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推动清洁建造 降低城市隐含碳排放 Role of Clean Construction in Reducing Embodied Emission in Cities

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清洁建造项目经理 Clean Construction Manager

C40 Cities



C40 is a network of mayors of nearly 100 world-leading cities collaborating to deliver the urgent action needed right now to confront the climate crisis. Together, we can create a future where everyone, everywhere can thrive.

C40是一个致力于应对气候变化的世界特大城市及市长网络。C40支持城市高效协作、分享知识并推动有意义、可衡量和可持续的气候行动。





Mayors of C40 cities are committed to using an inclusive, science-based and truly collaborative approach to help the world limit global heating to 1.5°C and build healthy, equitable and resilient communities.

C40成员城市的市长们致力推动于采用包容、基于科学和务实协作的方法助力将全球升温控制在 1.5°C 以内，建设健康、公平和有韧性的社区。

城市的重要性

Why do cities matter?

城市占全球陆地面积

2%

Cities occupy the world's landmass

城市消耗能源占全球

75%

Cities' consumption of the world's energy

来源于城市的全球温室气体排放占比超过

70%

Cities create energy-related greenhouse gas emissions

城市贡献的全球GPD占比超过

80%

Cities' contribution of the world's GDP

C40 全球网络 The C40 Cities Global Network

96

座成员城市
cities

7

大区域
regions

20%

全球经济贡献占比
of the global
economy

AFRICA: ABIDJAN – ACCRA – ADDIS ABABA – CAPE TOWN – DAKAR – DAR ES SALAAM – DURBAN (ETHEKWINI) – EKURHULENI – FREETOWN – JOHANNESBURG – LAGOS – NAIROBI – TSHWANE | **CENTRAL EAST ASIA:** BEIJING – CHENGDU – DALIAN – FUZHOU – GUANGZHOU – HANGZHOU – HONG KONG – NANJING – SHANGHAI – SHENZHEN – QINGDAO – WUHAN – ZHENJIANG | **EAST, SOUTHEAST ASIA & OCEANIA:** AUCKLAND – BANGKOK – HANOI – HO CHI MINH CITY – JAKARTA – KUALA LUMPUR – MELBOURNE – QUEZON CITY – SEOUL – SINGAPORE – SYDNEY – TOKYO – YOKOHAMA | **EUROPE:** AMSTERDAM – ATHENS – BARCELONA – BERLIN – COPENHAGEN – HEIDELBERG – ISTANBUL – LISBON – LONDON – MADRID – MILAN – MOSCOW – OSLO – PARIS – ROME – ROTTERDAM – STOCKHOLM – TEL AVIV – VIENNA – WARSAW | **LATIN AMERICA:** BOGOTÁ – BUENOS AIRES – CURITIBA – GUADALAJARA – LIMA – MEDELLÍN – MEXICO CITY – RIO DE JANEIRO – SALVADOR – SÃO PAULO – SANTIAGO – QUITO | **NORTH AMERICA:** AUSTIN – BOSTON – CHICAGO – HOUSTON – LOS ANGELES – MIAMI – MONTRÉAL – NEW ORLEANS – NEW YORK – PHILADELPHIA – PHOENIX – PORTLAND – SAN FRANCISCO – SEATTLE – TORONTO – VANCOUVER – WASHINGTON DC | **SOUTH & WEST ASIA:** AMMAN – BENGALURU – CHENNAI – DELHI – DHAKA – DUBAI – KARACHI – KOLKATA – MUMBAI

直接代表5.82亿居民

影响更广泛的在城市生活和工作的 8.96 亿人

Directly representing 582 million residents

Influencing 896 million people living and working in the wider city

C40中国成员城市 C40 Cities in China

北京
Beijing

上海
Shanghai

广州
Guangzhou

深圳
Shenzhen

香港
Hong Kong

武汉
Wuhan

成都
Chengdu

杭州
Hangzhou

南京
Nanjing

13
中国城市
Chinese
Cities

青岛
Qingdao

大连
Dalian

福州
Fuzhou

镇江
Zhenjiang

C40中国成员城市 C40 Cities in China

清洁建造项目中国试点城市 China Clean Construction Program Pilot Cities

C40的解决方案与全球技术网络——支持城市加速气候行动

C40 Technical Networks Support Cities to Accelerate Climate Action

能源与建筑 Energy & Building

- 私有建筑能效网络
- 市政建筑能效网络
- 新建筑能效网络
- 清洁能源网络
- 清洁建造网络 Clean Construction

交通与城市规划 Transport & Urban Planning

- 交通管理网络
- 公共交通网络
- 步行与骑行网络
- 低排放汽车网络
- 土地利用规划网络

食品、水与废弃物 Food, Water and Waste

- 可持续废弃物管理体系网络
- 废弃物资源化网络
- 食品系统网络

气候适应措施 Climate Adaptation

- 三角洲城市互联网络
- 凉爽城市网络
- 城市内涝网络

空气质量 Air Quality

- 空气质量网络

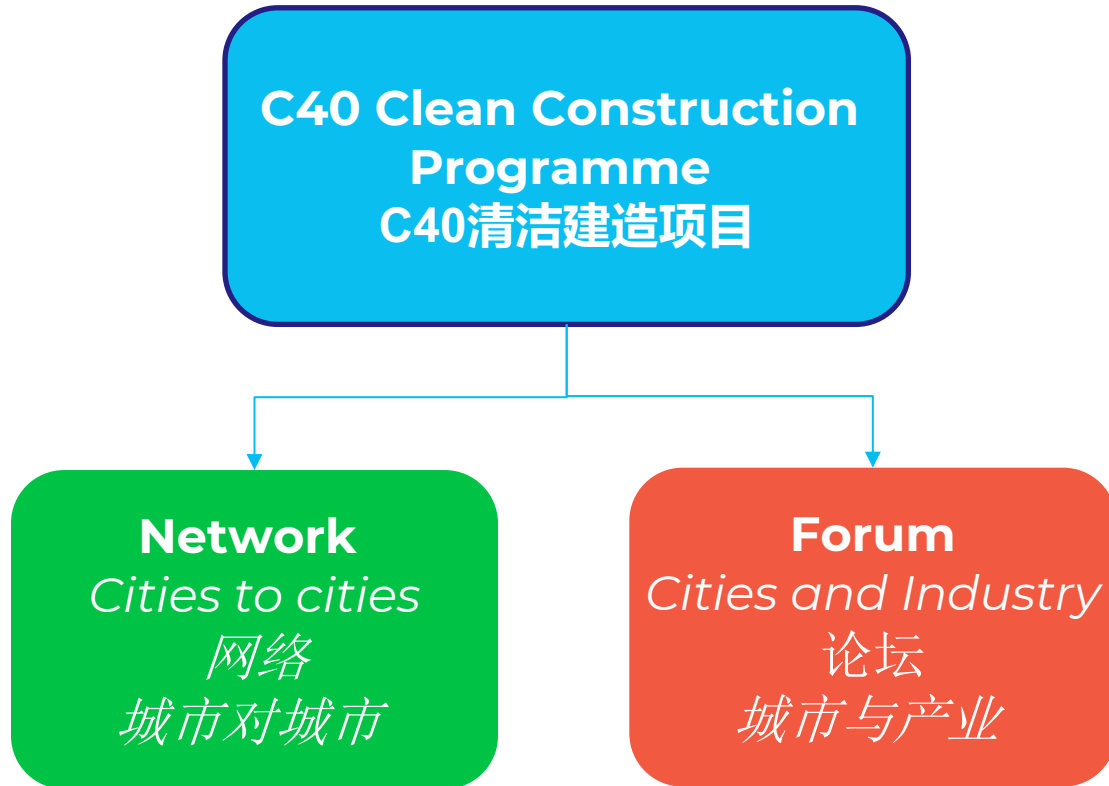
为何要实施清洁建造 Why Clean Construction

- 到 2050 年，居住在城市的人口将增加 25 亿 By 2050, 2.5 billion more people will live in cities
- 世界上 70% 的人口居住在钢筋混凝土建筑中 70% of the world's population live in a building made of reinforced concrete
- 建造活动（建筑物和基础设施）Construction activities (buildings and infrastructure):
 - 排放全球温室气体23% 以上 Emit more than 23% of global GHG emissions
 - 消耗全球超过1/3开采资源 Consume over 1/3 of all extracted resources globally
 - 产生空气、噪音和土壤污染以及大量废弃物 Generates air, noise and soil pollution, and vast amount of waste
- 2050 年前有 60% 的建筑尚未建成 60% of buildings that will exist in 2050 are yet to be built
 - 这意味着直到 2050 年，每月都要建造一座纽约这样规模的城市 This means building a city a city like New York every month until 2050
- 城市推动了住宅、学校、医院、道路、水和能源基础设施等改造和建设的需求 Cities drive the demand for the renovation and construction of homes, schools, hospitals, roads, water and energy infrastructure, etc.



C40清洁建造项目 Clean Construction Programme

May 2019, launched in Oslo, Norway
2019年5月，在奥斯陆正式启动



- **网络**：支持城市行动和政策采纳——全球共47个城市 | **Network**: support city actions and policy adoption – 47 cities globally, 3 in China
- **论坛**：行业及商业伙伴之间的协作——促进加强全球和地方合作 | **Forum**: industry and business partners and collaboration - foster stronger global and local collaborations

清洁建造项目3大支柱 3 Programme Pillars



减缓-降低隐含碳排放

Embodied emissions reduction -
Mitigation

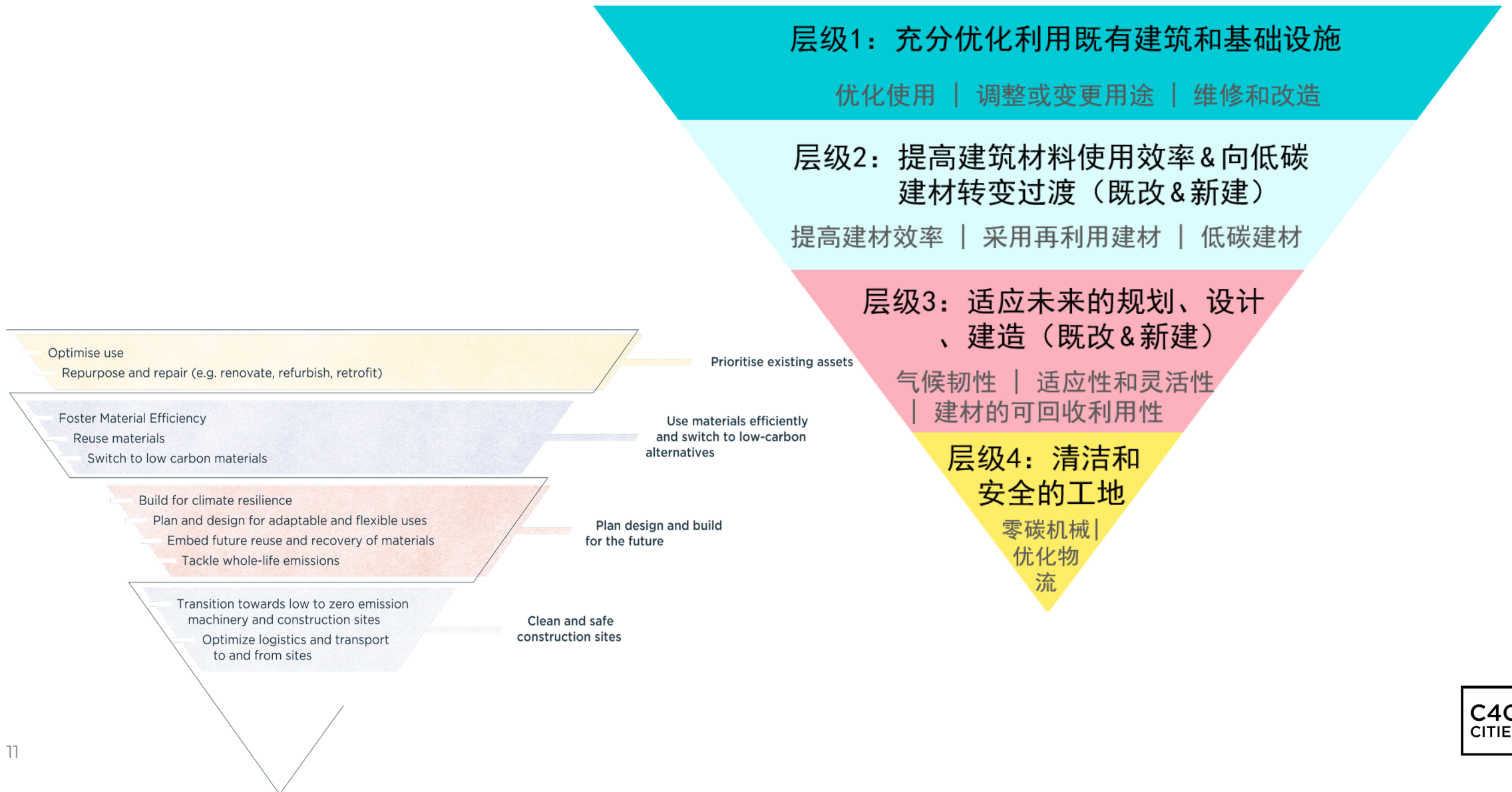
适应-提高气候韧性

Climate Resilience -
Adaptation

社会经济与健康效益

Socio-economic and health
impacts

清洁建造的逻辑路径层级 The Clean Construction Hierarchy



C40清洁建造项目活动 Clean Construction Activities

交流和能力建设

Focused exchanges & building capacity

研讨、工作组、线上培训等
Webinars, working groups and workshops
CC hierarchy
E-Learning

提升市长领导力

Fostering Mayoral leadership

清洁建造加速器、高级别活动和宣传
Clean Construction Accelerator
High level events and Communication

为全球和当地贡献案例

Building the case globally and locally

技术协助、研究项目
示范试点
Technical Assistance
Research projects
Pilot projects

实现规模和速度的变革

Enabling change at scale and pace

利益相关方联盟、城市-产业对话
Coalition of stakeholders
City-Industry Dialogues

8大行动 Activities



清洁建造加速器 Clean Construction Accelerator: Mayoral leadership

- C40城市市长发表政治领导声明，以最雄心勃勃的科学目标为基础，与切实交付的里程碑相结合。
Statement of political leadership by C40 mayors, based on the most ambitious science-based targets and allied to tangible delivery milestones.
- 签署城市承诺采取8项具体行动(左侧) Signatory cities commit to 8 tangible actions (on the left).
- 通过这些行动，城市在实现该部门的三个集体目标方面履行了自己的责任 With these actions, cities meet their share of responsibilities in reaching three collective goals for the sector:
 - 到2030年，所有新建和重大改造建筑的实际排放量至少减少50% Reduce embodied emissions by at least 50% for all new buildings and major retrofits by 2030
 - 到2030年，所有基础设施项目的实际排放量至少减少50% Reduce embodied emissions by at least 50% of all infrastructure projects by 2030
 - 在有条件的情况下，到2030年在全市范围内建立零排放建筑工地 Require zero emission construction sites city-wide by 2030, where available





清洁建造行动联盟 Clean Construction Action Coalition (CCAC)

由 C40 与世界绿色建筑委员会在 COP26 上合作发起，目的是：
Launched by C40 at COP26, in partnership with World Green Building Council, for:

- 整个价值链上的公司认可并支持清洁建造加速器以及城市对 8 项具体行动的承诺 **Companies across the value chain to recognise and endorse the Clean Construction Accelerator** and cities' commitment to 8 tangible actions
- 根据 CC 加速器，将公司的气候承诺转化为与城市一致的行动 **Translate companies' climate pledges into actions aligned with those of cities**, as per the CC Accelerator
- 提供安全的对话和协作空间，以识别阻碍因素、挑战和机遇，从而在整个价值链上更快地共同前进 **Provide a safe space for dialogue and collaboration** to identify blockers, challenges and opportunities to move further faster together across the value chain

C40中国清洁建造项目

C40 China Clean Construction Programme

- 2022年6月启动
 - **国家层面合作单位**
 - 中国建筑节能协会
 - **3个试点城市**
 - 北京（第二批国家绿色建材试点城市）
 - 青岛（第一批国家绿色建材试点城市）
 - 南京（第一批国家绿色建材试点城市）
 - **关注内容**
 - 清洁建造政策
 - 绿色低碳建材
 - 隐含排放计算方法论

- **Launch in June 2022**
 - **Partners at the national level**
 - China Building Energy Efficiency Association
 - **3 pilot cities**
 - Beijing (the second batch of national green construction materials pilot cities)
 - Qingdao (the first batch of pilot cities for national green construction materials)
 - Nanjing (the first batch of pilot cities for national green construction materials)
 - **Focus**
 - Clean construction policy
 - Green & low-carbon construction materials
 - Embedded emissions calculation Methodology

零碳施工机械的机遇和挑战

Opportunities and Challenges with Zero Emission Machinery

机遇 Opportunities

- 更高的空气质量 Better air quality
- 更低的施工噪音 Less city noise
- 更好的工作环境 Better working environment
- 无直接温室气体排放 No direct GHG emissions

挑战 Challenges

- 电力供应和充电基础设施 Electricity supply and charging infrastructure
- 所有参与方需要适应新的流程 New process for all parties involved
- 成本提升 Cost increasing
- 机器和车辆的可用性 Availability of machinery and vehicles



政策措施举例

Examples of Policy Measures

- 市政建设项目公共采购 Public procurement for municipal construction projects
- 技术研发支持计划 Support schemes for technology development
- 低/零排放建造的规划/分区要求
Planning/zoning requirements requiring low/zero-emission construction
- 与电网公司合作促进充电基础设施建设
Collaboration with electric grid companies to facilitate charging infrastructure
- 气候行动方案减少建筑活动排放的目标
Climate Action Plan targets for reducing emissions from construction activities





Explore the data:

Filter by:

Region:

City:

Policy Type:

Applicable to:

Voluntary / Mandatory:

Strategies, targets, and pilots:

Clear Selections

Clean construction policy map

0000 km

Hover over each city to see the summary of its policies and actions. For more details on the cities' policies or actions, see the table below.

Buy Clean CALIFORNIA Incentive Program

Incentives up to \$15,000 towards your product's Environmental Product Declaration for:

- Steel
- Flat glass
- Mineral wool insulation

Act Fast! Compliance data for AB 262 is January 1, 2021 and covers public contracts awarded by the state, UC and CSU campuses

Contact Dominique Hargreaves, USGBC-LA dominique@usbc-la.org 213-689-9707

UNIVERSITY BUILDING CHAPTER LOS ANGELES

ClimateWorks

City of Rotterdam

From trash to treasure

Rotterdam Circularity Programme 2019 - 2023

Rotterdam Circulair

C40 知识中心的资源 Resources on C40 Knowledge Hub

Research 研究报告

C40's 2019 flagship research on consumption-based emissions: [The future of urban consumption in a 1.5°C world](#), with its in-focus on the built environment

Policy Brief 政策建议和解读

[Why cities need to address the construction sector's hidden emissions](#)
[City Stories: Equitable job access for a green and just recovery](#)

How to guide 行动指南

[How to reduce embodied emissions in municipal construction and lead by example](#)
[How to reduce embodied emissions in private and residential buildings](#)
[How to start deconstruction and stop demolishing your city's buildings](#)

Case studies and City profile 城市案例

[Making the case for Clean Construction series: Toronto, Mexico City, Milan, Quezon City, Ekurhuleni and Qingdao](#)

[Clean Construction in practice: case studies from Reinventing Cities](#) [Developing an Embodied Carbon Policy Reduction Calculator](#): case study from **Austin, New York** and **Portland** on a city-level tool to measure embodied carbon reduction potential of different policies, co-developed with the University of Washington (CLF)

[How Oslo is driving a transition to Clean Construction](#)
[Oslo's Pursuit of an Emission-free Construction Industry](#)

[Buildings for Tomorrow: Emerging Practice in the Nordic Buildings Sector](#)

Open-ed Knowledge Hub pieces

[It's time for cities to enable the construction of timber buildings](#)

Map of City Actions 城市行动地图

[Clean Construction Policy Explorer - Interactive map](#) in 5 languages documenting strategies, policies and actions adopted by cities.





谢谢!
Thank you for your time



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