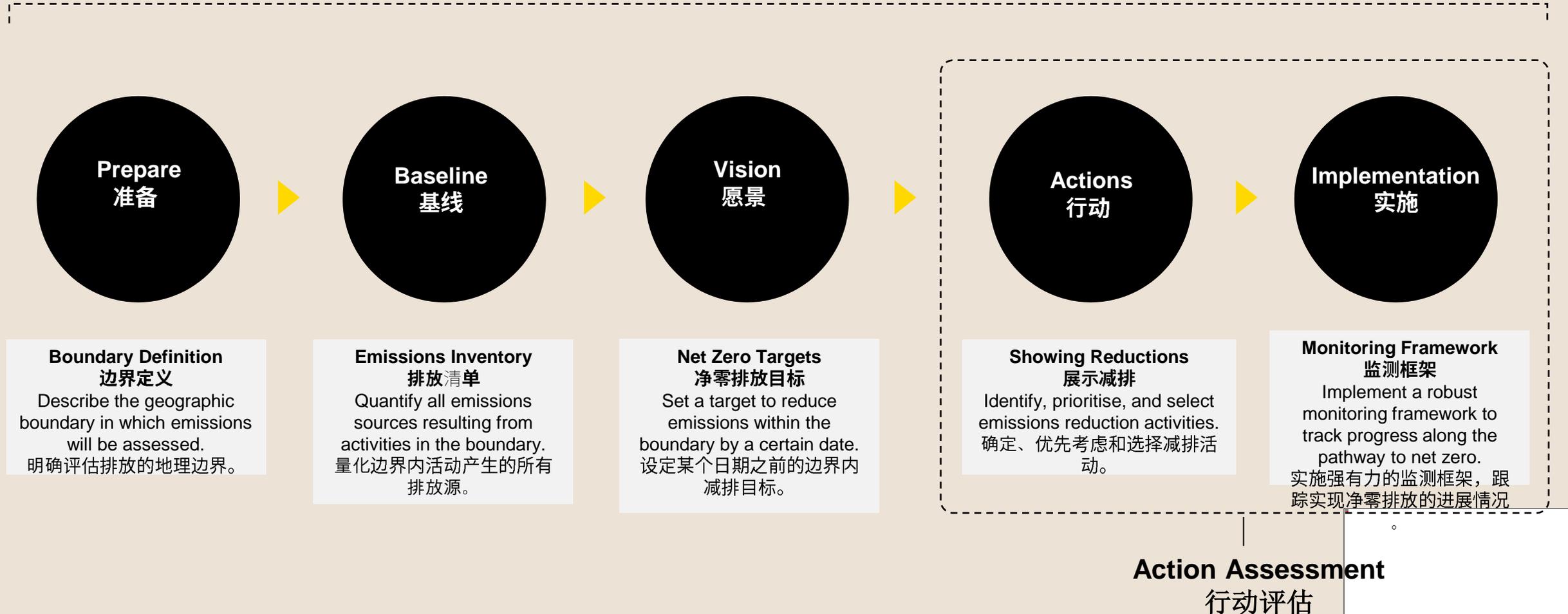
实现最大限度的隐含碳减排，例如，通过建筑和/或翻新材料的选择，并对任何残余排放进行全额补偿。

Assessment process
评估程序

Assessment overview
评估概述

Full Neighbourhood Assessment
全面社区评估

| Prepare 准备 | Baseline 基线 | Vision 愿景 | Actions 行动 | Implementation 实施 |

Boundary Definition
边界定义
Describe the geographic boundary in which emissions will be assessed.
明确评估排放的地理边界。

Emissions Inventory
排放清单
Quantify all emissions sources resulting from activities in the boundary.
量化边界内活动产生的所有排放源。

Net Zero Targets
净零排放目标
Set a target to reduce emissions within the boundary by a certain date.
设定某个日期之前的边界内减排目标。

Showing Reductions
展示减排
Identify, prioritise, and select emissions reduction activities.
确定、优先考虑和选择减排活动。

Monitoring Framework
监测框架
Implement a robust monitoring framework to track progress along the pathway to net zero.
实施强有力的监测框架，跟踪实现净零排放的进展情况

Action Assessment
行动评估

Assessment tools
评估工具

The City Inventory Reporting and Information System (CIRIS) is an Excel-based tool used for managing and reporting city-level GHG inventory data in an accessible, and flexible way.

城市温室气体清单报告和信息系统（CIRIS）是一个基于Excel的工具，可以方便灵活地管理和报告城市温室气体清单数据。

While CIRIS is designed to be used for city-scale emissions reporting, it can also effectively be used at neighbourhood level, as it aligns with the GPC standard, and CIRIS can inherit information from the city, which can save time and effort for neighbourhood-level users.

虽然CIRIS原本设计用于报告城市排放，但它也可以有效地用于报告社区排放，因为它符合GPC标准，而且CIRIS可以沿用城市信息，因而可帮助社区用户节省时间和精力。

Emissions over time
长期排放

Future emissions should be predicted using the base year inventory, then monitored over time. This often requires a bespoke model, built using local data.

应利用基准年清单预测未来的排放量，然后对其进行长期监测。这通常需要使用本地数据建立一个定制模型。
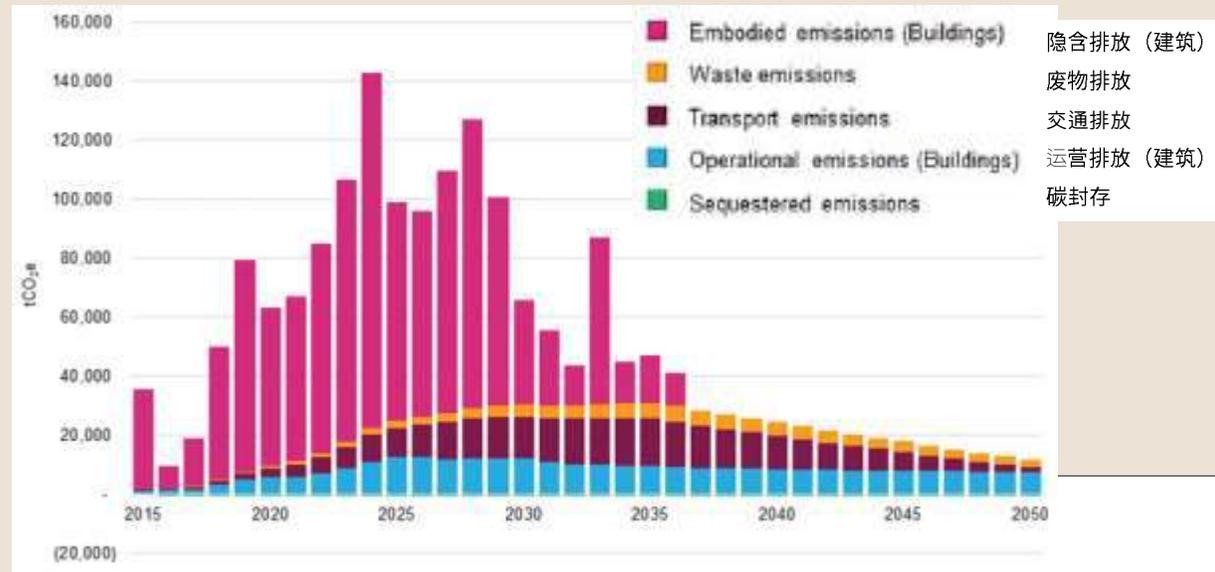
隐含排放（建筑）
废物排放
交通排放
运营排放（建筑）
碳封存

Examples

Case Study 1:

Carbon Emission Accounting at Dameisha
Community in Yantian District, Shenzhen

Dameisha Community
大梅沙社区

Established in 2005 |成立时间：2005年

Approximately 3.2 km2 |约3.2平方公里

Community population: 6,250 permanent residents, totaling 2,650 households

辖区面积：社区人口：常住人口6250人，共2650户

Near-Zero Carbon Goals
近零碳目标

- **To reduce the total community carbon emissions by 40%, with per capita carbon emissions at 0.41 tons by 2025 |** 2025目标社区碳排放总量下降40%，人均碳排放总量0.41吨

- **10% of urban community buildings with a green rating of two stars or above |** 城市社区二星级及以上绿色建筑面积比例：10%

- **48% of renewable energy vehicles owned by community residents |**社区内居民拥有的新能源汽车占比：48%

- **40% of Green coverage rate |**绿化覆盖率：40%

- Establish and implement a comprehensive carbon emission management system |建立完善并实施碳排放管理体系

万科中心建筑低能耗建筑改造 Energy-efficient reconstruction of the Vanke Center buildings

黑水虻处理有机废弃物科教基地 Science and education base for organic waste disposal using the black water fly

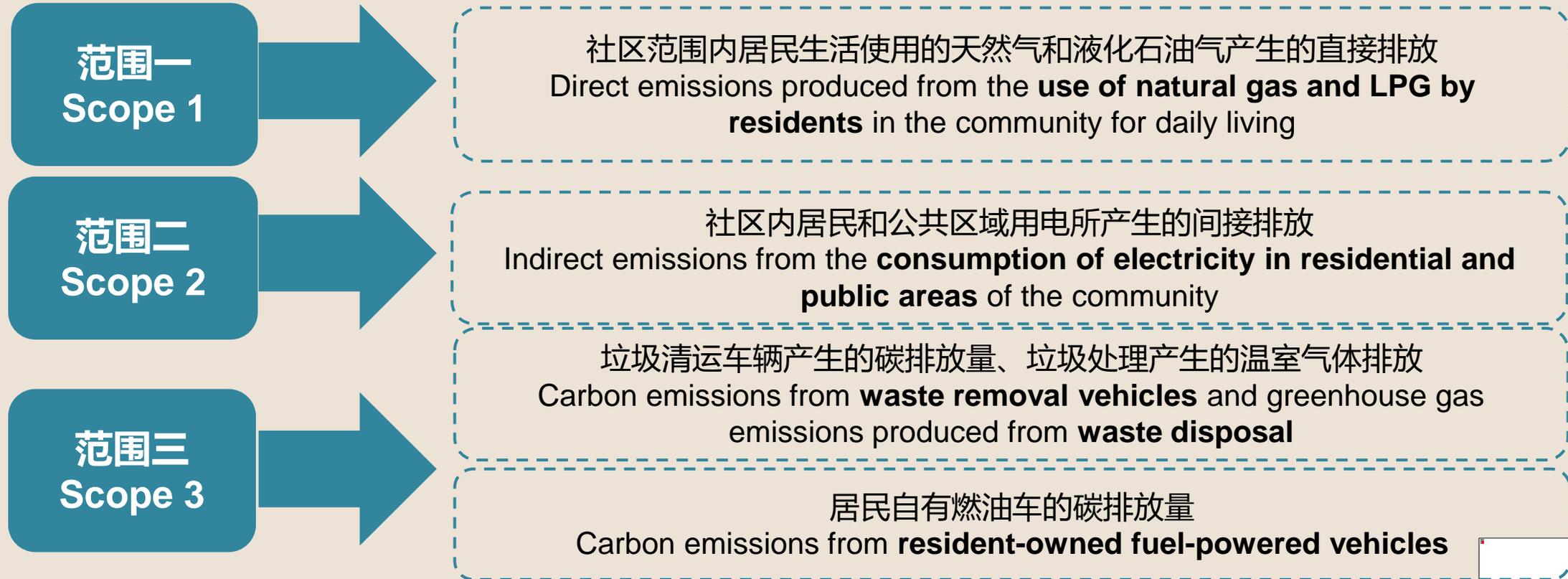梅沙自然观察年（2021-2022）） Meisha Nature Observation Year (2021-2022)

大梅沙碳中和国际论坛 Dameisha Carbon Neutrality International Forum

Dameisha Community in Shenzhen – Carbon accounting

Carbon emission accounting scope of Dameisha Community

范围一
Scope 1

社区范围内居民生活使用的天然气和液化石油气产生的直接排放
Direct emissions produced from the **use of natural gas and LPG by residents** in the community for daily living

范围二
Scope 2

社区内居民和公共区域用电所产生的间接排放
Indirect emissions from the **consumption of electricity in residential and public areas** of the community

范围三
Scope 3

垃圾清运车辆产生的碳排放量、垃圾处理产生的温室气体排放
Carbon emissions from **waste removal vehicles** and greenhouse gas emissions produced from **waste disposal**

居民自有燃油车的碳排放量
Carbon emissions from **resident-owned fuel-powered vehicles**

大梅沙社区碳排放核算数据
Carbon emission accounting data of Dameisha Community

指标名称 Indicator Name	活动水平数据 Activity Level Data		2020年碳排放量（吨/年） Carbon Emissions in 2020 (t/a)
灌装液化气 Bottled liquefied gas	社区罐装液化气年消耗量 Annual consumption of bottled liquefied gas in the community	48.24吨/年 48.24 t/a	141.05
燃气 Fuel gas	社区管道天然气年消耗量 Annual consumption of piped natural gas in the community	171802立方米/年 171,802 m³/year	266.22
电力 Electricity	社区用电总量（居民生活及公共区域） Total electricity consumption in the community (for residential and public areas)	697.38万千瓦/时 6,973,800 kW/h	3,146.58
垃圾清运 Waste removal	社区垃圾运输车月均拉运距离（单程） Average monthly transportation distance for waste transport trucks in the community (one-way)	15千米 15 km	0.57
	社区垃圾运输车数量（燃油） Number of waste transport vehicles in the community (fuel-powered)	1辆 1 unit	
	社区垃圾运输车数量（电动） Number of electric waste transport vehicles in the community (electric-powered)	2辆 2 units	
	垃圾运输车单位距离燃料消耗量（燃油） Fuel consumption per unit distance for a waste transport vehicle (fuel-powered)	0.75升/千米 0.75 L/km	
	垃圾运输车单位距离燃料消耗量（电动） Fuel consumption per unit distance for a waste transport vehicle (electric-powered)	1.5千瓦.时/千米 1.5 kWh/km	
	社区各类型垃圾总量（生活垃圾、工厂废弃物、建筑垃圾等） Total waste volumes in the community (domestic waste, industrial waste, construction waste, etc.)	1195.79吨/年 1,195.79 t/a	343.55
汽车 Automobile	燃油小汽车数量 Number of fuel-powered vehicles	610辆 610 units	489.80
	社区范围内年均行驶距离 Average annual driving distance in the community	4088千米 4,088 km	
	百公里耗油量 Fuel consumption per 100 km	8.33升/百千米 8.33 L/100 km	
社区碳汇 Community carbon sink	草地面积 Grassland area	40825平方米 40,825 m²	7.96

4379.8吨
4,379.8 t
社区净碳排放总量
Total net community carbon emissions

0.70吨
0.70 t
人均净碳排放总量
Total net carbon emissions per capita

Case Study 2:

Carbon Emission Accounting in Auckland, Kāinga Ora
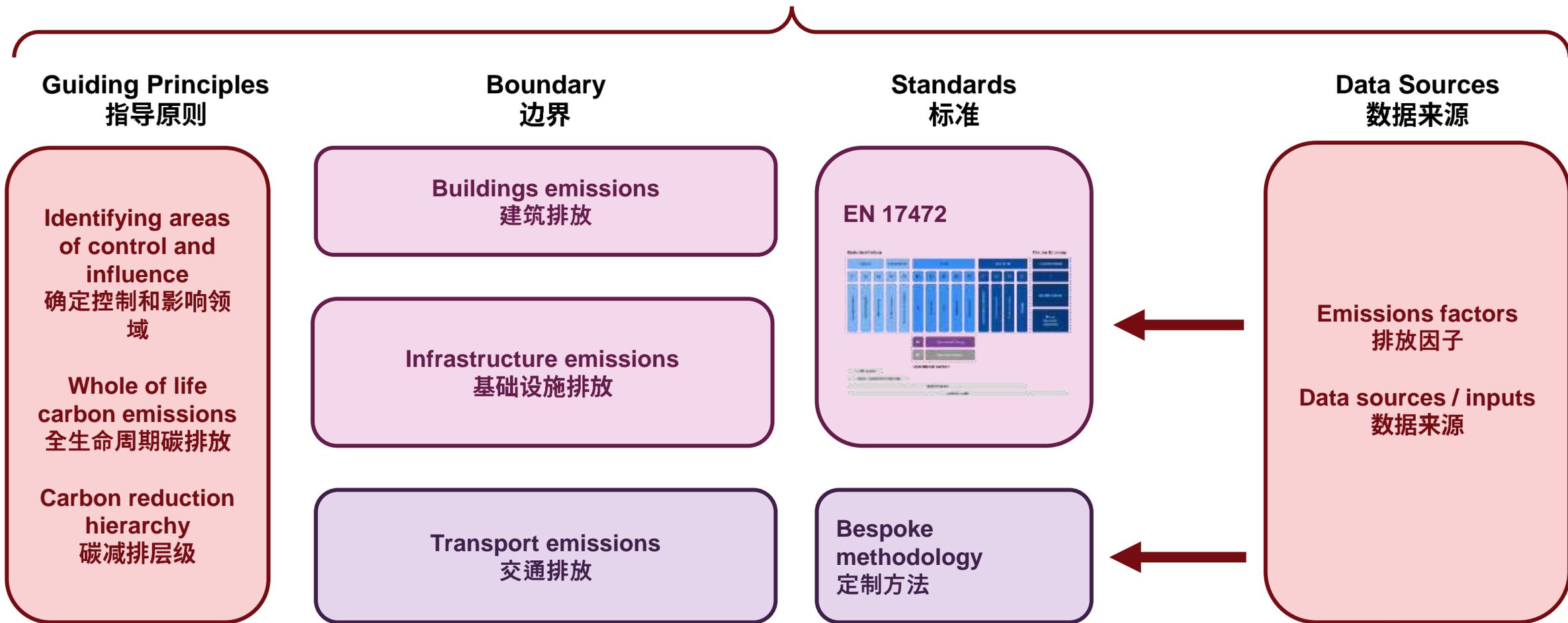
What is the model?

什么是详细模型？

- Three existing brownfield urban development projects (Baselines)
- Modelled emissions across buildings, transport and infrastructure
- Modelled against two other scenarios - hypothetical greenfield development, low carbon interventions

- 三个现有的城市棕色用地（待重新开发的用地）开发项目（基线）
- *模拟建筑、交通和基础设施的排放*
- *模拟另外两种情景——绿色用地（待开发地区）开发假设情景、低碳干预情景*

How we developed the model
我们如何开发该模型

High level methodology
高级别方法

Standard methodology and datasets
标准方法和数据集

Guiding Principles **指导原则**	**Boundary** **边界**	**Standards** **标准**	**Data Sources** **数据来源**

Identifying areas of control and influence
确定控制和影响领域

Whole of life carbon emissions
全生命周期碳排放

Carbon reduction hierarchy
碳减排层级

Buildings emissions
建筑排放

Infrastructure emissions
基础设施排放

Transport emissions
交通排放

EN 17472

Bespoke methodology
定制方法

Emissions factors
排放因子

Data sources / inputs
数据来源

How we developed the model
我们如何开发该模型

Model development
模型开发
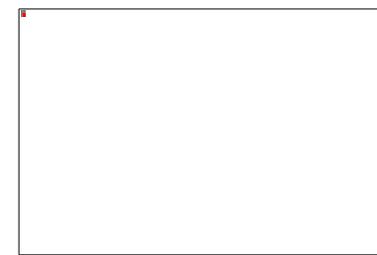
Areas of control and influence
控制和影响领域
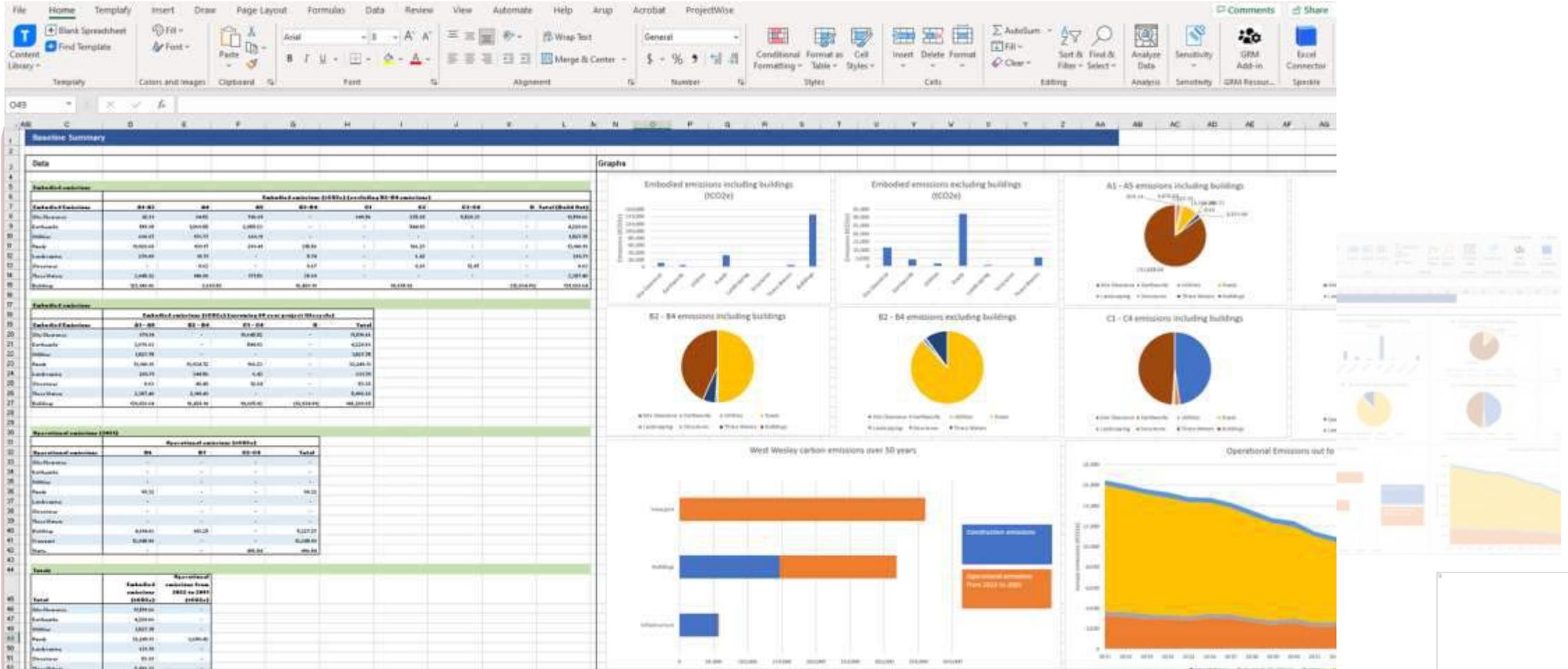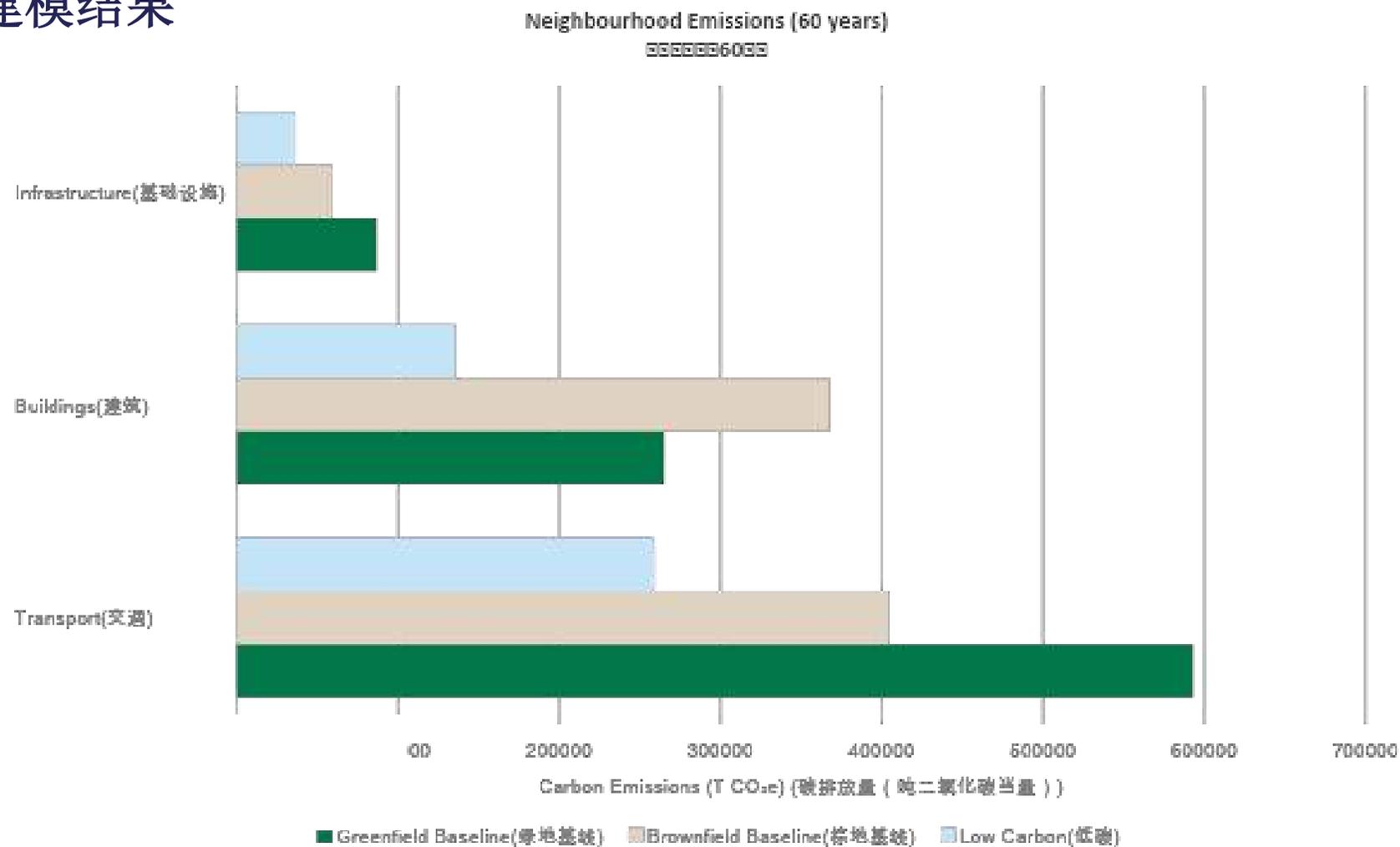
Inputs and data sources
输入和数据来源

Carbon model
碳排放模型

Buildings
建筑

Infrastructure
基础设施

Transport
交通

How we developed the model
我们如何开发该模型

Model development
模型开发

Modelling results

建模结果

Neighbourhood Emissions (60 years)
社区碳排放（60年）

**Q&A
问答**

Civic Center, Shenzhen Lianhuashan Park
Source: Sparktour