首尔城市能源自治实验：“省下一座核电站”政策
An experiment for urban energy autonomy in Seoul: The One ‘Less’ Nuclear Power Plant policy

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研究问题 Research Questions

- 城市进行能源转型的原因和途径

  How and why do cities make energy transition?

- 城市能源转型的定义和组成要素

  What are the definition and components of urban energy transition?

- 如何评估首尔“省下一座核电站”政策的效果？

  How do we evaluate Seoul’s “one less nuclear power plant policy”?

引言 Introduction

- 城市占全球一级能源消耗的2/3，且这些能源是由化石燃料和核燃料提供的

  Cities use two thirds of global primary energy consumption and are powered by fossil fuels and uranium

- 这被认为导致气候变化、给居民带来核辐射风险

  Are criticized to be main agents causing climate change and exposing their citizens into radiation risks

- 2011年仅首尔就消费了全国10. 3%的能源输出，但是只产出了相当于其能源消费量的2. 95%

  Seoul alone consumed 10.3% of the total national energy output while producing 2.95% of its total energy consumption in 2011

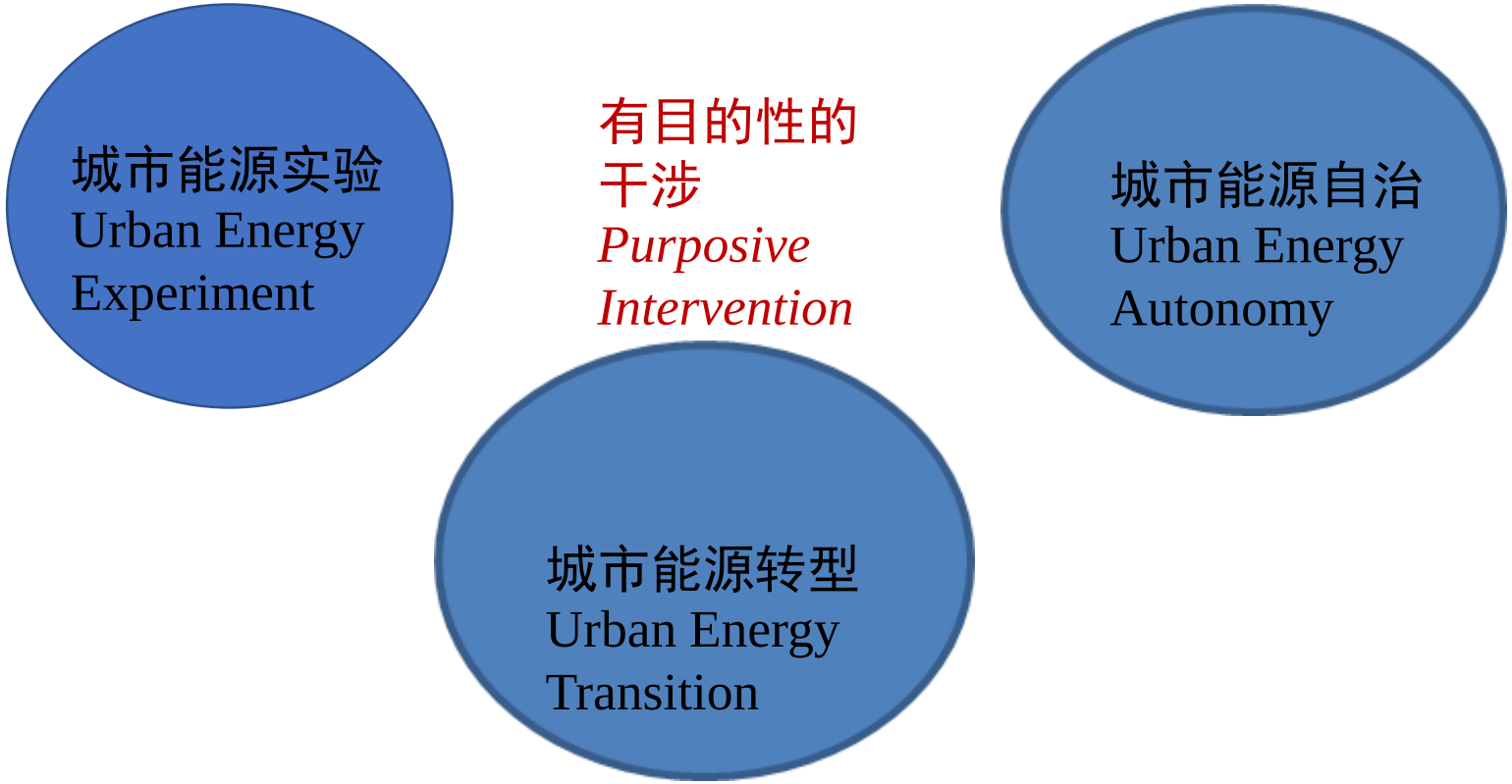
- 为了扭转这一趋势，首尔于2012年四月启动了这项实验

  To reverse this trend, Seoul’s interesting experiment was initiated since April 2012

- “省下一座核电站”政策（OLNPPP）

  One Less Nuclear Power Plant Policy(OLNPPP)

城市能源实验、转型、自治的理论框架
Theoretical Framework on Urban Energy Experiment/Transition/Autonomy

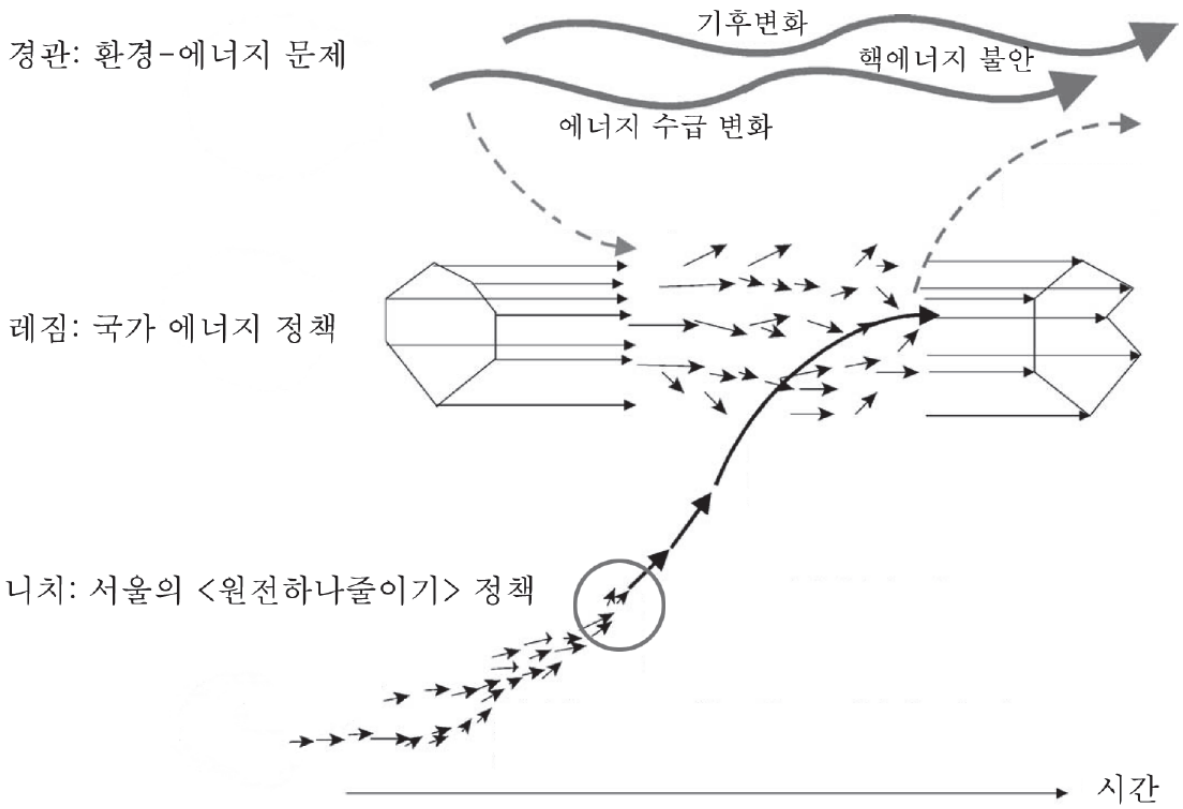


通过有目的性的干涉使能源系统从以化石能源和核能为基础转型为以可再生能源和能源需求管理为基础

A purposive intervention for energy transition from an energy system based on nuclear and fossil fuels to one based on renewable energy and energy demand management.

首尔能源转型的多层级视角
MULTILEVEL PERSPECTIVE ON SEOUL ENERGY TRANSITION

<그림 2> 다수준 관점에서 본 에너지 전환 구조도



자료: <그림 1>에 인용한 Schot & Geels (2008:546), 재구성.

An and Lee (2016, in Korean)

城市能源实验的分析框架
A Framework to Analyze Urban Energy Experiment

政策背景 Policy backgrounds	国内国际经济状况Domestic and international economic realities	影响城市能源转型的国内国际经济状况是什么？ What are domestic and international economic realities that influence on urban energy transition?
	国内国际与环境相关的政治关切 Domestic and international environmentally related political concerns	影响城市能源转型的国内国际与环境相关的政治关切是什么 What are domestic and international environmentally related political concerns contributing to urban energy transition?
	国内社会问题 Domestic social issues	现有的困难如何影响城市能源政策？程度如何？ How does the siting difficulty influence on urban energy policy? To what extent?
治理 Governance	城市能源政策的目标Aims of urban energy policy	为什么目标很重要？城市能源政策的目标是如何建构的？目标的设置包含了什么标准和思想？ What and why are aims important and prioritized? How are the goals of urban energy policy framed? What kinds of norms and ideas are embedded in the goal setting?
	决策过程 A process of decision making	什么个人或组织参与了政策的制定过程？这一过程是自上而下、自下而上的还是两者皆有？公众、政府官员、专家和利益相关团体会采取什么措施？Who and which organizations get involved in urban energy policy making process? Are urban energy policies made by top-down, bottom-up or mixed approach? How do the public, city officers, experts and interest groups adopt energy policy measures?
	领导人角色 The role of leadership	制定政策的过程中，市长和市长办公室的角色是什么？市长和市长办公室如何推进政策制定？What are the role of a mayor and a mayor office in making urban energy policies? How do the mayor and the mayor’s office precede urban energy policies?

城市能源实验的分析框架
A Framework to Analyze Urban Energy Experiment

政策内容 Policy Contents	本地可再生能源供给 Local renewable energy supply	如果有可再生能源标准和目标，它的时间线和行动计划是什么？ If there is renewable energy standard and targeted goal, what would be timeline and action plans?
	能源效率衡量 Energy efficiency measures	什么技术被采用了？能源效率的焦点领域（例如建筑交通、基础设施、照明）是什么？ Which types of technologies are adopted? What are the focusing fields (such as building, transportation, infrastructure, and lighting) for energy efficiency?
	能源需求管理 Energy demand management	节约能源的金融支持和管制工具是什么？如何发动社区和个人进行能源需求管理？ What are financial supports, and regulation tools for saving energy? How are communities and individuals mobilized for energy demand management?
	绩效评估和监管 Performance evaluation and monitoring	如何测度政策实施的效果？以什么频率？评估和监管的标准是什么？ How and how often do we measure the outcome of policy implementation? What are the criteria for evaluation and monitoring?

OLNPP的政策背景
Policy Backgrounds of OLNPPP

政策背景 Policy Backgrounds	国内国际经济状况 Domestic and international economic realities	**2011年9月15日的电力断供** Power outages in September 15, 2011  
	国内国际与环境相关的政治关切 Domestic and international environmentally related political concerns	**2011年3月11日福岛第一核电站事故** Fukushima Daiichi nuclear power plants accident in March 11, 2011 
	国内社会问题 Domestic social issues	**密阳输电塔选址问题** Transmission towers siting problem in Miryang 

OLNPPP的管理 Governance of OLNPPP

治理 Governance	城市能源政策目标 Aims of urban energy policy	
	决策制定的过程 A process of decision making	* **希望政策咨询小组** Hope Policy Advisory Panel * **环境与文化小组委员会：与SMG官员和NGO的16次会议** Environment and Culture subcommittee: 16 meetings with SMG officials and NGOs * **OLNPPP草案** Drafted OLNPPP * **2月21日的政策听证会和4月16日的国会会议（400名议员-109条建议）** Policy Hearing Workshop on Feb 21 and Citizens' Congress (400 citizens-109 proposals) on April 16 * **2012年4月26日：OLNPP最终版本** Final version on April 26, 2012 * **在气候环境总部（环境政策和绿色能源部门的领导者）下成立OLNPPP推广委员会** OLNPPP Promotion Board under the Climate and Environment Headquarters (Leading roles by Environmental Policy and Green Energy Divisions) * **公民委员会/执行委员会** Citizens' Committee / Implementation Committee * **政府和社会资本合作（PPP模式）** Public-Private Partnership
	领导者的角色 The role of leadership	* **市长的领导** Leadership of Mayor - 命名政策 Naming the Policy - 确定其在能源政策中的优先权 Putting top priority on energy policy - 组织每两年的绩效评估会议和其他会议 Biannual performance evaluations meetings and other meetings organized by a Mayor

OLNPPP的政策内容 Policy Contents of OLNPPP

政策内容 Policy Contents	本地可再生能源供给 Local renewable energy supply	* **水资源回收中心的小型水电站** Small hydro power for water recycling centers * **氢燃料电池发电厂** Hydrogen fuel cell power plants * **沼气场** Biogas plants * **2012年7月30日修订的能源条例，以降低屋顶安装太阳能电池板的公共建筑租金** Energy ordinance amended in July 30 2012 to lower rents for public buildings in case of solar panel installation on rooftops * **安装公寓阳台用200瓦或更小的太阳能电池板** Installations of solar panels of 200W or smaller for apartments' balconies
	能源效率衡量 Energy efficiency measures	* **建筑翻新工程（BRPs）** Building Retrofit Projects(BRPs) * **LED灯的更换** LED replacement
	能源需求管理 Energy demand management	* **针对性降低商业（60%）和住宅（28%）部门的能源消耗** Targeted reducing Energy consumption in commercial (60%) and residential (28%) sectors * **减排积分系统** Eco-mileage system * **能源咨询服务** Energy Consulting Services * **150名能源设计师——学校和商业建筑** 150 Energy Designers- schools and commercial buildings * **能源自给村庄** Energy Self-sufficient Villages
	绩效评估和监管 Performance evaluation and monitoring	* **截至2014年3月完成目标的73%** Accomplishing 73% of the goal as of the end of March 2014 * **节能(87万吨油当量)、能效(65万吨油当量)、新能源和可再生能源生产(25万吨油当量)** Energy conservation (870,000TOE), Energy efficiency (650,000TOE) and New and Renewable energy production (250,000TOE) * **定期绩效监察会议** Regular performance monitoring meetings * **新能源和可再生能源（50万吨油当量目标，已完成25万吨油当量）** New and Renewable Energy (500,000 TOE (goal) ☞ 250,000TOE) * **96%的建筑翻新工程受益于窗户的更换** 96% of BRP benefited to the replacement of windows

讨论 Discussion

- OLNPPP是对当地、国家、地区、全球层面的关切的回应

  OLNPPP as responding to concerns at local, national, regional and global scales

- OLNPPP考虑超出行政管辖范围的地方能源问题

  OLNPPP considers local energy issues beyond administrative jurisdiction

- 利益相关者的“直接经验”对政策的形成有较大的影响

  “Direct experiences” of stakeholders strongly influenced policy formation

- OLNPPP的目标在之前能源政策的“唯一环境维度”上增加了“社会(或道德)维度” （准则的改变）

  Goals of OLNPPP added “social (or moral) dimension” in the previous “only environmental dimension” of the energy policy ☞ Norm Change

- OLNPPP是自上而下和自下而上方法的结合

  OLNPPP as the mix of top-down and bottom-up approaches

政策建议 Policy Implications

- 城市可以利用在地方、国家和全球范围内出现的政治机遇来制定目标和议程，同时执行政策并争取公众对其城市能源政策的支持

cities can use political opportunities occurring at local, national and global scales for setting goals and agendas, implementing the policy and gaining public supports about their urban energy policies

- 在公众大力支持下制定城市能源政策，可以采用自上而下和自下而上混合的方式

creating urban energy policy with great public support can come from the mixed top down and bottom up approaches

- 领导的作用对于政策制定和执行过程中目标和议程的确定是至关重要的

the role of leadership is crucial for setting aims and agendas in the policy formation and policy implementation

- 具体目标和定期绩效评估是十分重要的

the importance of concrete targets and regular performance evaluations

- 必须使短期、中期和长期的具体目标的制定制度化，并在法律框架下执行定期绩效评估

must institutionalize setting concrete targets in short, medium and long terms, and implementing regular performance evaluations with legal framework

结论 Conclusion

- 通过能源政策寻求与当地其他政策的共存是这个实验（OLNPPP）得到的关键信息

Pursuing co-existence with other locals through energy policy is the key message from the experiment (OLNPPP)

- OLNPPP的成功可以促使人们重新考虑国家和地方层面的核电站和输电塔建设

The success of OLNPPP can pressure to reconsider nuclear power plants and transmission towers construction at national and other local levels.

- **我们对城市能源政策研究的贡献 Our contribution to urban energy policy literature**

- 基于城市气候变化实验的概念，我们为城市能源自治提出了城市能源实验的概念

we conceptualize the meaning of urban energy experiment for urban energy autonomy, based on the concept of urban climate change experiment

- 我们为城市能源实验提供了分析框架:背景、治理和政策内容

we provide analytic framework for urban energy experiment: background, governance and policy contents

- 虽然这个实验可能不能推广或适用于其他城市环境，但通过网络和协作进行的传播和学习可以促进世界各地不同城市的城市能源实验

While this experiment may not be generalizable or applicable to other city context, diffusion and learning through networking and collaboration can facilitate various urban energy experiments across cities around the world

- **未来的研究议程 Future research agenda**

-为此，应分析地方政府如何在特定制度背景下为实现城市能源自治而支持城市能源实验

In order for that, how local authorities bolster urban energy experiment for energy autonomy with an institutional setting should be analyzed