

Market Mechanisms for Urban Energy Efficiency Improvement in China

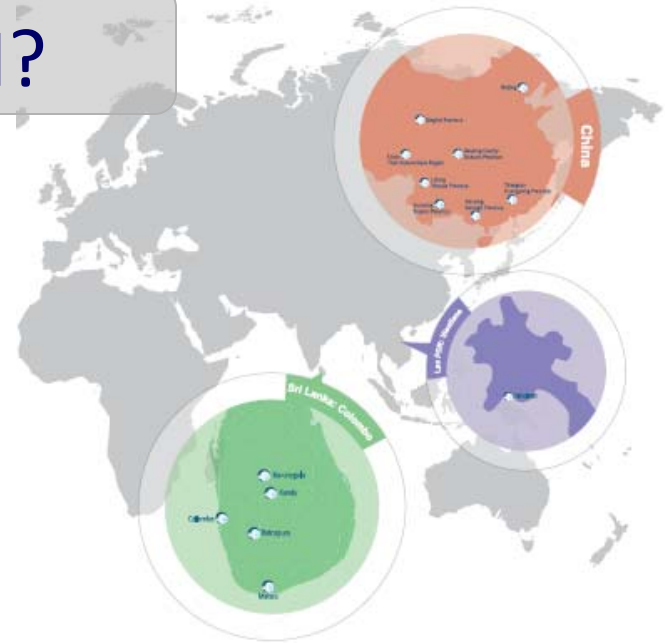
Douglas Whitehead

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Suwon Conference on Low Carbon, Green
Cities in Northeast Asia, UNESCAP

Who is GEI?

- **Chinese NGO and Think Tank**
 - Registered in Beijing in March 2004
- Offices in Beijing and Vientiane, Project sites in China (Yunnan, Sichuan, Tibet, Guangdong, Shanxi) and Lao PDR
 - Mission: Design and implement market-based mechanisms to solve environmental problems.
- **Areas we work in:**
 - Biodiversity Conservation
 - Environmental Governance
 - Sustainable Rural Development
 - Energy and Climate Change
 - Capacity Building



Energy and Climate Change Program

•US-China Track II Dialogue and Regional Climate Action Planning

- Climate Policy Maker Track II Dialogue (Chatham House)
- State Province Cooperation for Regional Low Carbon Planning in China

•Capacity Building for High Level Decision Makers

- Sustainable Development Curriculum at CCPS
- Low Carbon Development Training at CELAP

•Energy Efficiency Financing

- Dalian East Energy and Engineering Co.:* ESCo developing CDM projects in cement industry (WHR)
- ESCo for LED Retrofitting
- Market Mechanisms for Urban Energy Efficiency Improvement in China



Market Mechanisms for Urban Energy Efficiency Improvement in China

- **Challenge**

- Energy Consumption reduction target of 20 percent in 11th 5 year plan
- Carbon Intensity reduction target of 40-45% below 2005 levels in 12th 5 year plan
- Energy supply shortages in a number of Chinese cities
- 5 Province, 8 City Low Carbon Development Pilot Program launched by National Development and Reform Commission

- **Response**

- Build replicable model to assist cities in reducing CO₂ emissions and improving energy security through procurement and financing.
- Targeting heavy industry as main energy consumer

Project Methodology

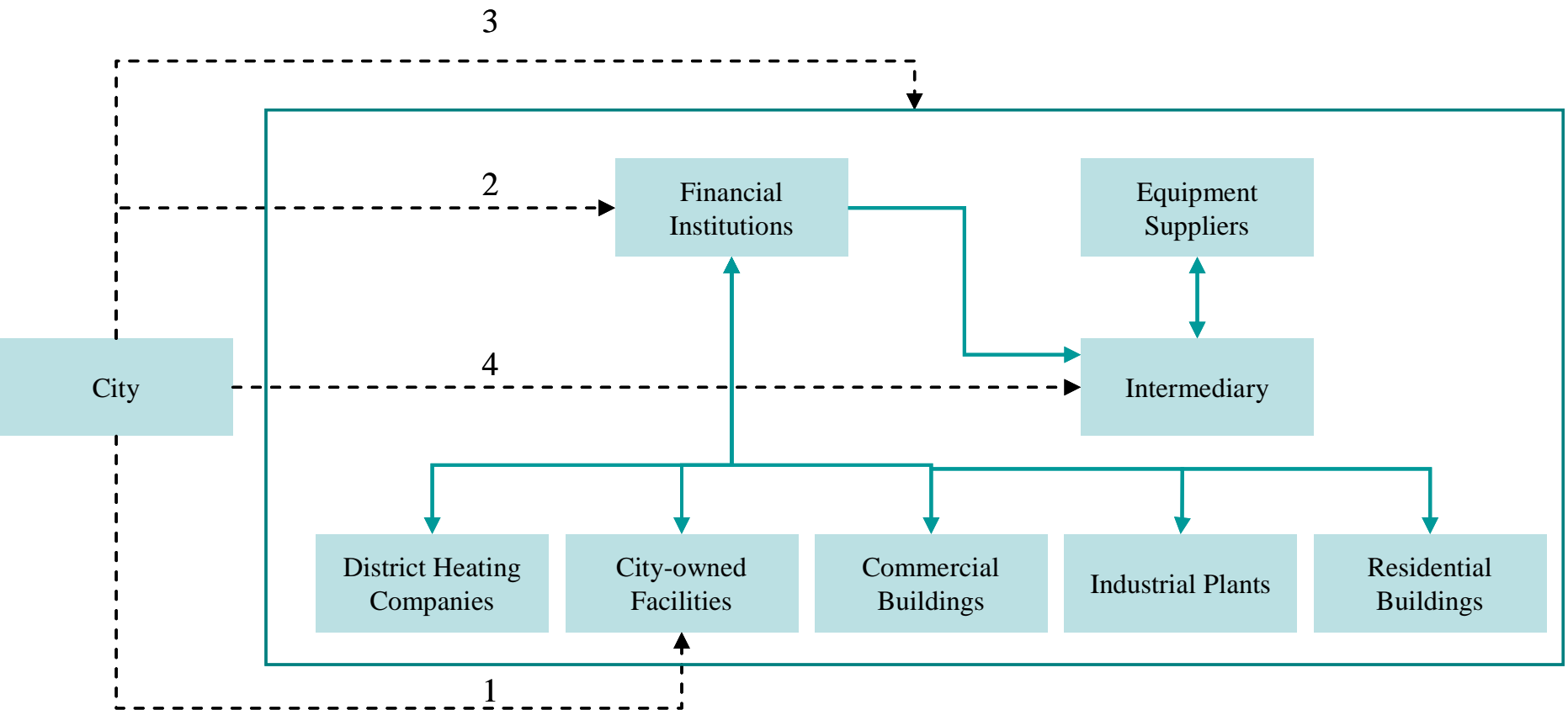
•Partner Organizations

- US: Battelle Memorial Institute, Pacific Northwest National Laboratories, Blue Moon Fund
- China: Energy Information Dissemination Center at NDRC, Local partners in Chongqing and Nanyang

•Approach

- Replicable model for market transformation of energy efficiency in urban China
- Tools such as local energy efficiency funds and bulk procurement of energy saving products
- Leverage available assets in China (local energy saving centers and energy service companies)
- Implement in two pilot cities: Chongqing and Nanyang

Project Model (Chongqing)



Note:



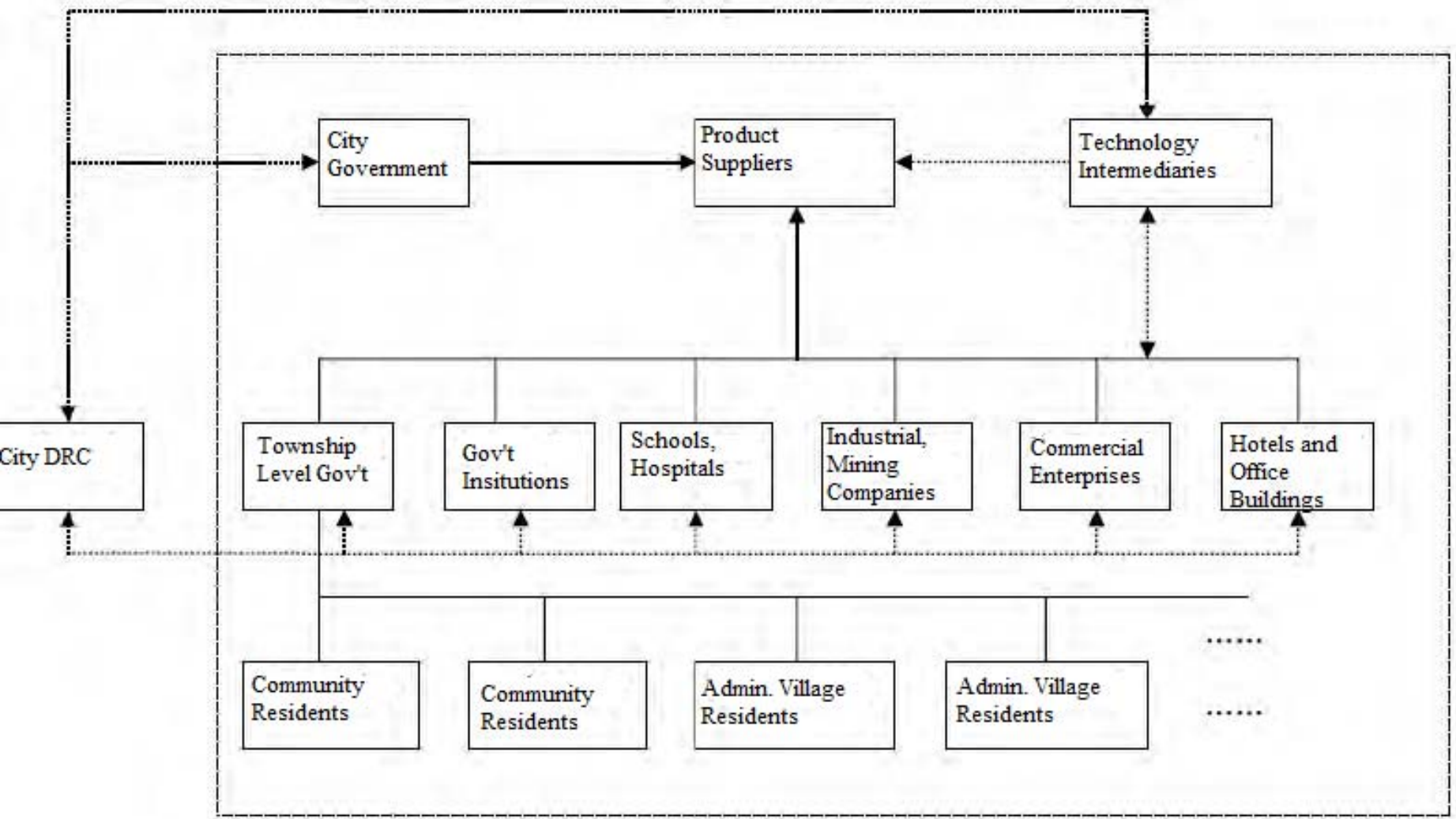
Possible cash flow (s).

(1) Possible linkages between the city and other stakeholders;

(2) Possible cash flow (s) between the city and financial institutions, intermediary, and city-owned facilities, when the city may serve as a potential financial source to them; and

(3) The attached numbers refer to the linkages discussed in the below text.

Project Model (Nanyang)



Note:
 ———→ Cash Flow
 - - - - -→ Information Flow

Key Findings from Chongqing

- **Main Challenges**

- Provincial level city, important Western regional industrial center
- Frequent energy shortages
- Aim: Facilitate market transformation of EE in Chongqing through a cooperative bulk procurement model

- **Local partners**

- China Energy Conservation and Environmental Protection Group (Chongqing Co.)
- Chongqing Municipal Government



Key Findings from Chongqing

- **Successes**

- Active participation from local partners to establish: RMB 1 billion EE investment fund; platform for clean energy in Western region, dialogue between tech users, providers and financiers.

- **Barriers**

- Financing options limited mainly to stock finance
- Lack of risk assessment mechanism
- Difficulties in establishing self-sustaining fund needed to support energy efficiency projects

Key Findings from Nanyang

- **Challenges**

- Prefecture level city in Central China
- Energy Consumption in 40% higher than global average
- 32% EE rate for overall energy use
- 11th Five Year Plan Emission reduction targets



- **Partners**

- Nanyang City Government
- Nanyang Energy Technology Service Center

Key Findings from Nanyang

- **Successes**

- Energy efficient lighting: 450,000 bulbs for three approved lamp models, saving 28 million kWh

- **Barriers**

- Policy

- China's focus still mainly on industrial EE
- Limited Policy support for ESCOs (changing)

- Market

- Bulk-procurement difficult across sectors
- Immature markets for EE products

Project Implementation

- **Timeframe**

- February 2009 – September 2010

- **Main Activities**

- February – July 2009: Feasibility study and model design
- June – August, 2009: Chongqing and Nanyang identified as pilot cities
- September 2009: GEI and project partners visit project sites to exchange key information; learn of plans for EE fund by Chongqing
- September 2009 – April 2010: Fund promoted from Chongqing Co. to parent company; GEI and partners provide relevant training
- July 2009 – GEI and partners visit pilot cities, learn benefits and limits of bulk procurement model
- Late September 2009—Final project report completed



Overall Findings

- **Project was successful in:**
 - Bringing key stakeholders on board in both cities
 - The establishment of a PPP fund in Chongqing
 - Successful EE lighting project in Nanyang
 - New Projects in 20 cities, inspired by GEI's project
- **Factors contributing to success**
 - Effective 4-in-1 Model
 - Active stakeholder participation, particularly city government
 - Involvement from financial institutions at early stages
 - Local coordinating body
 - Good Auditing and Technology selection
- **Remaining Challenges**
 - Unfavorable (though changing) policy environment
 - Immature/non-diverse EE market
 - Limited financial resources

“This project is meaningful in many ways. Many developing countries and transitioning economies face similar market barriers in deploying technologies and in seeking viable solutions [to overcome those barriers]. Models we experimented with in China provide good insights, and in fact we have started to replicate the experience we gained from this project in other countries”

--Yu Sha, Energy Expert, Battelle Memorial Institute

Further Work

- Bring private investment into EE fund, assist in investment analysis
- International best practices in stock investment fund management, particularly for fund management and risk control
- Expansion of model to additional pilot cities in China and elsewhere
- Incorporation of model or similar models in NDRC's Low Carbon Pilot Region Program?

Thank You!

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