

CASS Forum on Low-carbon urbanization and Sustainable Infrastructure

# LCCC Low-carbon City Index System 中国低碳城市评价指标体系

---

Zhuang Guiyang

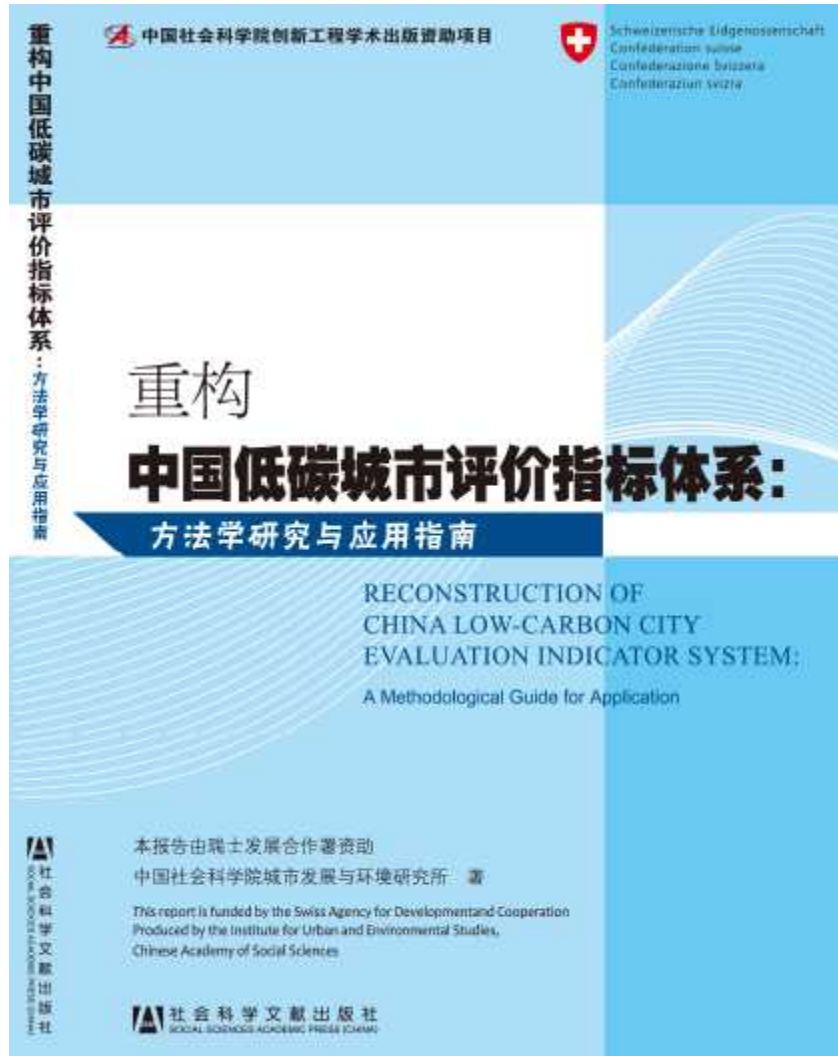
**Institute for Urban & Environmental Studies, CASS**

**CASS Forum (2013, Economics)**

**5-6 December 2013**



# Briefing of LCCC Index System



**One tool developed by CASS and SDC under the LCCC programme for China's cities**

**Integration of successful international experience (European Energy Award, Swiss Energy City)**

**Assessing cities' LCD status quo and efforts through comprehensive check and review, so as to assist cities to develop LCD action plan**



# Outline

**Logical Framework of LCCC Index System**

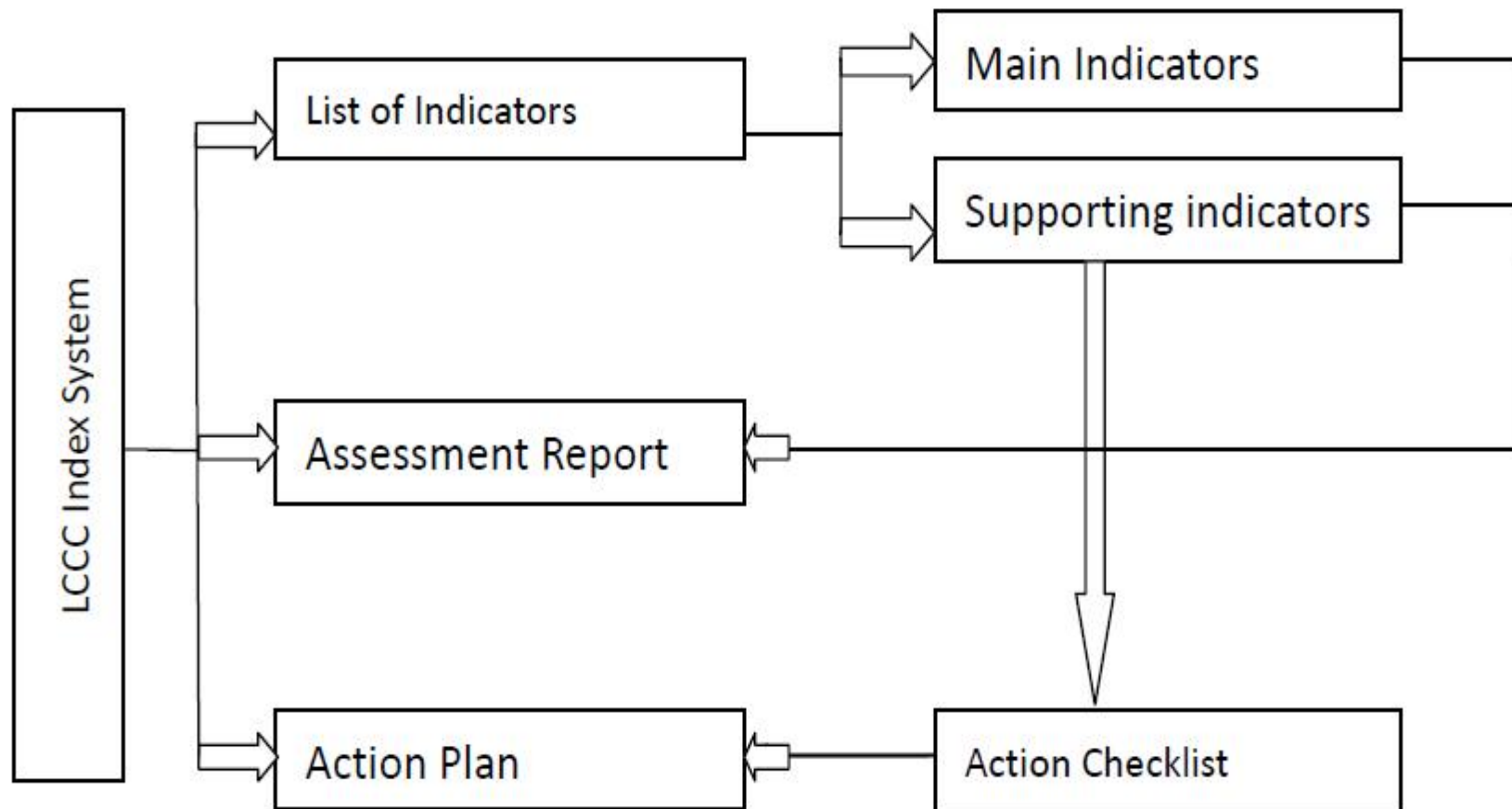
**Main Indicators and Assessment**

**Supporting Indicators and Assessment**

**Assessment Report & Action Plan**

**Guidance for Application**

# Logical Framework of LCCC Index System





## Key Approaches

The *LCCC Index System* applies an innovative “three-step” approach to dynamically link the city indicators and assessment with systemic action plan to improve the city’s performance

**Step 1: Investigate current status with LCCC Indicator List (main & supporting)**

**Step 2: Monitor, assess, report by LCCC Index Assessment Guidance**

**Step 3: Develop low-carbon plan for future activities**



## **Key Features of the Index System**

**Comprehensive Assessment Scope including rural areas**

**Action oriented log-frame and design, referring the concept of PDCA process**

**Integrated assessment on status quo and efforts, avoiding among cities**

**LCCC main indicators can serve for ranking among cities, but the research do not care it**

**Besides external assessment, cities can make self-assessment using the tool**

# Framework of Main Indicators

Primary Indicator	No.	Secondary Indicators
Economy	(1)	Carbon productivity
	(2)	Energy intensity
	(3)	Decoupling index
Energy	(4)	Percentage of non-fossil energy in primary energy consumption
	(5)	Per capita non-commercial renewable energy use
	(6)	Carbon Intensity of Energy
Infrastructure	(7)	Energy consumption per unit building area for public buildings
	(8)	Energy consumption per building area for residential buildings
	(9)	Satio of green transport
Environment	(10)	Percentage of days with API less than 100
	(11)	Domestic water consumption per capita per day
	(12)	Forest coverage rate
Society	(13)	Urban-rural income ratio
	(14)	Per capita CO <sub>2</sub> emission
	(15)	Low-carbon management institution

**15 “Main Indicators” in 5 major perspectives**

**Selection criteria of indicators**

**Relevance of LD concept**

低碳相关性

**Difference in connotation**

内涵差异性

**Typical characteristic**

自身特色性

**Policy orientation**

政策导向性

**Regional differentiation**

地区差异性

**主要指标描述形式**

**Description**

**定义 Definition;**

**范围 Scope;**

**计算工具 Instrument;**

**评价方法与基准**

**Assessment Criteria and**

# Overview of Supporting Indicator

**52 indicators covering in four major areas**

**Urban Management**

**Municipal Economy**

**Green Building**

**LC Transportation**

**Serves for detailed analysis of all the relevant activities and realized implementing measures**

**Help the municipal departments to identify gaps for action through checklist assessment**

**Guide the municipal departments to launch new LC activities in a systemic way**

**指标定义 Definition;**

**范围 Scope;**

**意义 Significance;**

**计算工具 Instrument;**

**数据来源 Data source;**

**数据表单 Data sheet**

**行动负责部门 Key**

**responsible entity for action**

**行动检查表 Checklist for action**



# 城市管理/Urban Management

## 1.1 规划Planning

1.1.1 实施低碳工具清单

1.1.2 制定低碳发展战略

1.1.3 低碳理念在城市规划中能否系统考量以及体现方式

1.1.4 低碳发展（节能、可再生能源、环境保护等）专项资金占地方政府预算的比例

## 1.2 低碳规划与政策的实施情况Implementation of low-carbon planning and policies

1.2.1 促进低碳和绿色经济发展的激励措施

1.2.2 低碳社区/学校/医院/商场/超市示范项目

1.2.3 绿色采购状况（如电器的能耗标识产品等）

1.2.4 低碳规划及管理文件等信息的公开程度/可获得性

## 1.3 低碳市政设施管理Low-carbon management for utilities

1.3.1 集中供热的能源消耗（吨标煤/万平方米•供暖日）

1.3.2 城镇居民燃气普及率（%）

1.3.3 本地可再生能源生产占能源消耗的比率

1.3.4 供水的能源消耗量（吨标煤/立方米）

1.3.5 污水处理的能源消耗量（吨标煤/立方米）

1.3.6 市政水务管理中的节水措施

1.3.7 城市垃圾无害化处理率（%）

# 城市经济/Municipal Economy

## 2.1 低碳工业Low-carbon industries

2.1.1 工业过程中的非二氧化碳温室气体排放情况及相应的减排措施

2.1.2 高耗能、高污染产业准入政策的执行力度

2.1.3 规模以上工业企业节能监察达标率 (%)

2.1.4 具备能源管理体系的重点用能单位的比率 (%)

2.1.5 签署自愿减排协议的重点用能单位的数量

2.1.6 可再生能源/节能产品产值占整个工业产值的比例

2.1.7 工业生产中可再生能源利用情况

2.1.8 工业固体废弃物综合利用率 (%)

## 2.2 低碳服务业Low-carbon services

2.2.1 医院/学校/大型购物中心/宾馆/机场等机构能源管理者的受训人数

2.2.2 签署自愿减排协议的主要服务业企业比例

2.2.3 从事能源服务、合同能源管理、CDM服务以及能源咨询业务的企业数量

## 2.3 低碳农业Low-carbon agriculture

2.3.1 单位种植面积的化肥施用量 (吨/公顷)

2.3.2 农村沼气建池户数占适宜建池户数的比例 (%)

2.3.3 农林剩余物的处理和再利用情况

2.3.4 农业生产过程中的节能措施

# 绿色建筑/Green Building

## 3.1 规划Planning

3.1.1 不同类型建筑能耗信息统计工具的应用情况

3.1.2 制定绿色建筑行动计划

3.1.3 城市新区建筑用能规划

## 3.2 绿色建筑管理Green building management

3.2.1 城市整体的建筑能源/低碳管理实施情况

3.2.2 既有建筑建筑节能

3.2.3 可再生能源建筑应用

3.2.4 与绿色建筑相关的能力建设活动

3.2.5 推广绿色建筑（小概念）

3.2.6 相关激励政策与措施的施行情况

3.2.7 应用低碳技术的示范（先锋实验）项目

# 低碳交通/Low-carbon Transportation

## 4.1 低碳交通战略与规划 Low-carbon transport strategy and planning

### 4.1.1 具有不同交通方式的能耗和碳排放清单

### 4.1.2 低碳交通战略与行动计划

## 4.2 交通管理 Transport management

### 4.2.1 交通一体化管理

### 4.2.2 平均通勤时间

### 4.2.3 公共服务领域中新能源汽车比重 (%)

### 4.2.4 道路照明中推广节能灯及可再生能源照明的措施

### 4.2.5 公交服务水平评估

### 4.2.6 每年提高低碳意识和推广活动的次数

### 4.2.7 每年参加低碳培训和能力建设活动的人数

### 4.2.8 慢行交通基础设施的规划及维护



## **Key Features of Checklist**

**Assessment items are categorized into three groups in terms of priority to facilitate the planning and implementation of improving activities**

**Items are designed in line with the actual responsibilities and jurisdictions of specified department**

**Assessment addresses the managing low carbon factors rather than technical details**

# Example of Action Checklist

## (1.3.1 district heating energy)

Category	Yes	No	N/A
<b>Controlled items 控制项</b>			
Establish management institutions for water supply energy consumption			
Establish management for water supply energy consumption			
<b>General items 一般项</b>			
Set clear targets for water supply energy consumption			
Develop implementation plans for water supply energy consumption			
Establish online monitoring system for water supply energy consumption			
<b>Optional advanced items 优选项</b>			
Develop implementation plans with targets in different phases			

# Assessment Report Template (draft)

执行概要 **Executive summary**

城市描述 **Portrait of the Municipality**

城市远景以及情景分析 **Long term vision and scenarios**

低碳城市管理现状 **Status of LC Urban Management**

**LC planning**

**Implementation of LC planning and policies**

**LC management for utilities**

城市经济发展现状 **Status of LC in Municipal Economy**

绿色建筑发展现状 **Status of LC in Green Buildings**

低碳交通发展现状 **Status of LC in Mobility/Transport**

建议 **Recommendations**

致谢 **Acknowledgments**

## **Major Content of LC Action Plan (draft)**

项目/活动描述（依照支持指标评估） **Description of activity (based on supporting indicator list)**

项目/活动的时间安排/控制节点

**Schedules / Deadlines**

项目的优先程度

**Priorities**

分项目预算信息

**Costs for Different Projects**

总体项目预算以及资金来源

**Overall Budget and Funding Source**

项目负责部门以及人员

**Responsible Department, Person(s)**





# **Guidance for Practical Application**

**LCCC main indicators aim at assessing status and efforts of cities. In order to keep consistency of index system, any adjustment should not be made on 5 categories 15 indicators**

**LCCC supporting indicators and checklists are intended to lead the cities to improve their work. Considering regionalism and need for self-assessment, cities can make adjustment based on basic version**

**Currently assessment is based on checklist. Checklist will be updated regularly. In the future, all supporting indicators should be calculated**

# 国家发展和改革委员会办公厅文件

发改办环资〔2013〕674号

## 国家发展改革委办公厅关于开展2012年度节能目标责任评价考核和控制温室气体排放目标责任试评价考核的通知

各省、自治区、直辖市人民政府办公厅：

根据《中华人民共和国节约能源法》、《国务院关于印发“十二五”节能减排综合性工作方案的通知》（国发〔2011〕26号）、《国务院批转节能减排统计监测及考核实施方案和办法的通知》（国发〔2007〕36号）和《国务院关于印发“十二五”控制温室气体排放工作方案的通知》（国发〔2011〕41号）要求，现将开展省级人民政府2012年度节能目标责任评价考核和控制温室气体排放目标责任试评价考核有关事项通知如下：

# Thanks for your attention!



中国社会科学院城市发展与环境研究所