An Experiment for Urban Energy Autonomy in Seoul: One Less Nuclear Power Plant Policy

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- A Framework to Analyze Urban Energy Experiment
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Research Questions

- How and why do cities make energy transition?
- What are the definition and components of urban energy transition?
- How do we evaluate Seoul's "one less nuclear power plant policy"?

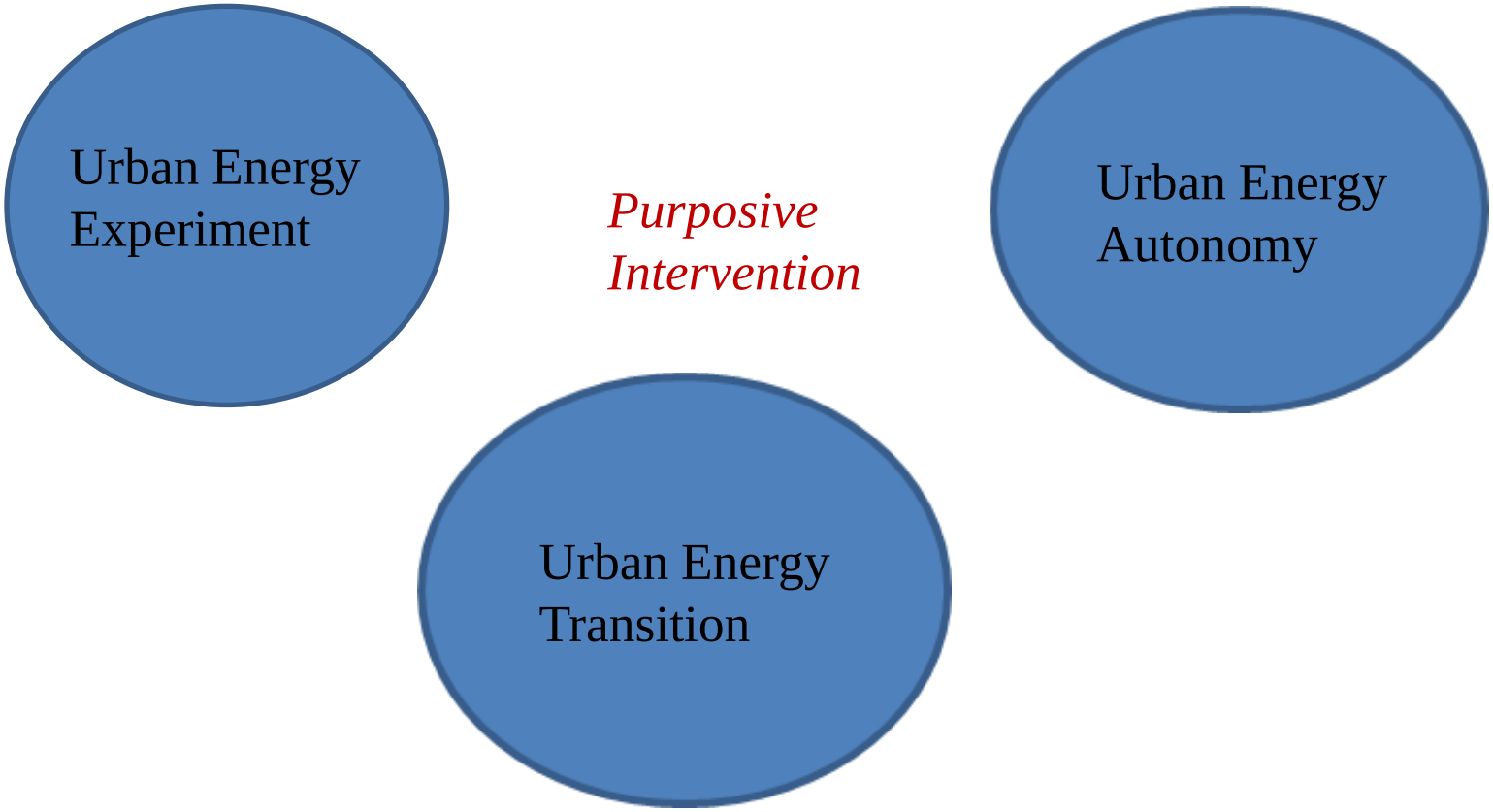
Introduction

- Cities use two thirds of global primary energy consumption and are powered by fossil fuels and uranium
- Are criticized to be main agents causing climate change and exposing their citizens into radiation risks
- Seoul alone consumed 10.3% of the total national energy output while producing 2.95% of its total energy consumption in 2011
- To reverse this trend, Seoul's interesting experiment was initiated since April 2012
- One Less Nuclear Power Plant Policy(OLNPPP)

Research Methodology

- Literature review of other scholars' related works
- SMG's official documents
- Participatory observation
- Interviews

Theoretical Framework on Urban Energy Experiment/Transition/Autonomy



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.

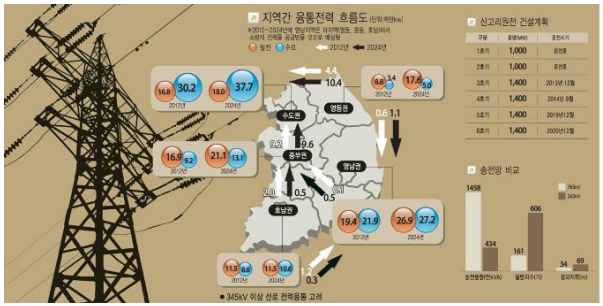
A Framework to Analyze Urban Energy Experiment

Policy backgrounds	Domestic and international economic realities	What are domestic and international economic realities that influence on urban energy transition?
	Domestic and international environmentally related political concerns	What are domestic and international environmentally related political concerns contributing to urban energy transition?
	Domestic social issues	How does the siting difficulty influence on urban energy policy? To what extent?
Governance	Aims of urban energy policy	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?
	A process of decision making	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?
	The role of leadership	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?

A Framework to Analyze Urban Energy Experiment

Policy Contents	Local renewable energy supply	If there is renewable energy standard and targeted goal, what would be timeline and action plans?
	Energy efficiency measures	Which types of technologies are adopted? What are the focusing fields (such as building, transportation, infrastructure, and lighting) for energy efficiency?
	Energy demand management	What are financial supports, and regulation tools for saving energy? How are communities and individuals mobilized for energy demand management?
	Performance evaluation and monitoring	How and how often do we measure the outcome of policy implementation? What are the criteria for evaluation and monitoring?

Policy Backgrounds of OLNPPP

Policy Backgrounds	Domestic and international economic realities	Power outages in September 15, 2011  
	Domestic and international environmentally related political concerns	Fukushima Daiichi nuclear power plants accident in March 11, 2011 
	Domestic social issues	Transmission towers siting problem in Miryang 

Governance of OLNPPP

Governance	Aims of urban energy policy	
	A process of decision making	* Hope Policy Advisory Panel * Environment and Culture subcommittee: 16 meetings with SMG officials and NGOs * Drafted OLNPPP * Policy Hearing Workshop on Feb 21 and Citizens' Congress (400 citizens-109 proposals) on April 16 * Final version on April 26, 2012 * OLNPPP Promotion Board under the Climate and Environment Headquarters (Leading roles by Environmental Policy and Green Energy Divisions) * Citizens' Committee / Implementation Committee * Public-Private Partnership
	The role of leadership	* Leadership of Mayor - Naming the Policy - Putting top priority on energy policy - Biannual performance evaluations meetings and other meetings organized by a Mayor

Policy Contents of OLNPPP

Policy Contents	Local renewable energy supply	* Small hydro power for water recycling centers * Hydrogen fuel cell power plants * Biogas plants *Energy ordinance amended in July 30 2012 to lower rents for public buildings in case of solar panel installation on rooftops * Installations of solar panels of 200W or smaller for apartments' balconies
	Energy efficiency measures	* Building Retrofit Projects(BRPs) * LED replacement
	Energy demand management	* Targeted reducing Energy consumption in commercial (60%) and residential (28%) sectors * Eco-mileage system * Energy Consulting Services * 150 Energy Designers- schools and commercial buildings * Energy Self-sufficient Villages
	Performance evaluation and monitoring	* Accomplishing 73% of the goal as of the end of March 2014 * Energy conservation (870,000TOE), Energy efficiency (650,000TOE) and New and Renewable energy production (250,000TOE) * Regular performance monitoring meetings * New and Renewable Energy (500,000 TOE (goal) ☞ 250,000TOE) * 96% of BRP benefited to the replacement of windows

Discussion

- OLNPPP as responding to concerns at local, national, regional and global scales
- OLNPPP considers local energy issues beyond administrative jurisdiction
- “Direct experiences” of stakeholders strongly influenced policy formation
- Goals of OLNPPP added “social (or moral) dimension” in the previous “only environmental dimension” of the energy policy ☞ Norm Change
- OLNPPP as the mix of top-down and bottom-up approaches

Policy Implications

- 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
- creating urban energy policy with great public support can come from the mixed top down and bottom up approaches
- the role of leadership is crucial for setting aims and agendas in the policy formation and policy implementation
- the importance of concrete targets and regular performance evaluations
- must institutionalize setting concrete targets in short, medium and long terms, and implementing regular performance evaluations with legal framework

Conclusion

- Pursuing co-existence with other locals through energy policy is the key message from the experiment (OLNPPP)
- The success of OLNPPP can pressure to reconsider nuclear power plants and transmission towers construction at national and other local levels.

- **Our contribution to urban energy policy literature**

- we conceptualize the meaning of urban energy experiment for urban energy autonomy, based on the concept of urban climate change experiment
- we provide analytic framework for urban energy experiment: background, governance and policy contents
- 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

- **Future research agenda**

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